Joanna Piwowarczyk

Mapping barriers to sustainable development with interactive management: coastal areas of the Pomeranian province (Poland) and marine areas off the coast

Mapowanie barier dla zrównoważonego rozwoju metodą interaktywnego zarządzania: wybrzeże województwa pomorskiego i przylegające obszary morskie

Rozprawa doktorska na stopień doktora
w dziedzinie nauk społecznych
w dyscyplinie Geografia społeczno-ekonomiczna i gospodarka przestrzenna
przedkładana Radzie Dyscypliny Geografii społeczno-ekonomicznej i gospodarki przestrzennej
Uniwersytetu Gdańskiego

Promotor: prof. dr hab. Iwona Sagan

Gdańsk, 2021

Acknowledgements

I would like to express my gratitude to my supervisor, Professor Iwona Sagan, for her help and advice throughout the preparation of this dissertation. I would also like to thank Professors Jan Marcin Węsławski, Jacek Zaucha and Christine Domegan for their support.

I would like to acknowledge my appreciation to all workshops' participants. Thank you for your time and readiness to share your knowledge and experiences. I would also like to thank Professor Tymon Zieliński for helping me with the workshops as co-facilitator. It would be difficult without having you on-board.

But first and foremost, I would like to thank my Family for all your love and support that allowed me completing my PhD: my Mum, Dad and Sister for always believing in me, my Husband for being always in the right place, and, most importantly, my Daughter for giving me all the patience a three-and-a-half year could muster.

***

This research was supported by the European Community's Seventh Framework Programme (FP7 2007-2013) under Grant Agreements no. 289066 for the project *Sea for Society* (SFS) and 266445 for the project *Vectors of Change in Oceans and Seas Marine Life, Impact on Economic Sectors* (VECTORS). Complementary funding for both projects were provided by the Ministry of Science and Higher Education within the contracts no. 2583/7.PR/2012/2 (for SFS) and 2200/7.PR/2011/2 (for VECTORS). I would also like to acknowledge additional financial support received from the internal funds of the Institute of Oceanology Polish Academy of Sciences.

CONTENTS

Summary in English

Marine and coastal ecosystems have always played a crucial role in sustaining human well-being. However, these valuable resources are not adequately protected nor used sustainably, putting at risk current and future generations. Aware of these threats, national and international communities have long attempted to provide solutions for more environmentally-friendly social and business models. Indeed, the idea of sustainable development is one of the most commonly recognised and widely accepted efforts towards such (behavioural) change. Behavioural change cannot be, however, achieved without people. More precisely, it cannot be achieved without a good understanding of the people's opinions, attitudes and beliefs. Consequently, marine and coastal ecosystems will not be protected appropriately if there is insufficient social support for their conservation and sustainable use. This increased recognition of humans' role in a transition towards a more sustainable world has led to calls for more of social science expertise (or perspectives) in marine (co-) management. These calls should be understood as giving 'the voice' and 'the agency' to the relevant stakeholders.

This dissertation is an answer to such calls. It gives the voice to the plethora of marine stakeholders to gain a deeper understanding of how these stakeholders conceptualise marine sustainability and how they perceive barriers to (more) sustainable marine and coastal ecosystems. By doing that, my research documents the current levels of knowledge on the sea and its sustainable development carving the path towards more evidence-based marine education and sustainable marine management.

Giving the voice to the stakeholders themselves requires the use of deliberative methods. For this purpose, I have used the system science Interactive Management methodology, which is designed to address complex issues (such as sustainability and marine ecosystems management) with a diverse group of participants. Interactive Management allows not only to understand the structure of the problem and the relations between its components, but it also stimulates co-creation of the collective vision of the problem at hand. Interactive Management is implemented in the form of a collaborative workshop. In this study, I organised ten workshops related to the coastal and marine ecosystems of the Pomeranian province. Seven of them were run with the representatives of the maritime sectors ('food supply', 'transport', 'energy', 'tourism and leisure', 'human health', 'a place to live' and 'nature conservation'), gathering primary stakeholders, secondary stakeholders, and influencers in one room. I also organised three workshops for the representatives of the coastal communities, i.e., the general public, to capture the opinions of the actors who are less dependent and, therefore, less closely related to the marine environment. I then analysed the results of these workshops both individually (each workshop separately) and collectively (in two groups: seven maritime stakeholders' workshops; three coastal community workshops).

The representatives of the maritime sectors and the coastal communities generated a variety of barriers (420 and 166, respectively) that — in their opinion — hinder the path towards the sustainable development of the sea and the coast. These barriers addressed all three pillars of sustainable development. However, no group of stakeholders in this study embraced strong sustainability ambitions fully. There was a broad consensus that sustainable development is about balancing social, economic and environmental needs, and that, therefore, protection of the environment cannot take priority over the other two dimensions. Both the representatives of the maritime sectors and the coastal communities reached such a consensus, with some voices of opposition coming mainly from 'a place to live' and 'nature conservation' workshops. There was also no evidence that the sectors more dependent on healthy marine ecosystems were more willing to acknowledge nature conservation's primary role. The reservations towards this managerial paradigm were shown regardless of the participants' background, be it 'food supply' and 'tourism and leisure' on hand, or 'energy' or 'transport' on the other.

Barriers related to 'attitudes', 'knowledge' and 'public involvement in decision-making' were recognised as the most critical challenges by the maritime sectors' representatives. Among these three groups, inadequate attitudes were suggested as the area where social interventions could bring the most noticeable change, and — through this change — stimulate improvements in all other fields of human activities. Although emphasising the role of the attitudinal change to achieve sustainable development, the respective sectors considered themselves as relatively environmentally friendly, acting — as much as the market allows — towards a more sustainable world. This narration suggests a relatively low internalisation of sustainable development, especially that the primary responsibility (and, therefore, the blame) for the current failures was put on governments and public authorities. However, it does not mean that the relevant stakeholders have not noticed issues related to their own activities and sectors. Although perhaps not as common as expected, some voices called for the sectoral management reform. Such voices were most evident in the 'food supply' workshop, but other sectors (such as tourism and human health) also suggested some possibilities for improvements within their own domains.

Similarly to the participants coming from the maritime sectors, the representatives of the coastal communities identified issues related to 'knowledge', 'attitudes' and 'public participation' as most problematic for achieving the ambitions of sustainable development. However, this group's narratives (unlike the maritime sectors) were remarkably disconnected from 'the sea' and 'the coast'. To a lesser extent, this disconnection was also evident for the more general notion of the 'natural environment' (or environmental pillar of sustainable development). Indeed, the coastal citizens focused on sustainable development's social and economic dimensions, leaving the environment outside the sustainability discourse. This narrative suggests that — despite the considerable educational efforts undertaken in the past — the general public still knows relatively little about sustainable development, and even less about its marine context.

Therefore, coastal citizens of the Pomeranian province are not truly coastal as they are unaware (and consequently do not appreciate) relations between the healthy ecosystems and their well-being. What is perhaps quite promising (and distinguish this group from the maritime sectors) is that the coastal citizens were willing to take much more responsibility for not acting sustainably. They blamed the governments and businesses but also themselves, which actually provides hope for fostering behavioural change in the long run.

This dissertation is the first (and possibly the only) study that systematically maps and analyses the barriers to sustainability and their interrelations. By approaching the problems through the lens of the marine stakeholders and giving the voice to the stakeholders themselves, my study contributes to exploring the knowledge gaps and popular myths concerning marine ecosystems and marine sustainability ambitions. These contributions allow for formulating some advice for marine management, research and education.

The general recommendations stemming from my study are the following. Firstly, social science expertise, including public perception research and social marketing, will be essential to raise awareness and promote pro-environmental behavioural changes. Secondly, this expertise will be crucial to properly shape social participation and explore the issue of limited trust between the planners and managers and participating stakeholders. Thirdly, education scientists should play an essential role in designing educational campaigns and school curricula for ocean-literacy. They should revise their efforts (since current seems not to be successful) to educate about sustainable development.

Summary in Polish

Ekosystemy morskie i przybrzeżne od zawsze odgrywały kluczową rolę w utrzymywaniu dobrostanu człowieka. Te cenne zasoby nie są jednakże odpowiednio chronione ani wykorzystywane w sposób zrównoważony, co zagraża zarówno obecnym, jak i przyszłym pokoleniom. Świadome tych zagrożeń społeczności krajowe i międzynarodowe od dawna próbują zapewnić rozwiązania sprzyjające społecznym i biznesowym modelom działania bardziej przyjaznym środowisku naturalnemu. W swojej istocie koncepcja zrównoważonego rozwoju jest jednym z najbardziej rozpoznawalnych i powszechnie akceptowanych działań zmierzających do takiej (behawioralnej) zmiany. Zmian w zachowaniu nie da się jednak osiągnąć bez ludzi. Mówiąc dokładniej, nie można ich osiągnąć bez dogłębnego zrozumienia ludzkich opinii, postaw oraz przekonań. W konsekwencji ekosystemy morskie i przybrzeżne nie będą odpowiednio chronione, jeśli nie będzie wystarczającego wsparcia społecznego dla ich ochrony i zrównoważonego użytkowania. To zwiększone uznanie dla roli człowieka w dochodzeniu do bardziej zrównoważonego świata doprowadziło do apeli o większe włączanie wiedzy eksperckiej (lub perspektywy) nauk społecznych do (współ-) zarządzania morzem. Apele te należy rozumieć jako wezwania do przekazania ‘głosu’ i ‘sprawczości’ zainteresowanym stronom.

Niniejsza rozprawa jest odpowiedzią na tę potrzebę. Oddaje ona głos szerokiemu spektrum morskich interesariuszy, aby dogłębnie zrozumieć, w jaki sposób interesariusze konceptualizują zrównoważony rozwój na morzu, oraz jak postrzegają bariery zrównoważonego funkcjonowania ekosystemów morskich i przybrzeżnych. Wynikiem przeprowadzonych badań jest także opis obecnego poziomu wiedzy na temat morza i jego zrównoważonego rozwoju, konieczny do prowadzenia opartej na faktach edukacji morskiej i zrównoważonego zarządzania środowiskiem morskim.

Oddanie głosu samym interesariuszom wymaga zastosowania metod deliberatywnych. W związku z tym, w badaniu wykorzystana została jedna z metod nauki o systemach — interaktywne zarządzanie (z ang. *Interactive Management),* która to metoda zaprojektowana została do analizy złożonych problemów (takich jak na przykład zrównoważony rozwój czy zarządzanie ekosystemami morskimi) z udziałem różnorodnej grupy uczestników. Interaktywne zarządzanie pozwala nie tylko zrozumieć strukturę problemu i relacje między jego składowymi, ale stymuluje także współtworzenie wspólnej zbiorowej wizji problemu. Interaktywne zarządzanie realizowane jest w formie grupowego warsztatu. W ramach niniejszego badania zorganizowałam dziesięć warsztatów związanych z ekosystemami przybrzeżnymi i morskimi województwa pomorskiego. Siedem z nich przeprowadzonych zostało z przedstawicielami sektorów morskich (‘żywność’, ‘transport’, ‘energia’, ‘turystyka i wypoczynek’, ‘zdrowie człowieka’, ‘miejsce do życia’ i ‘ochrona przyrody’) i zgromadziło interesariuszy pierwszego stopnia (ang. *primary stakeholders*), interesariuszy drugiego stopnia (ang. *secondary stakeholders*) oraz przedstawicieli organizacji wywierających wpływ (ang. *influencers*). Zorganizowałam także trzy warsztaty dla przedstawicieli społeczności nadmorskich, czyli ogółu społeczeństwa, aby uwzględnić opinie jednostek mniej zależnych od

środowiska morskiego, a przez to mniej z nim związanych. Przeanalizowałam wyniki tych warsztatów zarówno na poziomie każdego warsztatu, jak i zbiorowo (w dwóch grupach: siedem warsztatów z interesariuszami reprezentującymi sektory morskie; trzy warsztaty z reprezentantami społeczności nadmorskich).

Reprezentanci sektorów morskich oraz społeczności nadmorskich zidentyfikowali szereg barier (odpowiednio 420 i 166), które — ich zdaniem — utrudniają osiągnięcie zrównoważonego rozwoju morza i wybrzeża. Bariery te dotyczyły wszystkich trzech filarów zrównoważonego rozwoju. Jednak żadna grupa interesariuszy nie zaakceptowała w pełni ambicji silnego równoważenia. Panowała powszechna zgoda co do tego, że zrównoważony rozwój polega na równoważeniu potrzeb społecznych, gospodarczych i środowiskowych, a zatem ochrona środowiska nie może mieć pierwszeństwa przed dwoma pozostałymi wymiarami. Taki konsensus obecny był zarówno wśród przedstawicieli sektorów morskich, jak i społeczności nadmorskich, z nielicznymi głosami odrębnymi płynącymi głównie od uczestników warsztatów 'miejsca do życia' oraz 'ochrona przyrody'. Wyniki nie świadczą też o tym, by sektory morskie bardziej zależne od dobrego stanu ekosystemów morskich były bardziej skłonne do uznania wiodącej roli ochrony przyrody. Zastrzeżenia do tego paradygmatu zarządzania były wyrażane niezależnie od pochodzenia uczestników, czyli niezależnie od tego, czy reprezentowali oni z jednej strony sektory 'żywność' lub 'turystyka i wypoczynek', czy też sektory 'energia' lub 'transport'.

Bariery związane z 'postawami', 'wiedzą' oraz 'zaangażowaniem społeczeństwa w podejmowanie decyzji' zostały uznane przez przedstawicieli sektorów morskich za najbardziej istotne. Wśród tych trzech grup barier wskazano nieodpowiednie postawy jako obszar, w którym interwencje społeczne mogłyby przynieść najbardziej zauważalną zmianę i poprzez tę zmianę stymulować poprawę we wszystkich innych dziedzinach ludzkiej działalności. Podkreślając rolę zmiany postaw dla osiągnięcia zrównoważonego rozwoju, przedstawiciele poszczególnych sektorów morskich uważali jednak swój sektor za stosunkowo przyjazny środowisku naturalnemu i działający — na ile pozwala rynek — na rzecz bardziej zrównoważonego świata. Narracja ta sugeruje stosunkowo niską internalizację idei zrównoważonego rozwoju, zwłaszcza że główną odpowiedzialnością, a więc także i winą, za bieżące niepowodzenia w osiąganiu ambicji zrównoważonego rozwoju obarczano rządy i władze publiczne. Nie oznacza to jednak, że poszczególni interesariusze nie zauważali problemów związanych z ich własną działalnością i ich własnymi sektorami. Pojawiały się bowiem głosy, chociaż być może nie tak powszechne jak można by tego oczekiwać, które wzywały do reformy obecnego zarządzania sektorowego. Głosy takie były najbardziej słyszalne podczas warsztatów 'żywność', lecz inne sektory morskie (takie jak turystyka i zdrowie ludzkie) również sugerowały pewne możliwości ulepszeń w ich własnych dziedzinach.

Podobnie jak w przypadku uczestników reprezentujących sektory morskie, przedstawiciele społeczności nadmorskich za najbardziej problematyczne dla osiągnięcia ambicji zrównoważonego rozwoju uznali kwestie związane z 'wiedzą', 'postawami' i 'partycypacją

społeczną'. Jednak narracje tej grupy, w przeciwieństwie do narracji sektorów morskich, były wyraźnie oddzielone od 'morza' i 'wybrzeża'. Oderwanie to było również w mniejszym stopniu widoczne w przypadku 'środowiska naturalnego' czyli środowiskowego filaru rozwoju zrównoważonego. Mieszkańcy wybrzeża skupiali się na wymiarze społecznym i gospodarczym zrównoważonego rozwoju, pozostawiając środowisko naturalne poza głównym nurtem dyskusji. Ta narracja sugeruje, że — pomimo znacznych wysiłków edukacyjnych podjętych w przeszłości — opinia publiczna nadal wie stosunkowo niewiele o koncepcji zrównoważonego rozwoju, a jeszcze mniej o jego morskim kontekście.

W związku z powyższym można stwierdzić, że mieszkańcy wybrzeża województwa pomorskiego nie są społecznościami prawdziwie nadmorskimi, ponieważ nie są świadomi relacji między zdrowymi ekosystemami a ich dobrostanem, a co za tym idzie nie doceniają tych relacji. Natomiast napawa nadzieją fakt, że mieszkańcy wybrzeża byli gotowi wziąć na siebie znacznie większą odpowiedzialność za działanie w sposób niezrównoważony. Przedstawiciele lokalnych społeczności obwiniali nie tylko rządy i firmy za obecną sytuację, ale także siebie samych, co daje nadzieję na zmiany w ich zachowaniu w dłuższej perspektywie.

W tej rozprawie przedstawione zostały pierwsze (i być może jedyne) badania, które systematycznie mapują i analizują bariery dla zrównoważonego rozwoju oraz ich wzajemne powiązania. Podchodząc do problemów przez pryzmat morskich interesariuszy i dając głos samym zainteresowanym, moje badania przyczyniają się do poznania luk w wiedzy oraz popularnych mitów dotyczących ekosystemów morskich i ambicji w zakresie ich zrównoważonego rozwoju. Wyniki niniejszych badań pozwalają także na sformułowanie pewnych rekomendacji dotyczących zarządzania morzem, badań morza i edukacji morskiej.

Z moich badań wynikają następujące główne rekomendacje. Po pierwsze, wiedza z zakresu nauk społecznych, w tym badania percepcji społecznej i marketingu społecznego, będzie niezbędna dla zwiększenia świadomości i promowania prośrodowiskowych zmian w zachowaniu. Po drugie, wiedza ta będzie konieczna, by właściwie kształtować procesy partycypacji społecznej oraz badać problemy ograniczonego zaufania między planistami i zarządzającymi a interesariuszami procesów decyzyjnych. Po trzecie, specjaliści od edukacji powinni odegrać istotną rolę w opracowywaniu kampanii edukacyjnych i szkolnych programów nauczania o morzu. Powinni oni zrewidować swe działania (jako że obecne nie przynoszą oczekiwanych rezultatów) w zakresie edukacji i oświaty na temat zrównoważonego rozwoju.

Introduction

Rationale

Marine and coastal areas are extremely productive ecosystems, and the sea has always played an important role in the development of humans. Seas and oceans deliver life-supporting services (e.g., climate regulations or nutrient cycling), are important sources of food and other raw materials (e.g., medicine or minerals) and provide opportunities for culture, tourism, recreation, and cognitive development (e.g., Lubchenco et al. 2016; Bennett 2019; Franke et al. 2020). And yet, current patterns of social and economic development are unsustainable. They put at risk the good environmental status of natural ecosystems and — as an unavoidable consequence — well-being of the humankind (Franke et al. 2020). Aware of these threats, nations and international communities attempt to undertake actions that could prevent further deterioration of our marine and coastal natural assets (e.g., Recuero Virto 2018); the assets, that while "ours" now, are inherited from our ancestors and lend from our successors. The ideas and the ambitions of sustainable development are one of many efforts to change this precarious trend; an attempt that perhaps has gained most recognition and influence world-wide, and mainstreamed the problems of the protection of the environment into political agendas (e.g., Barr 2008). This political discourse has further popularized the concept of sustainable development among the general public and the companies world-wide (e.g., Barr 2008), leading to increased efforts towards social and corporate responsibility.

Despite the undeniable value of sustainable development-related actions, the world we are living in is still far from being sustainable. Moreover, the seas, oceans and coasts are under considerably greater threat than terrestrial ecosystems, because marine conservation efforts are relatively more recent (Martin et al. 2017; Pinheiro et al. 2018). There is no single answer why sustainable development is not successful and — perhaps more importantly in the light of this thesis — why we fail to use marine ecosystems in sustainable ways.

Sustainable development is a social construct and a process of interactions shaped by human values, norms and beliefs (e.g., Waas et al. 2011; Ahmad et al. 2012). All stakeholders have an important role to play (Ahmad et al. 2012). Human values and norms can — and obviously do — change over time, and they can be important drivers (or significant obstacles) on the path towards more environmentally-friendly policies and behaviours (e.g., Kollmuss and Agyeman 2002; Raymond et al. 2019).

Traditionally, people and their activities were considered key negative drivers for the state of marine and coastal ecosystems. Nowadays, we can observe an important shift in the narrations about the relations between humans and nature. Currently, people are not only viewed as a part of the problem, but also as a part of the solution (e.g., Jefferson et al. 2015; McKinley et al. 2020). This new trend slowly starts to manifest itself in more participatory marine planning and governance (e.g., Kelly et al. 2019; Barreto et al. 2020), corporate strategies within maritime sectors (e.g., Kronfelf-Goharani 2018), or initiatives towards marine citizenship and ocean literacy (e.g., MicKinley and Fletcher 2012; Fauville 2019).

However, these initiatives will only be successful and will be able to drive desired societal change if they are rooted in the genuine understanding of the whole system (Domegan et al. 2016), and values, opinions, norms and beliefs of the involved social actors (Jefferson et al. 2015; Martin et al. 2017). Hence, the involvement of social science is crucial (e.g., Hastings and Domegan 2014; Jefferson et al. 2015; Blicharska et al. 2016; Domegan et al. 2016; Gruby et al. 2016; Bennet 2018; Bennet 2019; Grimmel et al. 2019; McKinley et al. 2019; Barreto et al. 2020; McKinley et al. 2020).

More precisely, changes in human behaviours can stimulate more sustainable day-to-day managerial practices, increase support for conservation initiatives, and — as a result — reduce the pressures on marine and coastal ecosystems (e.g., Jefferson et al. 2015; Barreto et al. 2020), closing the gap between the biologically-driven marine and coastal management and 'the people' (Berkes 2003; Ulate et al. 2018). However, orchestrating behavioural change is not an easy task. It needs to be people-oriented, and must focus on the values, beliefs, opinions and aspirations that shape the current choices of consumers and citizens, and their behaviours, attitudes and lifestyles (e.g., Hastings and Domegan 2014; Jefferson et al. 2015).

Since values play an important role in individual and societal transformation (e.g., Ives and Fischer 2017), recognition of (hidden) values, their elicitation and joint negotiations are all important steps towards more sustainable seas and oceans (e.g., Horcea-Milcu et al. 2019). Further, in order to choose the proper set of actions or set of incentives, it is necessary to identify the drivers and barriers to the successful behavioural change within a given social group (e.g., McKenzie-Mohr et al. 2012; Hastings and Domegan 2014). For example, in the case of seas and oceans, research focusing on public perception could provide deeper insights into how various actors (i) see the sea, (ii) recognize positive and negative experiences with marine and coastal environments, or (iii) conceptualize interdependencies between their well-being and the state of the marine environment. Such research is likely to uncover new — currently unknown, overlooked or not properly understood — dimensions of human-ocean relations, and help to shape a more sustainable future (e.g., Jefferson et al. 2015; Bennet 2019).

This thesis is an answer to the call for a larger contribution of stakeholders themselves — through the use of social sciences — into the marine sustainability debate. I have chosen to focus on the ideals of sustainable development for two reasons. Firstly, sustainable development is an important paradigm for marine and coastal management world-wide (e.g., Stojanovic and Farmer 2013). Secondly, it is widely accepted and popular among various groups of stakeholders (e.g., Barr 2008; Arias-Maldonado 2020). Since, all the stakeholders are expected to have at least some knowledge on sustainable development (Ahmad et al. 2012), this concept is an important component for change co-creation on the sea (e.g., Kronfeld-Goharani 2015; Domegan et al. 2016). Such change can ultimately lead to more sustainable use of the sea and its resources, and to good environmental status of marine and coastal ecosystems.

In addition, I have decided to more closely explore the support for strong sustainability[1]. Despite the variety of interpretations of sustainable development, protection of natural ecosystems and environmental justice are among the most important elements of sustainability (Hopwood et al. 2005). In consequence, the environmental pillar of sustainable development should be prioritized (Neumayer 2013) because *"(…) irreversible collapses in marine ecosystems would eventually lead to collapses in the economic sectors that depend on such marine ecosystems"*[2] (Qui and Jones 2013, p. 183). Strong sustainability is further postulated to be the paradigm for coastal and ocean management (e.g., Qui and Jones 2013; Neumann et al. 2017); some authors (e.g., Biely et al. 2018) go even further and suggest that the weak sustainability approaches should not be considered as fully legitimate.

My research, through the direct interactions with the plethora of marine-related stakeholders, contributes to better understanding of the issues of marine sustainability, and the perceived barriers for the maritime sectors and marine communities. Giving stakeholders 'the voice', will allow to understand enablers and challenges to progress towards more sustainable marine economy and more sustainable marine regions. The discussions with (and between) stakeholders will provide insights on the levels of knowledge of various groups of actors on marine sustainability and — more generally — on marine and coastal ecosystems. My hope is that in the long run this research will contribute to establishing the fora for knowledge and solutions co-creation, and allow for more active adoption of the ambitions of sustainable development.

Research questions

The overall aim of this thesis is to identify how the representatives of various maritime sectors and coastal communities conceptualize marine sustainability, and how they perceive barriers to (more) sustainable marine and coastal ecosystems. This general aim is further broken down into more specific objectives or research questions; these research questions are designed for two major groups of actors involved in this study, i.e., (i) the representatives of the maritime sectors active off the shore of the Pomeranian province, and (ii) the members of the coastal communities living close to the sea (Table 1).

[1] The concept of strong and weak sustainability will be discussed in sub-chapter 1.1, including Table 3.

[2] It is true that the social dimension of sustainable development is not explicit and somewhat forgotten in the current marine sustainability debate. In other words, it is ofen linked to (or associated with) economic benefits (Saunders et al. 2019a). The strong and weak sustainability dichotomy presented by Qiu and Jones (2013) is, indeed, an example of this omission. However, marine social sustainability is a concept that is relatively poorly defined and operationalized, what might – at least partially – explain its low manifestation in marine management (Saunders et al. 2019a).

Table 1 Research questions addressed in this thesis

Group of marine actors	**Main research question**	**Complementary or additional research inquiries**	**Additional explanation on research questions**
Maritime sectors	(1) How do the representatives of maritime sectors perceive barriers to marine sustainability?	(i) Which of these barriers are considered most important or more influential in the eyes of maritime stakeholders? (ii) Which of these barriers should be addressed first in order to enable more efficient marine and coastal governance?	These research questions will additionaly allow for exploring: (i) how (and why) the representatives of maritime sectors perceive their links and responsibilities towards marine and coastal areas; (ii) how (if at all) they embrace the concept of corporate social responsibility;
	(2) How do the representatives of the maritime sectors embrace the ambitions of weak or strong sustainability?	(i) What dimension(s) of sustainable development are being prioritized by the representatives of the maritime sectors? (ii) Do the representatives of maritime sectors acknowledge the superior role of environmental dimension of sustainable development?	These research questions will additionally allow for exploring: (i) if sectors that are more dependent on the health of marine and coastal ecosystems are more inclined to support the ideals of strong sustainability; (ii) the level(s) of internalization of the strong sustainability concept among marine professionals of the Pomeranian province;
Coastal communities	(1) How do the coastal communities perceive barriers to marine sustainability?	(i) Which of these barriers are considered most important or most influential by the representatives of the coastal communities? (ii) What do barriers to marine sustainability tell about the ways, in	These research questions will additionally allow for exploring: (i) how the representatives of the coastal communities perceive their links with marine and coastal areas;

		which sustainable development is conceptualized by the members of the coastal communities?	(ii) level(s) of knowledge on marine and coastal ecosystems among the general public;
	(2) How far have the coastal communities progressed on the path towards marine citizenship[3]?	(i) What worked well and what are the current challenges towards the ambition of marine citizenship?	These research questions will additionally allow for exploring: (i) significant missing links or missing elements to support embracing the ideals of sustainability among coastal communities;

Source: Own elaboration.

[3] The concept of marine citizenship will be discussed in sub-chapter 1.5, including Table 7.

Finally, the comparison of results obtained for the representatives these two groups of marine actors will allow for analysing how large the knowledge and awareness gaps are between groups of people (i) whose well-being clearly depends on marine and coastal recourses (maritime sectors), and (ii) for whom this relation is distant and less obvious (coastal communities).

Structure of this thesis

This thesis consists of five chapters, and it additionaly contains the 'Introduction' and the 'Conclusions' sections. In the 'Introduction', I present the general overview of my thesis. This section begins with providing the rationale for undertaking my research, and the overview of the research objectives and research questions. Finally, it shortly discusses the structure of the thesis and the content of each chapter.

Chapter one ('Sustainable development in the theoretical perspective') has a theoretical character; it explores the current discourses on the concept of sustainable development, and its most prominent operationalization models. A separate sub-chapter is dedicated to the issue of marine management, and how sustainable development is embraced in the marine realm and practical decision-making concerning the sea. Finally, I present the ideas of marine citizenship and sustainable coastal communities, which attempt to link humans with the healthy marine ecosystems.

Chapter two ('Mapping barriers to sustainable development') begins with the overview of the methods most commonly used in the practice of social sciences. Based on this summary, I provide justification for the chosen research approach, i.e., the qualitative method and the Interactive Management methodology.

Chapter three ('The Pomeranian province as a case study area') provides the overview of the Pomeranian province and a justification for its selection as a case for my research. Here, I also present the adaptation of the selected methodology (Interactive Management) to the context of my study and the procedures adopted for sample selection and recruitment of the workshops' participants. Chapter three concludes with the brief presentation of the steps and approaches used for the analysis of the collected data.

Chapter four ('Barriers to sustainable development of coastal and marine areas off the shore of the Pomeranian province') describes the results, and discusses them in the broader context of the literature. Chapter four is divided into two major parts; first of them presents the results of the Interactive Management workshops run with the representatives of the maritime sectors; the second one examines data obtained from the interactions with the coastal communities. Both parts follow the analytical steps described in Chapter three. The implications of each set of workshops (for the representatives of maritime sectors and coastal communities) are discussed separately, but the chapter concludes with a comparison between these two groups of marine stakeholders.

The goal of Chapter five ('Policy recommendations') is to connect the results of my study with some practical actions that could assists in pursuing the ambitions of sustainable development on the sea. This Chapter provides some practical recommendations for management, science and education.

Finally, the 'Conclusions' section provides the summary of the most important results in relation to the research question. It also offers some take-home messages arising from my research.

1 Sustainable development in the theorethical perspective

1.1 The idea of sustainable development: definitions and approaches

The origins of sustainable thinking can be traced back as far as to the beginning of human history as people always had to balance between their demand for material and immaterial goods and their availability in the natural environment (Waas et al. 2011; Degórski 2014). The term 'sustainable' is also quite old itself as it dates back to the 18th century and the need to provide the constant supply of scarce forestry resources (Thatcher 2014). More recent history of sustainable development relates to the progressive destruction of the natural environment, disruption of the Earth's national cycles, increasing poverty and income disparity, and the urgent need to address these challenges (Flint 2003; Thatcher 2014). Sustainable development arose, indeed, as an attempt to overcome these problems and reconcile the competition between growth and nature (Rogers et al. 2008). The 1972 United Nations Conference on the Human Environment is considered the first milestone[4] in the modern history of sustainability[5]. It was this event that has increased the global environmental awareness and created foundations to introduce environmental protection into global political agenda(s) (Waas et al. 2011). Since then the concept has significantly matured and today the sustainable development (or sustainability[6]) is an universal model for environmental management (e.g., Giddings et al. 2002; Zaccai 2012) both on land and on the sea (Gallagher 2010; Zaucha 2014a). This model is not limited to international, national and

[4] Some authors (i.e., Rogers et al. 2008; Blewitt 2015) suggest a different first milestone in the modern history of sustainability, i.e., the study 'Limits to Growth' prepared and published by the international think-tank called the Club of Rome. This report poined out to the possible severe economic and ecological consequences of the current patterns of human development (Blewitt 2015).

[5] Examples of the other milestones include (Waas et al. 2011) (i) 'Our Common Future' report that contains most popular definition of sustainable development (WCED 1987); (ii) the 1992 United Nations Conference on Environment and Development and the adoption of sustainable development model and Agenda 21, or (iii) the United Nations Conference on Sustainable Development, Rio+20, where the process of forming of 'Sustainable Development Goals' (SDGs) has been initiated.

[6] Although I am aware of the debate on the differences between 'sustainable development' and 'sustainability', in my study, I will use these terms interchangeably. This is because these two terms are still considered equal or at least interchangeably (e.g., Norton 2005; Olawumi and Chan 2018; Purvis et al. 2019), and the difference between these two is often considered contextual (e.g., Robinson 2004). Both concepts include a strong element of a 'change' of the current economic growth paradigm and focus on interactions between humans and nature (e.g., Hopwood et al. 2005; Vatn 2009). Furthermore, Kronfeld-Goharani (2015) in her systematic evaluation of the ocean sustainability does not distinguish between sustainable development and sustainability. She argues – after Robinson (2004) – that sustainable development refers to technical approaches while sustainability is more about the value change. Other authors underline other differences or other aspects of these two terms. Some, for example, suggest that sustainability is a societal vision or target to achieve while sustainable development is the societal and political process to move towards the agreed direction (Axelsson et al. 2011; Hector et al. 2014). For others (e.g., Ramcilovic-Suominen and Pülzl 2018) sustainable development describes the forms of interactions between humans and nature while sustainability is more about the levels of interchange between natural and human-made capital. Further, sustainable development is considered to be more about ameliorating economic growth without the call for the paradigm change (Robinson 2004; Brand 2012); hence the first is preferred by politicians and private sectors and the latter by non-governmental organization and academy (Robinson 2004). For more elaborate discussions on the differences between 'sustainable development and sustainability see, for example, Olawumi and Chan (2018), Ramcilovic-Suominen and Pülzl (2018) or Purvis et al. (2019).

regional governments through the policies they implement (Zaccai 2012) but — perhaps more importantly — it is embraced by the individual organizations and companies that include sustainability ambitions in their visions and strategies (e.g., Hall et al. 2010).

Being such a popular and widely accepted paradigm, sustainable development is still a relatively vague concept with many valid definitions and approaches (e.g., Wheeler 2004; Hopwood et al. 2005, Waas et al. 2011; Lam et al. 2014; Purvis et al. 2019). Various definitions emphasise various elements of sustainability such as ecosystems' carrying capacities, protection of the environment, needs of the future generations, maintaining natural capital or human livelihood, opposition towards constant growth or simply not making our world a worse place (Wheeler 2004). Nevertheless, all these definitions consider links between environmental problems and socio-economic issues (Hopwood et al. 2005), and share a common concern that the current growth (or development) paradigms need to be changed (e.g., Wheeler 2004). The most popular or the most widely used definition (e.g., Wheeler 2004; Waas et al. 2011) is that put forward by the World Commission on Environment and Development stating that:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987[7]).

This anthropocentric definition emphasises two issues: the importance of human (or social) development and inter-generational solidarity within the undefined time-frames (Thatcher and Yeow 2015).

Other approaches[8] define sustainable development as:

(i) a social process that aims to improve the quality of life (Pezzoli 1997);
(ii) a new form of societal and economic progress that puts long-term future of humans before individual advancement (Baker 2006);
(iii) (an attempt to ensure good quality of life for all while protecting the right to choose the preferred lifestyles within the inter-generational fairness (Altwegg et al. 2004);
(iv) a global compromise between economic development and the natural environment (Kates et al. 2005);
(v) a process of negotiation between human and social 'necessities' and 'desires' and the notion of 'enoughness' (Flint 2003);
(vi) a process of cultural and ethical transformation (Hammond 2020); or
(vii) a process of reduction of (or elimination of) conditions and actions that could endanger humans' capability to fulfil their needs (Robért 2002).

[7] This most common approach locates itself within the 'reform' narratives (see Table 2). It calls for reform of society and economy; however, many of the suggested solutions or tools to achieve sustainable development can be classified as coming from the status quo approaches (Hopwood et al. 2005).

[8] Up to 2007 more than 140 definitions of sustainable development was present in the literature (Johnston et al. 2007). Interestingly, although the majority of sustainable development definitions underlines the ecological issues much of the early research have focused on its economic and social dimensions (Thatcher 2012).

As demonstrated above, sustainable development has a variety of legitimate interpretations that depend on the actors' values, interests and opinions (e.g., Hopwood et al. 2005, Lam et al. 2012). These legitimate interpretations include ideas varying from green consumerism, through green economics to environmental justice, and provide very different levels of support to move towards equality and eco-centrism (Carter 2007; Baker 2008; Hopwood et al. 2015). Consequently, different approaches will differently recognize the need for (or lack of) economy and society to radically change to achieve sustainability, or to mediate current relations of power and ownership[9] (Hopwood et al. 2005). In other words, the level of trust towards science, technology, economy and current (political) rationality is one of the most important differentiating factors (Wheeler 2004).

There are three major and most popular standpoints[10] within the debate on sustainable development, i.e., support for (i) status quo, (ii) reform, and (iii) (deep) transformation (Table 2; Hopwood et al. 2005). These perspectives differ in relation to their recognition of the need for equality and importance of environmental problems. Although this classification does not provide a closed and well-delimited categorization for sustainable development approaches, it does, however, exclude some social and environmental concepts from the sustainability discourse (Hopwood et al. 2005). These excluded concepts cover extreme ideas from both ends (i.e., within status quo and transformation discourses) such as neo-liberal economy, deep-ecology, eco-fascism or socialist cornucopia (Hopwood et al. 2005). Indeed, other authors (e.g., Ramcilovic-Suominen and Pülzl 2018) also consider such approaches as lying outside the sustainable development boundaries.

[9] Other comparison criteria can include (Kates et al. 2005): (i) subject of sustainability (i.e., what is to be sustained), subject of development (i.e., what is to be developed), and (iii) time-frame in which 'sustaining' or 'developing' is to occur.

[10] Similar classification is proposed by Mawhinney (2002); in this classifications the supporters of status quo are equalled to mainstream economists; the reformers are called middle ground while the supporters of transformation are strong environmentalists. The latter group – the strong environmentalists in Mawhinney (2002) – seems to be more radical than supporters of transformation in Hopwood at al. (2005). It is uncertain if the extreme groups (such as deep-ecologists for example) would still fit the spectrum of sustainable development within the strong environmental approaches. However, I have chosen to use the Hopewood et al. (2015) classifications as it is commonly cited in the literature on sustainable development.

Table 2 Major perspectives within sustainable development discourse

Perspective	**Recognition of the need for equality***	**Recognition of environmental concerns***	**Description**	**Examples of ideas and approaches**
Status quo	Low to medium	Low (none) to (techno-centred)	– Sustainable development can be achieved within the boundaries of the current economic and social settings; – Market (and businesses) is perceived as the major driver to move towards sustainability; – Market mechanisms, technology, and improved managerial tools are considered key tools to achieve sustainable development; – This narration is most popular between governments and businesses;	– World Business Council for Sustainable Development (WBCSD 1998); – The World Bank (WB 2000) – The Organisation for Economic Co-operation and Development (OECD 2001); – Ecological modernization (e.g., Hajer 1995; Bell 1998; Buttel 2000; Mol and Sonnenfeld 2000); – Green consumerism (e.g., Elkington et al. 1990; Álvares-García et al. 2019);
Reform	Medium to high	Techno-centred**	– Changes in policies and lifestyles are essential to achieve sustainability but these changes can be introduced without revising the major tenants of current economic and social systems; – Science, technology, information are key to stimulate the needed reform; – This perspective is widely accepted between the scientific communities, mainstream NGOs and — to a lesser extent — between governments and public agencies;	– Green economy (e.g., Pearce et al. 1989; UNEP 2011; Jänicke 2012); – The Real Word Coalition (Christie and Warburton 2001); – Limits to the growth approach (Meadows et al. 1972); – The World Conservation Strategy (IUCN-UNEP-WWF 1980); – The World Commission on Environment and Development (WCED 1987[11]);
Transformation	High	Eco-centred	– Sustainable development cannot be achieved without a fundamental reform of society and	– Social ecology or dialectical naturalism (e.g., Murray Bookchin 1989);

[11] This is the most common and widely accepted definition of sustainable development (Wheeler 2004; Waas et al. 2011).

			economy and human's relations with the natural environment; – This approach focuses on power relations, social equity and environmental values;	– Ecofeminism (e.g., Buckingham-Hatfield 2000); – Eco-socialism (e.g., Pepper 1993; Cock and Hopwood 1996); – Environmental justice (e.g., Schrader-Frechette 2002; Schlosberg 2007);

*The classification neither proposes sharp boundaries between the perspectives nor defines clear recognition levels; it is rather an invitation for the debate about the content and limits of sustainability discourses;

**A very limited number of approaches within the reform perspective can be classified as having high recognition (eco-centred) of environmental concerns, e.g., the limits to the growth approach (Meadows et al. 1972);

Source: Hopwood et al. 2005

Consequently, there is no single conceptual sustainable development model that could facilitate operationalization of sustainability ambitions within the managerial practices (e.g., Giddings et al. 2002; Baker 2008; Waas et al. 2011). Various models have been suggested to support the implementation of sustainability goals. The three pillar model and the weak-strong sustainability model are perhaps two most popular or mostly recognized approaches among the sustainability models (e.g., Thatcher 2014; Ramcilovic-Suominen and Pülzl 2018).

The three pillar model divides sustainable development into three pillars[12] (dimensions or components), i.e., environment quality (or protection), economic prosperity (or growth) and social equity (or human well-being), and focuses on their integration and their simultaneous development (e.g., Flint 2003; Purvis et al. 2019). Each of these three areas has a set of general objectives, which are defined from the perspective of humans (Barbier 1987; Moldan et al. 2012). In short, the environmental pillar should ensure that the environment is resilient and characterized by high diversity and high productivity. The economic system should aim to reduce poverty and minimize income disparity while ensuring provision of the needed good and services. The ambitions of the social dimension are to maintain cultural diversity, stimulate participation, increase social justice and empower individuals and societies (Barbier 1987; Basiago 1999). These objectives are rather general, and, indeed, various alternatives (or more specific suggestions[13]) are put forward for each sustainability dimension (Moldan et al. 2012). For example, in one of the approaches, economic sustainability can be defined through the use of resources. Here, both renewable and non-renewable resources should be used in a way that ensures access to them for future generations (Goodland and Ledec 1987). Social sustainability can be defined as the ability to pass social values, identities and lifestyles into future generations[14] (Moldan et al. 2012). Environmental sustainability can be characterized as the long-term ability for the ecosystems to provide goods and services to humans (Daily 1997; Moldan et al. 2012).

Nevertheless, the three pillar model underlines that sustainable development is not about the conservation of natural ecosystems; it rather emphasises the synergy between ecology, economy and society (Flint 2003). In this model, in the long time horizon, all actions and programs should strive to positively influence all three dimensions of sustainability. Development of one pillar (on the expense of the other two) is not considered to meet the sustainability ambitions (Flint 2003). Although these three goals are — in theory — mutually reinforcing, in the managerial reality, they might be in conflict (even within single component), and, therefore, require prioritization and trade-off assessment (Lozano 2008;

[12] Other graphical representations include overlapping or nested circles (e.g., Purvis et al. 2019) or triangle (e.g., Thatcher 2014). The circle representation is often called the Venn diagram (see for example Flint 2003).

[13] Indeed, this lack of clarity in the three pillar definitions is considered as one of the most important weaknesses of the model. Lack of time dimensions or temporal pillar is the second major drawback (Thatcher 2014).

[14] However, willingness to pass current societal values and traditions into the next generations might be an example of the conflicting goals. It may, and in many cases it actually does, exclude some groups (e.g., women) from participating in social and political life leading to their increased poverty. It also contradicts other goals such as a need for increased participation or empowerment (Barbier 1987).

Purvis et al. 2019). And, indeed, the prioritization of various goals within and across the sustainability dimensions can be dependent on temporal, geographical and cultural (community) scales (e.g., Barbier 1987; Wheeler 2004; Turcu 2013).

The three-dimensional model is sometimes extended with additional perspectives. The institutional (or governance) pillar (e.g., Spangenberg 2004; Turcu 2013) is perhaps one of most popular extension to the basic sustainable development model. The institutional pillar originates from the political sciences and its objectives include the ambitions of accountability, promotion of civil society and gender equality, and free access to information (Spangenberg 2004). At a more local scale, the governnace pillar can address the quality of services provided by (local) authorities, social activism, and strength of local partnerships and cooperation (Turcu 2013). Some of the institutional sustainability goals are, indeed, included under the social pillar in the three-dimensional model.

Another pillar that is emerging to be important part of sustainability discourse is the notion of cultural sustainability (e.g., Soini and Birkeland 2014; Throsby 2017). Some authors (e.g., Nurse 2006; Duxburry and Gillette 2007; Soini and Birkeland 2014) clearly distinguish it from the social pillar in the three-dimensional model. Cultural sustainability — as a fourth pillar — addresses cultural identity, tangible and intangible heritage, cultural industries and ethnical pluralism (Nurse 2006). It departs from the westernized notion of modernization and development (Nurse 2006), and aims to support nations or communities to change or to develop within the boundaries of their own existing values, norms and beliefs[15] (Duxburry and Gillette 2007). Consequently, the ambition of this pillar is to maintain the groups' identity while still promoting the increase in their well-being (Duxburry and Gillette 2007). Another role of cultural pillar is to strengthen the cultural diversity and to avoid culture homogenization[16] (Nurse 2006); hence this approach is particularly important at global level (Dessein et al. 2015).

A different way of expanding the three-pillar model is to supplement it with the technical dimension (Hill and Bowen 1997; Ofori 1998). The technical pillar predominantly addresses infrastructure and buildings and their influence on the quality of life and on the natural environment. Its overarching principle is to ensure that (large) constructions are people- and environment-friendly (Hill and Bowen 1997; Ofori 1998). It seems, however, that the four-dimensional model with technical sustainability as a separate pillar has not gained much popularity. It is often not mentioned in the review papers on sustainable development models (see for example Waas et al. 2011; Thatcher 2014; Ramcilovic-Suominen and Pülzl 2018). Nevertheless, it does not mean that the concept of sustainable construction itself is not common. Indeed, there is a large body of scientific literature that discusses relations between the infrastructure, healthy ecosystems and humans without introducing the notion of

[15] Interestingly, some authors discuss (e.g., Berkedal 2000; Carroll 2016) the role of religion and spirituality in fostering the transformation towards more sustainable world.

[16] Interestingly, the most important exporters of mass culture include United States of America, Great Britain and India (Nurse 2006).

technical pillar itself (e.g., Parkin et al. 2003; Ainger and Fenner 2014; Ferrer et al. 2018). In these approaches, infrastructure is considered as an interface between the society and the environment or — alternatively — a part of economic pillar together with the financial capital (Parkin et al. 2003; Ainger and Fenner 2014).

Finally, the time dimension is often considered a missing link and a major critique towards the pillar model (e.g., Lozano 2008; Seghezzo 2009; Thatcher 2014). Sustainability considered as an overlap between the three (or more) pillars usually does not recognize the dynamics between the societal and economic goals in the short-, long-, and longer-terms (Lozano 2008), and within the inter-generational perspectives (Seghezzo 2009). Therefore, there is a need to consider not only the current social, economic and environmental aspects but also how these aspects are likely to change in the future. Sustainable development should, therefore, strive not only to balance its various dimensions today but also in the future through the introduction of two sustainability equilibria, i.e., the first one related to sustainability pillars (or dimensions) and the second one to time (Lozano 2008).

The above models of sustainable development are obviously not the only possible approaches for operationalizing sustainability. Indeed, some authors depart from describing it from the well-recognized 'pillars' perspective. For example, Seghezzo (2009) proposes place, persons and permanence as major sustainability dimensions, Giddings et. al. (2002) focus on social equity while Purvis et al. (2019) suggest that the United Nations 17 Sustainable Development Goals (SDGs) can also be considered as a way to put sustainable development into practice. Nevertheless, all these approaches are — to some extent — overlapping but emphasise various elements of the surrounding reality.

The second most common approach to sustainability is the strong-weak sustainability model that is perhaps an attempt to rank the relative importance of the sustainable development pillars. In other words, the model aims to assess if all pillars are substitutional and equally important to humans. The strong-weak sustainability model introduces the concepts of natural and man-made capital[17]. Natural capital equals nature, including plants, species and ecosystems' structures and functions, and nature's ability to satisfy human needs and support their well-being. Natural capital is, therefore, an anthropogenic concept as its utility for humans is what is crucial, i.e., the elements of nature are considered natural capital only if they provide material or immaterial services. Man-made capital refers to human activities and can be divides into two components, i.e., human capital (knowledge and skills) and infrastructure (e.g., factories, machineries, buildings, roads and so on; Neumayer 2013). The differences between strong and weak sustainability lies within the substitutability of these two types of capitals (e.g., Hediger 2008; Nielsen 2010; Davies 2013; Naumayer 2013; Biely et al. 2018). Strong sustainability approach assumes that natural capital cannot be substituted

[17] In this approach, capital is defined broadly as any stock that provides material and non-material utility to humans, both now or in the future (Neumayer 2013). Nature obviously provides utility (or good and services) to human, and, therefore, is considered natural capital.

with man-made capital, and that scientific and technological progress cannot compensate for resources scarcity and resources decline[18] (Naumayer 2013). Deterioration of natural ecosystems is often irreversible, and — given all scientific and technological developments — there are still limited prediction skills to properly understand and foresee the consequences of the permanent alternations of ecosystem functioning. Indeed, the collapse of natural ecosystems would actually mean the end of humanity. Some of the ecosystems functions are in fact life supporting so the healthy natural environment is a necessary condition for long-term survival of the humankind (e.g., Turner and Pearce 1993; Spash 2002). Weak sustainability adopts the opposite view: ecosystem services (i.e., the natural capital) can be substituted with man-made services[19]. In other words, natural capital can be safely reduced as long as there are enough investments in man-made capital (e.g., Neumayer 2013; Biely et al. 2018). The weak sustainability approach considers natural resources as abundant (or even super-abundant) while the strong sustainability underlines the scarcity of natural resources (Neumayer 2013). Weak sustainability demonstrates high trust in science and technology, and implies that technological progress can increase individual and societal well-being despite the negative changes in the environmental conditions (e.g., Ang and Van Passel 2012; Biely et al. 2018). The strong sustainability approach is less optimistic about the ability of technological improvement to compensate for the loss in environmental carrying capacity (e.g., Davies 2013; Biely et al. 2018). Strong sustainability does not, however, call for non-usage of non-renewable resources. It further supports such alternations in the natural environment that can provide benefits to human. Nevertheless, such changes (or human activities) must consider their impact on ecosystem functioning. Activities should only be undertaken if ecosystem functions can be maintained both in short and long time horizons (Hueting and Reijnders 1998; Neumayer 2013).

The strong-weak sustainability model is sometimes extended with additional steps representing the transition process from very weak, through weak and strong up to very strong sustainability (e.g., O'Riordan 1996; Carter 2001; Davies 2013). This transition process

[18] There are, however, some discussions about the extent of the non- substitutability rule. For example, Arios-Maldonato (2013) divides natural capital into three sub-groups, i.e., (i) disposable (or irrelevant) natural capital, (ii) fungible natural capital that is not so important for humans, and (iii) critical (or irreplaceable) natural capital. The same author argues (Arios-Maldonato 2013) that irreversibility should not be equalled with criticality. For example, extinction of one plant or animal species is, indeed, irreversible but it may well be that the ecosystems can maintain their functions properly without this plant or animal specimen (Arios-Maldonato 2013). Other authors (e.g., Ekins 2003; Ekins et al. 2003) distinguish critical natural capital (i.e., the capital that cannot be substituted with other forms of natural or man-made capital in relation to some of its clearly defined functions) without defining other forms of natural capital.

[19] The level of substitution of man-made capital is also a subject of discussions (see Nilsen 2010 for more detailed review). Some authors (e.g., Zadek 2004) suggests that although natural and man-made capital are in theory completely interchangeable, there might be some practical limits to substitution possibilities. Others (e.g., Tietenberg 2006) advocate that there are some types of natural capital for which the complete substitutability cannot be practically maintained. However, substitutability can change over time as it is not possible to foresee now what technological solutions will be available in the future (Arias-Maldonado 2013).

(or continuum) represents the path from techno-centrism to eco-centrism[20] (Carter 2001), and each step of the process is characterized with various ambitions concerning change within economy, society and ethics (Table 3).

The discussions between strong and weak sustainability are, indeed, the discussions between the preferred economical and societal models or paths of development (e.g., Atkinson et al. 2007; Baker 2008). In reality, the current discourses suggest that man-man capital is more important than natural capital (Davies 2013), and that the weak sustainability paradigm and reductionist thinking prevail in the developed western societies (Atkinson et al. 2007; Baumgartner and Korhonen 2010). It is, indeed, uncertain if achieving weak sustainability can, especially in the long term, preserve the natural capital essential for humans' survival and well-being. Some authors (e.g., Kastenberg et al. 2005; Randall 2007; Biely et al. 2018) suggest that weak sustainability is an illegitimate concept and a road to nowhere. In other words, weak sustainability, in its core, is nothing more than an actual continuation of the current growth model, and it has already been demonstrated that efforts rooted in this paradigm cannot stimulate a shift towards sustainable world (Biely et al. 2018). Identification and maintenance of critical natural capital, i.e., natural capital that cannot be substituted with any other form of natural capital or man-made capital (Ekins et al. 2003), is sometimes pointed out as a way to reconcile the tensions between strong and weak sustainability (e.g., Atkinson et al. 2007; Arias-Maldonado 2013). However, such an identification is not yet possible due to incomplete understanding on how nature works (e.g., Arias-Maldonado 2013) and perhaps it never be. Critical natural capital might also not be unchanged over time; what cannot be substitutable in a given period, might become such as science and technology progresses (Arias-Maldonado 2013). On the other hand, it is also likely that most (or at least many) natural assets can be labelled as critical either already now or in a moderately near future (Ekins 2014). This lack of certainty and relatively high risk of irreversible mistakes combined with ethical preferences for non-sustainability of natural capital add to the position that strong sustainability is a more plausible solution for humankind[21] (Dietz and Neumayer 2007).

[20] This continuum somewhat represents the more general discourse on sustainable development; please compare with the various perspectives in sustainable development discourse (Table 2).

[21] It is, however, true that both approaches, i.e., strong and weak sustainability, are not falsifiable and testable within the current standards in scientific research (Neumayer 2013).

Table 3 Extended strong-weak sustainability model

	Very weak sustainability	**Weak sustainability**	**Strong sustainability**	**Very strong sustainability**
Definition & discourse	– Natural and man-made capital remains stable over time; – Infinite substitution between various kinds of capital; – Changes of existing structures are not recognized important; – Actions towards sustainability are predominantly superficial; – Focus on recourse exploitation;	– Almost complete substitution of man-made and natural capital with the exception of critical natural processes and habitats; – Initiation of some systemic changes towards sustainability with less; – Focus on management of natural resources — predomination of conservationist approaches;	– Use of natural resources should be, to the extent possible, accompanied with the variety of pro-environmental actions (limited capital substitution); – Wider use of the precautionary principle: domination of the preservationist approaches; – Widely accepted system approach to policy and management, i.e., the health of the whole ecosystem paradigm;	– No substitution accepted between natural and man-man capital; – Strict limits on the use of natural resources; – Extreme preservationist positions dominate; – Bioregionalism; – Self-sufficient and self-supporting local economies;
Economy	– Growth-oriented and anti-green economy; – High support for unrestricted free market and for constant increase in per capita consumption; – Globalization, commodification and marketization of nature; – Minor efforts to change the economic paradigm(s) with the use of economic instruments only;	– Appearance of green markets and green economies; – Use of a variety of microeconomic incentives to stimulate shift towards more sustainable behaviours;	– Deep green economy based on environmental standards; no economic growth paradigm; – Full valuation of costs of living, including green accounting; – Importance of non-material elements of development; – Green and fair trade;	– Very deep green economy, i.e., minimization of the use of natural resources; – Ecosystems (i.e., biophysical factors) strictly define economy; – National and international adoption and implementation of sustainable economic accounting;
Society	– Little environmental awareness;	– Some public education for sustainable and future-oriented lifestyles;	– Strong commitment for societal education;	– Creation of the new sustainable society; – Society is organized around the principles of equity, gender

	– Limited coverage of the environmental problems in the media; – Corporate discourse and corporate interests prevail; – Limited public involvement in a form of consultations;	– Wider consultations with various elite stakeholders' groups; – Parliamentary surveillance;	– Many bottom-up community initiatives as part of education for the future; – Strong community involvement; – Close cooperation between developed and developing worlds;	equality, participation and justice; – High importance of community-let initiatives and of bottom-up community strictures;
Ethics	– Ethical reasoning related to rights and interests of contemporary individuals — no real solidarity with future generations; – Only instrumental values assigned to nature;	– Ethical reasoning extended to intra- and inter-generational equity; – First appearance of the care paradigm, i.e., caring for others; – Instrumental values assigned to nature predominate;	– Ethical reason further extended: collective interests are considered more important than individual;	– Prevalence of bioethics, i.e., intrinsic value of nature; – Acceptance of personified planet Earth (Gaia) towards whom humanity holds moral obligations;
Policy	– Sectoral approaches — almost no policy integration; – Command-and-control approach to pollution control; – Addressing the effects and not the sources of pollution' end-of-pipe approach;	– Formal policy integration towards sustainability; – Sustainability declarations rather than practical implementation; – Some policy coordination in order to address sources (and not effects) of pollution; – Use of environmental indicators;	– Strong and implementable policy integration; – Strong international agreements based on shared responsibilities; – Good governance principles widely accepted and used; – Green planning and green designing;	– Strong and fully enforceable international conventions; – National policy based on the paradigm of care; – Strong support for the national and international sustainability policies;

Source: Adapted from: O'Riordan 1996; Carter 2001; Baker 2006; Carter 2007; Barr 2008; Hediger 2008; Davies 2013.

1.2 Common principles of sustainability

Sustainable development is, indeed, a flexible and a vague concept. Various approaches to sustainability, however, include some common elements or principles (e.g., Gibson et al. 2005; Kyriakou 2005; Waas et al. 2011). Perhaps most importantly, sustainable development is about preservation of the set of choices for future generations; it is about cautious use of resources that would allow individuals and communities that will come to select between the same options that we can do today (Kyriakou 2005). Summarizing current sustainability discussions, Waas et al. (2011) put forward four fundamental sustainability principles: (i) the normativity, (ii) the equity, (iii) the integration, and (iv) the dynamism principles (Table 4).

Table 4 Fundamental principles of sustainable development

Sustainable principle	Description
The normativity principle	– Sustainable development is a product of societal interactions and a social construct itself; it is based on values individuals and communities held; – There is (and there will be) no objectifiable or empirically-proven theory of sustainable development; hence various approaches will co-exist and compete; – Sustainable development contains both 'subjective' and 'objective' elements; the first are societal choices while the latter scientific evidence and measures to implement these choices;
The equity principle	– Sustainable development is about fairness and solidarity: (i) between all and each individuals in current generation (intra-generational equity), (ii) between current and future generations (inter-generational equity), (iii) in democratic decision-making (procedural equity), (iv) in international collaboration (geographical equity[22]) and, (v) between species (environmental stewardship; interspecies equity);
The integration principle	– Sustainable development needs to integrate various (traditional) policies and objectives and apply holistic and systemic solutions to implement them;
The dynamism principle	– Sustainable development is an on-going evolutionary process with not fixed final outcome; instead the outcome can be negotiated and re-negotiated as the process progresses;

Source: Adapted from Waas et al. 2011.

The four fundamental sustainability principles are not the only attempt to specify commonalities between various sustainability approaches or otherwise to indicate necessary characteristics for an approach to be assessed as lying within the boundaries of sustainable

[22] The manifestation of this geographical equity is famous slogan: act locally, think globally.

development. Table 5 presents other examples of sustainable principles available in the literature.

Table 5 Examples of various approaches to sustainability principles

Approaches to the sustainability principles	**References**
Sustainable development: – needs to integrate and balance social, environmental and economic objectives and policies; – is future oriented and strive to achieve equity; – uses tools and mechanisms that are inclusive and democratic in nature;	Mawhinney 2002
Sustainable development: – challenges current thinking and societal and economic paradigms; – addresses both short-term and long-term well-being; – needs to be a framework for decision-making; – recognizes links between human and ecological well-being (or between humans and nature); – adopts some form of precautionary approaches; – acknowledges biophysical limits but also opportunities for innovations; – is a process and not a state; – is dependent on humans' behaviours and their values; – it is both universal and context-depended;	Gibson et al. 2005
Sustainable development: – recognizes common but differentiated responsibilities towards the natural ecosystems; – respects and support inter- and intra-generational equity; – recognizes the need for gender equality; – recognizes the need for environmental justice; – promotes participation in decision-making;	Backer 2008
Sustainable development: – employs precautionary principle, and especially non-proceeding option; – respects inter-generational equity; – protects ecological integrity and biological diversity; – ensures equity and good quality of life for individuals and communities (i.e., supports social cohesion); – promotes efficiency, i.e., reduces the use of materials and energy; – implements democracy and co-governance ambitions; – strives to support all sustainable development principles (although, indeed, some trade-off are inevitable);	Morrison-Saunders and Hodgson 2009
Sustainable development: – is based on the precautionary principle and adaptive management; – respects inter-generational equity; – respects intra-generational equity;	Lamorgesse and Gelatti 2013

– maintains important ecological processes and functions and prevents deteriorations of natural capital; – promotes efficiency, i.e., limits demand and use of materials and energy; – support public participation and transparent and inclusive decision-making; – seeks ways to implement all sustainability principles in both short- and long-time horizons;	

Source: Own elaboration based on Mawhinney 2002; Gibson et al. 2005; Backer 2008; Morrison-Saunders and Hodgson 2009 and Lamorgesse and Gelatti 2013.

These various ideas for sustainability principles build on each other and are, therefore, largely overlapping. This may suggest that — despite many different ideas what sustainability is (or is not) — the broad boundaries of sustainability are relatively well-defined. And, indeed, there is a wide consensus within sustainability scholars concerning sustainability fundamentals or most important changes to be implemented (e.g., Gibson et al. 2005; Christen and Schmidt 2011; Waas et al. 2011).

No matter what set of sustainable development principles is considered, the principles themselves are, indeed, quite open and may be subjected to various interpretations. In the current politic and managerial settings, these principles are definitely overambitious and not easy to directly operationalize (Gibson 2005; Waas et al. 2011); just like the concept of sustainability itself. However, they can still have important functions. Firstly, they allow to identify what solutions and approaches can fit within the ambitions of sustainable development (Waas et al. 2011). Secondly, the principles can be further translated into assessment frameworks and indicators for policies and investments. In such a way, they can support critical and reflective consideration of sustainable development in decision-making processes and stimulate the shift towards more sustainable solutions (Epstein and Roy 2003; Gibson et al. 2005; Becker 2010).

1.3 Sustainable development: is the approach still useful?

As the concept of sustainability was gaining popularity and influence, and was receiving significant recognition world-wide, voices of critique have also appeared. These concerns and doubts usually question if sustainable development can help to create a better (or approaches more environmentally-friendly) world and whether its definitional flexibility is not one of the major obstacles on the path to sustainability (Gibson et al. 2005). Sustainable development has, indeed, facilitated mainstreaming of environmental issues within governments and communities at large (Barr 2008). It has also strengthened environmental awareness and humans' bonds with nature (Barr 2008). However, one can also claim that it — through the concept of weak sustainability — has also weakened the (radical) environmental movements providing decision-makers and companies with a useful opportunity to change little in the way they were operating and still be considered environmentally friendly by their constituents and customers (e.g., Giddings et al. 2002; Grunwald 2004; Barr 2008).

Indeed, the sustainability narrative has been a subject of change and constant definitions and re-definitions[23]. Initially, sustainable development was much more about protecting the natural ecosystems while the current debate focuses on growth that should be compatible with the environment (i.e., the fake greenery[24]; Quental et al. 2009; Kambites 2012, Baldwin et al. 2019). Sustainable development is often considered a '*contemporary buzzword*' or '*seductive rhetoric*' with neither true meaning or practical implications (e.g., Benson and Craig 2004; Robinson 2004). It is being called an '*oxymoron*', '*self-contradiction*', '*redundancy*' (Gibson et al. 2015), an '*ideological illusion*' or a '*utopian hope*' (Grunwald 2004). Being such a wide concept, sustainable development can accommodate opponents representing various often opposing options (e.g., varying from very weak to very strong sustainability; e.g., Benson and Craig 2004) and, therefore, can lead to a situation when "(…) *developers [are] getting the noun and environmentalists [are] being left with the adjective.*" (Gibson et al. 2015, p. 52). Therefore, some authors postulate the end of the era of sustainability and acknowledge the need for new instruments of structural change[25] (e.g., Benson and Craig 2004).

Other scholars notice important shortcomings of sustainable development concept but underline its positive influence on the policy and society since it first appearance. These scholars underline that sustainable development contributed to the design and evolution of new instruments to protect the natural ecosystems (Baker and Eckerberg 2008; Zaccai 2012). Indeed, the principles of sustainability have promoted (i) shift from top-down to bottom-up managerial styles, (ii) use of collaborative instruments, and (iii) increased use of participatory, knowledge and information incentives (Baker 2008; Zaccai 2012). Improved corporate responsibility and public awareness of the environment, eco-products, green consumerism, green tenders or sustainable constructions are also considered the important results of the sustainable development discourse (e.g., Roosa 2008; Zaccai 2012). Finally, many authors see sustainable development as a form of problem framing, a common and widely accepted ground[26] for discussions (e.g., Rammel and van den Bergh 2003) or a process of societal learning and transformation with no pre-defined outcome (e.g., Kemp et al. 2007). And finally, what some scholars see as a drawback of sustainability, i.e., possibility to link governmental, private and social actors under its umbrella (e.g., Gibson et al. 2015), others consider as its strength through which it is possible to enhance collaboration for the sake of the natural ecosystem (Arias-Maldonado 2020). Such a collaboration is obviously not perfect but since

[23] This is actually inherent part of sustainability as it is a value-laden and context-dependent concept; please compare Tables 4 and 5 in the sub-chapter 1.2.

[24] In order not to make the picture completely grim, it is fair to note that there have been important improvements in ecological standards in many countries (Zaccai 2012), including Poland (Geise 2005).

[25] The concepts of resilience (Benson and Craig 2004; Adger and Hodbod 2014) or of regenerative development (Gibbons 2020) are put forward as possible successors of the sustainable development. Such discussions are, however, outside the scope of this thesis.

[26] Although sustainable development is often considered as a notion widely accepted by all (e.g., Gibson et al. 2015), we can recently observe some level of resistance towards the mitigation policies essential to achieve sustainability; this opposition is rooted in increasing populism and the differentiation between the people and the elite (Arias-Maldonado 2020).

and their results are uncertain but it still seems one of the best chances that are available at the moment (Arias-Maldonado 2020).

So what can be learnt from these discussions? Is sustainable development still a useful concept? The debate suggests that it, indeed, is and up to date sustainability is still the most powerful rhetoric and collaboration mechanism for working out the environmental issues (Gazzola et al. 2019). The concept is of course not without the problems (described above), but it wide acceptability, recognition on political and economic fora, and relative internalization seem to be extremely important (e.g., Kronfeld-Goharani 2015; Arias-Maldonado 2020), especially now where populism and associated resistance towards sustainability is on the rise (Arias-Maldonado 2020). It would be difficult, if not impossible, to develop and mainstream a new environmental paradigm, especially if sustainability officially fails to deliver the change and protect the planet (Blühdorn 2016). Nevertheless, the concept definitely needs reinterpretation(s) towards strong sustainability and reclaiming from the economy-focused approaches (Johnson et al. 2007; Imran et al. 2011). Some suggestions go beyond that calling for a significant change of thinking paradigm, in which sustainability is understood and implemented, and substantial revisions in the sustainability science itself (González-Márquez and Toledo 2020). From more practical perspective, there is a need for tighter alignments between 'going green' and 'going smart'[27] approaches (Ahvenniemi et al. 2017; Gazzolla et al. 2019) and for sustainability-oriented (social) innovations (Buhl et al. 2019).

Despite some problems, sustainable development is still a useful approach to address environmental issues in the multi-stakeholders' environment; an approach that is widely recognized and widely accepted. These are these qualities that make sustainability a good framework to address relations between humans and ecosystems on the coast and off the shores of the Pomeranian province.

1.4 Sustainability on the sea

One of the most important high level policy documents that address the issues of marine sustainability is the United Nations' 'Transforming Our World: The 2030 Agenda for Sustainable Development'. This agenda puts forward 17 sustainable development goals (SDGs) and one of them, SDG 14 (Life below water), directly approaches marine sustainability. SDG 14 necessitates efforts that would lead to more efficient protection of seas and oceans and their ecosystems and to responsible use of marine and coastal resources (Salvia et al. 2019). The goal is further broken into a set of targets that are accompanied by relevant

[27] The concept of going smart departs form the idea of putting the environment in the centre and focuses more on sustaining the current lifestyles (Gazzola et al. 2019). By using communication and information technologies, it aims to increase the efficiency of resources and energy usage in order to limit current inefficiencies, including negative impacts on the environment such as carbon emissions (e.g., Komninos 2014; Gazzola et al. 2019). The concept is, therefore, believed to have a great potential to actually improve sustainability of the modern societies (e.g., Ahvenniemi et al. 2017)

deadlines (Table 6); some of them are to be achieved earlier than the overall 2030 deadline (Gulseven 2020).

Table 6 Sustainable Development Goal 14 (SDG14) — Life below water

Sustainable Development Goal 14 (SDG14) — Life below water		
SDG14's targets	**Definition (quotation from the original document; UN 2015)**	Deadline
14.1 Reduce marine pollution	*"By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution"*	2025
14.2 Protection and sustainable management of natural ecosystems	*"By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans"*	2020
14.3 Reduce ocean acidification	*"Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels"*	2030
14.4 Regulation of the fishing sector	*"By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics."*	2020
14.5 Conservation of coastal and marine areas	*"By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information"*	2020
14.6 End subsidies contributing to overfishing	*"By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation"*	2020

14.7 Increase the economic benefits from sustainable use of marine resources	*"By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism"*	2030
14.a Increase scientific knowledge, research and technology for ocean health	*"Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries"*	2030
14.b Support small scale fisheries	*"Provide access for small-scale artisanal fishers to marine resources and markets"*	2030
14.c Implement and enforce international sea law	*"Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of "The future we want""*	2030

Source: Adapted from UN 2015 and Gulseven 2020.

Seas and oceans are crucial for the health of the planet and progress towards the ambitions of SDG 14 is important for the other SDGs put forward by the United Nations (Singh et al. 2018; Nash et al. 2020). Nevertheless, the SDG 14's targets are unlikely to be achieved within the expected deadlines[28], and progress towards them is definitely too slow (Singh et al. 2018; Nash et al. 2020). Moreover, targets and indicators for life below water are rather aspirational than operational and — in general — they fail to comply with SMART[29] rules proving little guidance for the policy-makers, managers and planners (Cormier and Elliot 2017; Recuero Virto 2018). To make the picture even grimmer, marine sustainability goal is not receiving enough attention, especially when compared with its significance and urgency (Salvia et al. 2019), what threatens not only the goal itself but the more general notion of world's sustainability.

On the positive side, sustainable development has become a paradigm for marine and coastal governance world-wide. It is now a managerial model that allows to seek balance between various uses and users, and between their short and long term interests (e.g., Gallagher 2010; Stojanovic and Farmer 2013), what raises hopes that the missing managerial objectives, indicators and operational outcomes will be developed at regional or national levels. Indeed, various pieces of legislation world-wide[30] consider sustainable development as their overall goal or framework for shaping human-ocean relations. These documents directly refer to the sustainability challenge but their understanding of what is sustainability can be different (Stojanovic and Farmer 2013). This is especially evident in case of choosing between strong and weak sustainability paradigms, what can perhaps illustrate a deeper tension between environmental and social and economic pillars of sustainable development.

This dichotomy between strong and weak sustainability is perhaps most visible in the European legislation. There are three documents that are probably most relevant for sustainable development on the sea; these are Integrated Maritime Policy, the Marine Strategy Framework Directive, and the Directive Establishing the Framework for Maritime Spatial Planning (Qiu and Jones 2013; Jones et al. 2016; Schultz-Zehden et al. 2019). The Marine Strategy Framework Directive builds on the ecosystem-based approach and aims to ensure good environmental status of the European seas; it focuses on conservation and long-term time horizon, and is rooted in the strong sustainability paradigm (Jones et al. 2016). The

[28] The newest evaluation on the progress towards SDG 14 (Nash et al. 2020), suggests that only about 2% of all countries will be able to demonstrate sufficient progress towards SGD 14. It is also clear that targets 14.2, 14.3 and 14.4 (Table 6) will definitely not be met (Nast et al. 2020).

[29] SMART = Specific, Measurable, Achievable, Realistic and Time-bounded. Only the latter criterion seems well-defined for SDG 14, while the largest lack of compliance can be observed overall for the three middle criteria (Cormier and Elliot 2017).

[30] In their study of the six national/international regimes (i.e., of Australia, New Zealand, South Africa, European Union, Canada and the United States), Stojanovic and Farmer (2013) concludes that 'sustaining' or 'sustainable development' accounts for between 0.83% (for Canada and its Ocean Act) and 10.57% (for the Unites States and its US National Ocean Policy 2010 Executive Order) of the total documents content. The European Union's Integrated Maritime Policy and the Marine Strategy Framework Directive scores 5.88% for the first piece of legislation and 1.28% for the latter.

Integrated Maritime Policy was designed to create and to support (i) more coherent approaches to maritime issues, (ii) promote maritime economic development, and (iii) strengthen integration and cooperation between various sectors and corresponding sectoral interests (Qiu and Jones 2013; Schult-Zehden et al. 2019). The Directive Establishing the Framework for Maritime Spatial Planning is believed to be strongly embedded in the ambitions of the European Union's maritime policy, and the maritime spatial planning is, therefore, considered a process for balancing and integrating uses and promoting the blue growth[31]. Indeed, protection of the environment is considered one of many and equal uses, hence the directive promotes the weak sustainability paradigm[32] (Jones et al. 2016). Practice of maritime spatial planning across Europe supports this claim and the dominance of the weak sustainability practices (e.g., Santos et al. 2014; Santos et al. 2015; Jones et al. 2016; Piwowarczyk et al. 2019a).

Since regional governance of the European seas is an important element the policy landscapes (van Tatenhove 2013), it is worth exploring sustainability arrangements at the Baltic Sea level, where the research presented in this thesis is placed. Two international initiatives (or governance modes) are especially interesting for the sustainability discourse in the region. The Baltic Marine Environment Protection Convention (also known as the Helsinki Convention; HELCOM) is the first out of these two organizations. It is also the example of international governance performed by national states[33] (Kern and Löffelsend 2004). HELCOM's main goal — that manifests itself in the Baltic Sea Action Plan (BSAP) — is to protect marine environment and the ecological balance of the Baltic Sea (Kern 2011); hence it is possible to conclude that HELCOM's approach is based on the strong sustainability paradigm. Having said that, it should be underlined that both HELCOM and BSAP embrace social and economic activities with their vision of healthy marine ecosystems (Kern 2011). Another important organization in the Baltic Sea region is VASAB, i.e., Vision and Strategies around the Baltic Sea. It is the second example of intergovernmental cooperation; in this case, it is the cooperation between the ministries responsible for spatial planning and development of all Baltic Sea Region countries. VASAB and HELCOM created a joint 'HELCOM-VASAB Maritime Spatial Planning Working Group' that has developed ten broad-scale maritime planning principles (Zaucha 2014a; Zaucha 2014b). The first, and presumably most important principle, is that of sustainable development. According to this principle, maritime spatial planning should be a process that balances economic, environmental and social needs, and integrates

[31] Interestingly, there are also some discussions what blues growth really is. Some scholars and stakeholders suggest that blue growth is about economic development mad use of marine and aquatic resources; other disagree and underline that the blue growth initiatives cannot lead to the deterioration of the natural (blue) capital (Eikeset et al. 2018).

[32] There are, however, different opinions on this issue. For example, Schultz-Zehden (2019) suggests that the provisions of the directive shaping maritime spatial planning in Europe need to be evaluated within the context of similar stipulations in the Marine Strategy Framework Directive; hence, there is no clear indication that maritime spatial planning is based on weak or strong sustainability paradigm and the final understanding is left for the Members States.

[33] All countries situated around the Baltic Sea and, additionally, the European Union are HELCOM's members (or contracting parties).

users and sectors. The process should be based on ecosystem approach and prioritize long-term sustainable management. Perhaps in order to underline the importance of ecosystem approach, the second HELCOM-VASAB planning principle elaborates on this particular concept (Zaucha 2014b). The broad-scale planning principles are quite ambitious and aspirational in nature so it makes it difficult to assess if they adopt strong or weak sustainability approach[34]. HELCOM and VASAB, regrettably, do not provide any insights or guidelines on how to operationalize their planning principles. As a result, countries (and planners) are left with interpretation flexibility, which, perhaps not surprisingly, drives many countries and their maritime spatial planning towards weak sustainability (Piwowarczyk et al. 2019a).

It seems that the tensions between strong and weak sustainability are resolved in the favour of the latter. Indeed, it is true not only for the planning processes (e.g., Jones et al. 2016; Piwowarczyk et al. 2019a) but also in the general discourse on marine affairs (Kronfeld-Goharani 2015). Marine management is the most important themes within marine affairs' discourse[35] followed by sea itself, fisheries and available data. The issues related to sustainability do not get into the top ten, taking the distant place (around 400; Kronfeld-Goharani 2015). There are five major themes within the marine management. Three of them relate to environmental issues, and they include (i) combating pollution, (ii) protecting ecosystems and resources, and (iii) establishing and implementing relevant managerial measures. Supporting humans' (economic) activities and generating scientific knowledge are the two additional topics not directly related to the natural environment. The sustainability discourse — in principle — follows the four dimensional sustainability model, i.e., the major themes include economic, social and institutional development, and protection of the environment and development (Kronfeld-Goharani 2015). Despite the evident complexity of the marine affairs' discourse, the weak sustainability paradigm is still a prevailing approach. Indeed, it is, therefore, not surprising that the weak sustainability paradigm is most commonly embraced by the representatives of the maritime sectors, which often see it as a way to increase their competitive advantage (Kronfled-Goharani 2018).

Despite the popularity and prevalence of the weak sustainability paradigm in maritime management and marine discourse(s), in this thesis, I have decided to underline the importance of strong sustainability paradigm. In this approach, I follow the interpretation of

[34] The working group uses the word 'maritime' similarly to (or coherently with) the European Union's Directive Establishing a Framework for Maritime Spatial Planning. As per the dictionary definition, 'maritime' is understood as connected with the sea through economic activities; 'marine' – on the other hand – is something that relates or comes from the sea (Jones at al. 2016). Hence, it may indicate the preference for weak sustainability paradigm.

[35] The analysis covers the ten-years period (namely 2002-2012) and is based on the word count of the marine-related scientific publications and managerial documents of the most prominent international organizations, including annual reports, meetings and conferences reports, newsletters, official, statements and speeches (Kronfeld-Goharani 2015).

Sustainable Development Goal 14 (SDG)[36] as promoting marine and coastal conservation, and, hence, the ambitions of strong sustainability (Neumann et al. 2017). In this context, it is worth pointing out the United Nations have declared the years 2021-2030 as the 'Decade of Ocean Science for Sustainable Development' and the 'Decade on Ecosystem Restoration' (Franke et al. 2020). Strong sustainability is also an inherent part of the ocean health metaphor; this metaphor is currently making its way to be an important approach in marine governance (Franke et al. 2020; Halpern 2020) and is closely linked with SDG 14 (Neumann et al. 2017). Finally, marine and costal ecosystems are already highly impacted by human activities, and their basic functions are heavily threatened (e.g., Pörtner et al. 2019; Jouffray et al. 2020; Winther et al. 2020). In this situation, it is highly unlikely that the weak sustainability approaches could, indeed, reverse the current trends (Biely et al. 2018) and restore marine productivity and health (e.g., Neumann et al. 2017; Franke et al. 2020). In fact, the opposite is true: the weak sustainability approaches can lead to the collapse of marine ecosystems (Qiu and Jones 2013), what can further threaten human's well-being that is largely dependent on the seas and oceans (e.g., Jouffray et al. 2020).

However, acknowledging the relevance and importance of strong sustainability approaches in managing marine affairs does not mean that this view was imposed on the maritime stakeholders, who participated in this study. In fact, the opposite is true. The participating stakeholders were encouraged to put forward (and discuss) their own conceptualization(s) of sustainable development. They maintained flexibility to define links and barriers between their respective sectors and sustainable development, and to decide about relative importance of these barriers[37]. The goal of this study was to understand and re-construct the opinions and perceptions of the stakeholders themselves, and to approach sustainability through the lens of maritime actors. The concept of strong sustainability has only been applied during data analysis stage in order to evaluate how far (or how close) the Polish maritime stakeholders are from accepting (and embracing) the ambitions of strong sustainability; the ambitions that are largely postulated to become the mainstream marine governance paradigm (e.g., Neumann et al. 2017).

1.5 Sustainable coastal communities and marine citizenship

One of the ambitions of the sustainable development is to maintain human well-being both for the current and future generations. The concept of sustainable coasts and seas has been widely accepted at the political and managerial levels as an overarching goal for development and planning (e.g., Beatley et al. 2002). Local communities have an important role to play in a way towards sustainability; their actions and behaviours can support or hinder conservation efforts and reduce or increase pressures on marine ecosystems (e.g., Jefferson et al. 2015; Rock et al. 2019; McKinley et al. 2020a). There are two concepts that link humans and marine

[36] And as I explained in the beginning of this sub-chapter SDGs are currently considered the most important efforts towards marine sustainability.

[37] The detailed explanation on the research strategy and steps in data analysis is presented in 'The Pomeranian province as a case study area' chapter.

areas in the context of sustainability: sustainable coastal communities (Beatley et al. 2002) and marine citizenship (McKinley 2010; McKinley and Fletcher 2012).

The first concept — sustainable coastal communities — presents the ambitions of how humans should interact with nature. The coastal community (local residents, business and institutions around them) can be assessed as sustainable when it attempts to *"(…) minimize their destructive impact on natural systems and the natural environment, create highly livable and enduring places, and build communities that are socially just and in which the needs of all groups in the community are addressed."* (Beatley et al. 2002; p. 197). Sustainable communities are, therefore, aware of how they shape and are shaped by natural processes (Corbett and Corbett 2000), promote understanding of and strong connections with nature, (Bealtley 1998), value local knowledge and experience (Glavovic 2008), and endorse holistic and integrative management and planning strategies (Beatley 1998). Sustainable coastal communities can be characterized by a set of attributes (Table 7). Indeed, the majority of all of these attributes need to be fulfilled if a given community can be characterized as 'sustainable'. However, cases where local decision-makers and local communities attempt to operationalize sustainability ambitions are rare and not fully successful (e.g., Beatley et al. 2002; Portman 2016; Teschner 2019). Rather, the literature still paints a pessimistic picture, where the general public is still under-informed about its relations to and dependence on the sea and its resources (e.g., Beeharry et al. 2017; McKinley and Acott 2018) and where the access inequalities to marine resources still persist (Avni and Tescher 2019; Kim et al. 2019). Nevertheless, the concept of sustainable coastal communities shows to be useful to guide the behavioural change both among the coastal residents and coastal managers and planners and many of its elements are being researched and implemented.

Marine citizenship constitutes a similar concept to sustainable coastal communities, although it is less connected with localities, i.e., the sustainable coastal communities actually live by the seaside while marine citizenship can be hold by any person outside coastal areas. Marine citizenship originates from the concept of 'rights' and 'obligations' of individuals towards the state (McKinley and Fletcher 2012). A person holding marine citizenship has a sufficient level of knowledge and understanding of the sea and recognizes own rights to use and own responsibilities to protect marine ecosystems. Such person is further willing to actively participate in marine (co-)governance to ensure sustainable development of marine areas and land-sea interactions (McKinley 2010). Similar to the sustainable coastal communities, marine citizenship can be characterized on the set of attributes (Table 7) that can constitute the assessment criteria to evaluate progress in moving towards the ambition of truly marine citizens. The concept of marine citizenship builds on the idea of environmental citizenship that underlines individual responsibilities towards natural ecosystems (e.g., Hawthorne and Alabaster 1999; Dobson and Bell 2006; Dobson 2007). Environmental citizenship blurry the division between public and private spheres and choices and underlines the need to protect the public good (the nature) even at the expense of the short-time private interests (Dobson and Valencia Sáiz 2005). Environmental citizens not only have a good knowledge on links

between ecosystems and humans, but they are also willing to act (and have such ability) to support sustainability (Hawthorne and Alabaster 1999) at both local/regional and global scales (Jelin 2000). As a result, environmental citizens undertake actions that reduce the negative impact on the environment and actively advocate for the environmental justice[38] for everyone (Agyeman and Evans 2004; Dobson 2007). They not only involve themselves in debating, protesting, signing letters and petitions, donating money and demanding for more environmentally-friendly policies but — since they are aware that private actions have public implications — they actively seek ways to improve individual behaviours (e.g., Dobson 2007; Bauer et al. 2020). Obviously, environmental citizens aim to change their own life-styles and habits but also the behaviours of other members of their community, through creating new (informal) social norms, educating or simply talking about the environment (Bauer et al. 2020). It is because of these qualities that environmental citizenship is considered a powerful concept to empower the role of individual citizens in achieving (global) sustainability and change the current trajectory of relations between human and the natural environment they live in (e,g., Bauer et al. 2020).

The concept of marine citizenship embraces the ambitions of environmental citizenship in relation to the ocean governance (e.g., Fletcher and Potts 2007; McKinley 2010; McKinley and Fletcher 2012). However, marine citizenship — when compared with environmental citizenship — emphasise the dependence on the resources (livelihood dependency) and geographical location (i.e., proximity to the resources, including landscapes and seascapes; McKinley 2010). It is not to say that marine citizenship can only be achieved within some geographical range from the coast[39]; rather it underlines the need to systematically investigate how the above factors impact ocean literacy, awareness of the sea, and willingness to engage in sustainable marine governance (McKinley 2010; McKinley et al. 2020a).

[38] It is important to underline that environmental citizens undertaken their actions for the environmental justice and not of charity (see Dobson 2007 for more details).

[39] As explained above marine citizenship – unlike sustainable coastal communities – can be realized outside coastal areas.

Table 7 Comparison between the concepts of marine citizenship and the sustainable coastal communities

Component	**Marine citizenship**	**Sustainable coastal communities**
Awareness	– high level of awareness and understanding of marine-related issues; – ability to recognize the links of personal actions on the marine ecosystems; – awareness of own environmental values;	– high level of awareness and understanding of marine and coastal related issues related to various types of human activities and at various geographical scales; – high appreciation for the bioregional contexts of the natural environment;
Knowledge	– high level of environmental and ocean literacy; – high level of civic literacy; – high cognitive skills, including evidence-based thinking, system-, trans-disciplinary -, quantitative-, creative- and emphatic-thinking; – good level of general knowledge applicable to various scales, i.e., local, national or international; – preferred constant exposure to marine-related formal and informal education;	– strong public and civic literacy; – good knowledge on the environment that the community lives in and its interaction with larger geographical scales; – good knowledge and appreciation for the bioregional contexts of the natural and human-made environment;
Concern	– sound sense of personal and societal responsibility for the state of marine ecosystems; – recognition of 'responsibilities' rather than 'rights'; – high sense of control; – self-efficacy; – good understanding of the threats toward marine environment;	– sense of shared responsibility; – sense of justice-oriented citizenship; – good understanding of the consequences that humans have on the natural environment;
Behaviour	– willingness to change own habits and every day behaviour for the benefit of marine environment;	– focus on the minimizing negative impacts of the community's development;

	– ability to foresee the negative and positive impacts of own behaviour on marine ecosystems; – practical wisdom and ability to put own ocean and civic literacy into work;	– decisions undertaken aim — for example — to minimize (i) excessive consumption, (ii) destruction of the environment, (iii) limit the waste production, (iv) promote recycling, (v) promote sustainable means of transportation, (vi) develop respect for the local and global natural capital;
Participation	– willingness to get actively involved in marine and coastal governance;	– high values put on participation; – providing opportunities for active co-governance for all the members of the community; – high involvement in terrestrial (coastal) and marine planning;
Personal connections	– strong dependence on marine environment and its resources either through professional life or holiday choices; – high sense of place attachment resulting, for example, from place of living (proximity to the coast) or leisure and tourism choices;	– promotion and development of a strong sense of place and aesthetic pleasure related to the place of living; – relatively high connection with the coast and the sea;
Socio-demographic	– childhood experience related to (marine and coastal) environment; – more liberal than conservative orientation; – good recognition of drawbacks of the free market and the growth paradigm;	not discussed in the concept;
Socio-economics	– good and stable financial situation that allows for environmentally-friendly or environmentally-conscious consumer decisions;	– high costs or negative impact on the possibility to develop listed among problems to implement sustainable management; however, costs were considered at community (or societal) and not at the individual level;

Source: Own elaboration based on Hawthorne and Alabaster 1999; Barr 2003; Dobson 2003; Berkowitz et al. 2005; Johnson and Morris; 2010; McKinley 2010; McBridge et al. 2013; Gifford and Nilsson 2014 (concerning marine citizenship) and on Beatley et al. 2002 (concerning sustainable coastal communities).

Nevertheless, the ambitions of marine citizenship and sustainable coastal communities are — to large degree — overlapping. Table 7 presents the comparisons between these two concepts. Indeed, I would argue that the differences are not significant. The socio-demographic component is the only one not discussed within the concept of sustainable coastal communities. Less focus is also put on socio-economic component, i.e., finances are not considered at individual level, which seems much more important in the marine citizenship framework.

I used the framework of marine citizenship to analyse the results of the workshops run with the representatives of the marine communities[40]. Looking at my results through the lens of this concept allowed me to assess how environmentally-friendly and marine-aware the coastal communities are, and how far (or how close) they are from achieving the ambitions of sustainable development[41].

[40] I have decided to use the marine citizenship framework as it is slighlt more overarching concept that the idea of sustainable communities. For the link between the concept and my research questions, please see Table 13 in the sub-chapter 3.4.

[41] Although the concept does not state it explicitely, the analysis of its overall content and its individual components clearly links with the ideals of strong sustainability. In addition, the concept of marine citizenship builds on and originates from the environmental citizenship (McKinley 2010), what further supports such conceptualization. This is why, in my study, I used marine citizenship as analytical approach to investigate the environmental pillar (and hence environmental awareness; Table 13) of the coastal citizens living on the shores of the Pomeranian Province.

2 Mapping barriers to sustainable development

2.1 Methods in social sciences: choosing a research approach

There is a variety of research approaches that are used to study social phenomena. One of the most critical steps in every research design is to select what method(s) should be employed to investigate the problem at hand. From the methodological perspective, there are three most common research strategies: (i) quantitative, (ii) qualitative, and (iii) mixed (e.g., Creswell 2009; Matthews and Ross 2010; Bryman 2012). Although qualitative and quantitative methods answer different research questions and serve different research purposes, they should not be viewed as fundamentally contrasting, but rather as a part of a continuum with mixed strategies situated in the middle (Creswell 2009; Bryman 2012). Mixed strategies are, therefore, defined as research formats that involve both qualitative and quantitative research approaches to investigate a single social phenomenon in a single project (Bryman 2012). Nevertheless, quantitative and qualitative strategies are characterized by various factors (Table 8) that make one approach more suitable over the other one depending on the nature of the studied problem.

Table 8 Overview of quantitative and qualitative research strategies

Quantitative strategies	**Qualitative strategies**
have deductive character, i.e., test theories	have inductive character, i.e., generate a theory
measure occurrence, i.e., ask 'how many' and use closed-ended questions	provide in-depth insight, i.e., ask 'how' and 'why' and use open-ended questions
the research question is usually a set of statistically testable hypothesis	research questions are often answered through the description(s) of events and collective or individuals' opinions, beliefs, and experiences
aim at generalization	aiming at a contextual understanding
study action and/or behaviour	study meaning and/or motivation
consider social reality as external and objective	consider social reality as subjective and a subject of collective or individuals' construction
employ the natural science model, i.e., measure levels and casual relations (positivism approach)	reject the natural science model, i.e., provide insights and interpretations of meanings in a specific context (interpretivism approach)
the object of the study is usually well-recognized, i.e., researchers know precisely what they are looking for and the set of ideas structure the investigation process	the object of the study is often less recognized, i.e., researchers may have only a general idea of what they are looking for; the opinions of participants are the most significant
data are usually structured and represented as numbers or named codes	data can take any form but are often unstructured

Source: Own elaboration based on Creswell 2009; Matthews and Ross 2010 and Bryman 2012.

The overall questions asked in this study — i.e., (i) how the representatives of various maritime sectors and coastal communities conceptualize marine sustainability, and (ii) how they perceive the barriers to sustainable marine and coastal ecosystems — definitely call for employing qualitative research strategies. First, this study's main question is 'how' (followed by 'why' 'how' happens) and it aims to reconstruct opinions of marine actors to assess if they embrace the idea of 'strong' or 'weak' sustainability. Hence, I use the interpretivism approach. Since I am interested in the 'perceived' barriers, I focus on the individuals' (or collective or groups') conceptualizations of the social world, i.e., on the notions of sustainability. Consequently, the major result of the study is the in-depth description of opinions of various groups of marine actors towards marine sustainability, and their relation with the sea. Finally, since studies on the perception of barriers to marine sustainable development are rare, there is no common and well established understanding of the object of my research. Having analysed all these characteristics (Table 9), I conclude that quantitative approaches are not suitable for my research; hence qualitative approaches are selected and further explored.

Table 9 Evaluation of the social sciences research approaches in the context of this thesis research questions

Differences between qualitative and quantitative approaches*	**Characteristics of this study**	**Appropriate research strategy**
Research questions: Qualitative: describe reality ('how' and 'why') Quantitative: measures occurrence ('how many')	The overall goal of this study is to describe social reality of maritime sectors and coastal communities. The overall research question is, therefore, a 'how' question, i.e., how various groups of stakeholders conceptualize marine sustainability, and how they perceive barriers to (more) sustainable marine and coastal ecosystems. These general questions can be further broken down into more detailed inquiries, which also start with 'how' and are often followed by 'why' 'how' happens, e.g., 'How far have the coastal communities progressed on the path towards marine citizenship?' and further 'Why is that happening?'.	Qualitative approach
Object of the study: Qualitative: limited knowledge of the object Quantitative: well-recognized	There is relatively little research on barriers to marine sustainability, especially when investigated through the stakeholders' lens. Indeed, this study is answering the call for more public perception research and for more stakeholders' contribution into solving the wicked environmental problems (e.g., Jefferson et al. 2015; Bennett 2019; Barreto et al. 2020). Therefore, I can conclude that the object of the study is not well-recognized.	Qualitative approach
Result of the study: Qualitative: description of events or opinions Quantitative: a set of testable hypothesis	The expected (and, indeed, the achieved) result of the study is the in-depth description of opinions of various groups of marine actors towards marine sustainability, conceptualization of barriers to achieving them, and the description of their relation with the sea.	Qualitative approach
Aim of study: Qualitative: meaning and motivation	This research studies conceptualizations (or meanings) of marine sustainability of various groups of marine actors. It also approaches the	Qualitative approach

Quantitative: action and behaviour	motivations for not embracing the notions of (strong) sustainability in personal and professional choices.	
Social reality: Qualitative: a result of social construction Quantitative: objective	This research focus on the individuals' (or collective or groups') conceptualizations of the social world, namely on the notions of marine sustainability. Indeed, the very concept of sustainability is a social construction and a product of societal interactions (e.g., Waas et al. 2011).	Qualitative approach
Research model: Qualitative: interpretivism Quantitative: positivism	This study uses the interpretivism approach, i.e., it provides insights and interprets the meaning of marine sustainability and barriers to achieve it among various groups of actors.	Qualitative approach
Generalization: Qualitative: aims at contextual meaning Quantitative: aims at generalization	The study, predominantly, considers the contextual meaning of various stakeholders groups, and generalization is not its main aim. However, it will provide some generalizations.	Qualitative approach

* The criteria used here are selected from Table 8.

Source: Own elaboration.

As concluded above, the characteristics of my study require using the qualitative social science method. Therefore, the remaining part of this chapter focuses on the description of the qualitative methods in order to present and justify the research strategy selected and used in this thesis.

To start, there is no single classification of qualitative approaches. Creswell (2013) in his review of classification schemes lists 13 of them. Examples of these classifications include grouping according to the area of human activity, i.e., individuals, culture or social world (Miller and Crabtree 1992), according to discipline perspective (Lancy 1993), or according to theoretical paradigms and perspectives or research strategies (Denzin and Lincoln 2005). The classification I will use in this chapter, proposed by Creswell (2013) based on his review of the most common approaches used in social, behavioural and health sciences, puts qualitative research approaches in five groups: (i) narrative research, (ii) phenomenology, (iii) grounded theory, (iv) ethnography, and (v) case study. These five approaches are most commonly used across various disciplines in social science and are often recognized as 'most important approaches' in relevant fields (Creswell 2013).

Narrative research focuses on socially constructed stories (both oral and written) that depict or represent an event or action (or series of events or actions) in a clear chronological order in order to acquire a sense of being there (e.g., Czarniawska 2004; Matthews and Ross 2010; Yin 2010). Narratives provide insights to individuals' identity, personality and life experiences (Lieblich et al. 1998) and they allow to link these personal experiences to public issues (Bathmaker 2010). Narrative research can be characterized by three important features. First, narratives represent the sequence of events that are chronologically connected. Second, they aim to reconstruct the meanings and significance of these events to the narrator. Third, they are produced for a specific audience so they are inherently social and subjective (Elliott 2005). Within narrative research, we can differentiate four major approaches: (i) biographical studies which focus on experiences of another person(s), (ii) autoethnography, where a researcher is a narrator and links self-reflection and self- experiences to the wider social and cultural contexts, (iii) a life history that represents the story of entire life, and (iv) oral history that is a collection of reflections over past events, their causes, and effects (Creswell 2013).

Phenomenology studies how individuals understand and experience the reality around them (Matthews and Ross 2010; Bhattacherjee 2012). It emphasises the notion of 'phenomenon' to be explored (Creswell 2013). For example, the phenomenon can be defined as an idea of professional success, feeling of grief or happiness (Creswell 2013). Phenomenology has two important objectives. First, it aims to describe the social reality from the diverse perspectives of participants, who have all experienced 'phenomenon' being investigated. Its second objective is to understand the so-called 'symbolic meaning' or 'deep structure' that is the set of factors that are fundamental for shaping the phenomenon at hand (Bhattacherjee 2012). Judgements, perceptions, reflections on everyday actions and habits, ways of constructing social contexts, logics of decision-making, and ways of 'being in the world' are all within the focus of this research approach. Phenomenology is interested in both human 'knowledge' of

the surrounded reality and human 'being' in this reality (Titchen and Hobson 2005). Moreover, phenomenology requires researchers to disregard all pre-existing theories, hypotheses, concepts and explanations that might influence the study results (Yin 2010; Wertz 2011). There are two major approaches to conduct phenomenological studies: (i) direct approach (or phenomenological sociology), and (ii) indirect approach (or existential phenomenology). The first approach focuses on intersubjective meanings that are shared among the community being investigated, while the latter approach analyses practical know-how of daily life and background practices that help to cope with the world (Titchen and Hobson 2005).

The focus of the third research approach — grounded theory — is to develop a new inductive theory from data collected. In other words, grounded theory aims to provide a general explanation of the social behaviour or the social process that is being constructed through the simultaneous collection of research data and its analysis (Matthews and Ross 2010). These iterations between data collections and data analysis are core for the grounded theory (Bryman 2012). The theory in this approach is being built around categories and concepts that are developed from scratch through intensive collaboration with participants who all have experienced the process or the behaviour (Yin 2010).

Ethnography literally means "*writing about people*" so its core interests are groups of individuals that share the same culture (Goldbart and Hustler 2005). The groups can be small or large (e.g., a few teachers in a particular school versus the whole teachers' community) but they need to include people who interact over time and jointly create values, norms, rituals and routines that together create cultural meanings (Goldbart and Hustler 2005; Creswell 2013). These meanings influence further the actions of the members of the group (Creswell 2013). Ethnographical studies require a relatively long time (up to years of observations) that allows researchers to get involved or to immerse themselves into the social world of others and to describe and understand the culture of the group (Bhattacherjee 2012; Creswell 2013). Data are usually gathered through direct observations of the members of the group but also through formal and informal interactions (Bhattacherjee 2012). There are two major types of ethnography: (i) realist ethnography, and (ii) critical ethnography. The position or the engagement of a researcher in a given group or community is the main differentiating factor. In the realist ethnography, researchers are neutral observers, who document and report about the facts. In the critical ethnography, researchers undertake the role of a representative or a counsellor of the community to advocate for the rights of their members or to support their emancipation. In the latter case, the groups are more often underprivileged and a subject to large power inequalities (Creswell 2013).

Finally, the aim of the case study approach is (i) to gain an in-depth understanding of 'a case' (most commonly defined as an issue, a problem, a decision or a process[42]) or (ii) to use the

[42] However, these are not the only possible definitions or topics within the interests of the case study approach. It should be mentioned that the topics can be both more and less concrete. Individuals, groups of individuals or

case as a specific illustration of a real-life phenomenon (Creswell 2013). Case study approach should be used to address inquiries, which focus on the contemporary events and do not require to control the behavioural factors of the participants involved. This approach is also suggested when there are no clear boundaries between the 'phenomenon' being investigated and the 'context', in which the phenomenon appears (Gillham 2000; Yin 2009). Case studies provide an exhaustive description of the phenomenon investigated, often use multiple data sources to explore it, but their major limitation is linked with the limited possibility to generalize the findings (Matthews and Ross 2010; Creswell 2013). This limited generalization is often considered an important drawback of this approach[43] (e.g., Ragin 1992). Although, indeed, this is an issue that needs to be evaluated when the research format is designed, this lack of generalization applies predominantly to 'prediction'[44] while there is no evidence that it actually affects the development of theory[45] (Bassey 1999; Flyvbjerg 2006). In fact, the case study approach is strongly recommended for studies that investigate complex real-life interrelations, which are assessed to be too complicated for quantitative surveys or controlled social experiments (Yin 2009). Similarly, it is one of the best approached for interventions or phenomena that are expected to have more than one set of outcomes (Yin 2009).

There are various classifications of case study approaches. One of the typologies — based on the orientation of research (Lune and Berg 2017) — distinguishes between (i) exploratory case studies that are often considered as preliminary research when data collection takes place before the research question is fully defined), (ii) explanatory case studies, which allow to explore and analyse factors in order to understand and explain, why various phenomena occur; this type of case studies can be used for both theory building and theory testing, and (iii) descriptive case studies that aim to provide an in-depth description or characteristics of a given phenomenon or situation. Other authors (e.g., Matthews and Ross 2010) classify case studies according to their character, i.e., they distinguish: (i) critical case studies that provide the best opportunity to test or to develop a theory, (ii) extreme or unique case studies that are different or unique, when compared with the average groups or processes related to the investigated phenomenon, (iii) representative or typical case studies that allow for the

organizations are considered the part of the first group, while communities, relations, decisions or projects fall within the second group of topics (Yin 2009).

[43] Although, indeed, this problem is not relevant to case study or qualitative research only. The issue of adequate generalisation applies to quantitative social research as well as to natural sciences (Flybjerg 2006).

[44] It should be also underlined that some settings or some contexts in social sciences might not require the level of generalization that is relevant for the natural sciences. For example, what might work in some social (or cultural) settings might not be true for other contexts. This might be especially true when the level of specificity of the case is relatively high (Gillham 2000). However, this does not mean that the case studies cannot generate results that can and should be generalized.

[45] What is often pointed out as another important failure of case study approach (Flyvbjerg 2006). Another two most commonly discussed drawbacks include (i) underestimation of the context-dependent knowledge, (ii) a greater researcher's bias, and (iii) usefulness of the approach in early stages of the research. However, these issues are not only relevant for the case study approach as well as not only to qualitative research. In fact, the proper design of the case study and the careful selection of the sample included in the study allow to minimize or overcome all these barriers. Moreover, the challenges listed (as, indeed, they are rather challenges than actual drawbacks) do not impact the quality of the results and the usefulness of this approach to investigate various phenomena (Gillham 2000; Flyvbjerg 2006; Yin 2009).

greatest generalizations as they represent many similar groups or processes, (iv) revelatory case studies that help to reveal phenomena that are hidden or not well-recognized, and (v) longitudinal case studies that involve exploring the same group or process over a longer time. Last, but not least, there are research settings that involve implementation and analysis of one (single-case design) or many (multiple-case design) cases studies. Within both designs, the case studies can involve separate or embedded units of analysis[46] (Yin 2009).

I compared these five most common qualitative research approaches in order to assess their advantages and disadvantages (or pros and cons) in the context of my study objectives and research. Table 10 summarizes the outcomes of this evaluation, which have become a basis for the selection of my research approach.

[46] These units of analysis in some designs or contexts are, in fact, case studies themselves but that should not be considered as a rule.

Table 10 Evaluation of the qualitative approaches in the context of this thesis research questions

Qualitative approach	Major characteristics of the approach	Arguments for the approach	Arguments against the approach
Narrative research	– are socially constructed stories that are the representation of event(s) or action(s); – requires clear chronological order; – reconstruct the importance of the event(s) or action(s) to a 'narrator' – are created for the specific audiences;	None	The research objectives of my study do not require or even do not allow for keeping the chronological order of the events or actions. Neither they aim for recognizing importance of event(s) or action(s) for the individual person. The research approach to be used to address this study research questions needs to allow for the identification of collective views and interpretations.
Phenomenology	– focuses on understanding and experiencing reality within a given community; – describes 'phenomenon' or 'reality' from the point of view of diverse participants; – is interested in symbolic meaning or deep structure of the investigated 'phenomenon'; – requires to disregard any previous theories, hypothesis, concepts and explanations;	Phenomenology allows to investigate the opinions of the diverse group of participants within a given community.	There are two most important problems of using phenomenology to address this study's research objective. Firstly, phenomenology should be implemented within 'the community'. My study addresses more than one community (maritime sectors vs. coastal communities but also single maritime sectors is, indeed, a mixture of various communities and, more importantly, interactions between these communities. Secondly, and perhaps even more importantly, phenomenology requires to disregard previous theories, concepts and

			explanations while this study (and the research questions I pose) are well-rooted in the theory of sustainable development and its various models.
Grounded theory	– aims to provide the new explanations of social process or social behaviour;	None	The objectives of this study do not require to contract new theory to explain social behaviour; there are, indeed, many theories that can be applicable to explain current behaviours in the context of sustainable development. This study, however, is more about defining (or describing) social processes and behaviours of various marine actors. These processes and behaviours are not well-explored; developing (or supplementing) the theory is, indeed, the second possible step that is outside the scope of this research.
Ethnography	– focuses on groups of people who share the same culture; – requires long observation time within natural settings;	None	Ethnography requires to be implemented within the same culture understood as joint creation of social rituals and cultural meanings. Such culture is — in practice — non-existent within the stakeholder groups that are of interests of my research questions. In addition, ethnography requires long-time observations in the natural settings, what would not be feasible considering

			time- and cost-efficiency. Moreover, it would be problematic to define natural settings for interactions between the stakeholders themselves and between the stakeholders and the ambitions and practice of sustainability in their daily and professional activities.
Case study research	– the major aim of this approach is to understand a problem or a process or provide real-life illustration of the problem or a process; – focuses on contemporary events or processes; – is advised when investigated phenomena and context of the study are highly interrelated;	The objectives of my study is to understand interactions with and barriers to marine sustainability through the lens of various stakeholders in the given area. This is in line with the major aims of the case study approach. Defining marine sustainability within the marine areas off the shore of the Pomeranian province addresses, indeed, contemporary processes related to economy, society and environment; hence it matches the second important characteristic of this research approach. In my research, I am equally interested in the opinions on sustainable development but also in the context(s) that shape(s)	None[48]

[48] This is not to say that I was not aware of the issues that need to be carefully evaluated during the design, data collection, analysing and conclusion stages (names of the stages are given after Yin (2009)). While implementing the case study, I was also aware of the validity tests including (i) construct (or measurement) validity, i.e., the collection and use of correct evidence, (ii) internal (or casual) validity, i.e., distinguishing between casual and spurious relationships, (iii) external validity, i.e., the level of generalization (Ruane 2006; Yin 2009), and (iv) reliability, i.e., the repeatability of the research (Yin 2009). Indeed, these validity tests are not specific for the case study approach but are also relevant for other (social science) research methods (e.g., Ruane 2006; Bryman 2012).

		these opinions, and, therefore, the third characteristic is also relevant for the settings of my study[47].	

Source: Own elaboration.

[47] In addition, this research is embedded in a relatively well-defined geographical area, i.e., so-called bounded system, what – for some authors (e.g., Stake 2005) is also a core factor of the case study approaches.

Among these five qualitative research approaches, the case study approach was assessed to be most suitable to investigate opinion on and barriers to sustainable development among various marine actors. It is clearly evident (Table 10) that case study approach is most appropriate for the objectives of this study; it is in line with all major characteristics of the approach, and, in addition, no issues concerning its practical implementations have been detected.

2.2 An Interactive Management methodology

There are variety of techniques that can be employed to pursue qualitative social science research (see, for example, Corbetta 2003; Elliott et al. 2005; Bryman 2012). Techniques engaging interactions with stakeholders that are perhaps most commonly described in social research methods books include (i) observation research, (ii) qualitative interviewing, and (iii) group work or groups discussions. While choosing the proper technique to address the research questions in this study, I have first rejected the first group of techniques (observation research). Observation research involves an immersion of a researcher in the natural social settings and recording behaviours and intercations (e.g., Jupp 2006; Bryman 2012). This technique was assessed as not applicable for this research as it would be difficult (if not impossible) to find (regular) forums of interactions between various maritime stakeholders and sustainability. Even if certain kinds of forum exist (e.g., consultations and public hearings concerning various marine-related managerial initatives), sustainable development would play a secondary role during these events, and, therefore, it would be unlikely to extract direct opinions concerning marine sustainability.

The choice was, therefore, between qualitative interviewing and group discussions. Both groups of techniques involve direct interactions with the study participants and asking them questions, while only the latter allows for interactions between various participants (e.g., Bryman 2012) This can lead to idea exchange, discovery and co-creation of common opinions and values between various participants (e.g., Elliot et al. 2005). Since sustainable development itself is defined as a results of social interactions, group work — stimulating these intercations — was assessed more suitable technique to address my research questions. Indeed, there are variety of techniques suitable for group discussions[49]; for the purpose of my research, I have, however, chosen the Interactive Management methodology. In the next sub-chapters, I provide the detailed overview of this method and arguments for its efficiency to address research questions asked in my thesis.

2.2.1 General introduction to Interactive Management methodology

In order to identify views of marine stakeholders, including citizens, on barriers to sustainable development at sea and on the coast, the modified Interactive Management methodology was used (Domegan et al. 2016). Interactive Management is a system science methodology and a computer-aided facilitation process that puts in its core deliberation of complex issues

[49] See for example Elliot et al. (2005) for the list of available techniques.

and ideas exchange between a diverse group of participants (Warfield and Cárdenas 1993; Broome 2006; Hogan et al. 2014a). It is designed to recognize and to understand the structure of the problem and interrelationships between its components and to integrate contributions coming from different participants into collective vision represented through the structural (influence) map (Hogan et al. 2014a). The use of supporting software (i.e., interpretative structural modelling software) offers additional benefits when compared with other system science methodologies such as dynamic system modelling or structural equation modelling (Domegan et al. 2016). The software guides the diverse groups of participants in mapping the interdependencies between the components of the problem at various scales (individual, community or societal), can be easily used by participants with no or limited experience is system thinking, and allows to record all issues and ideas discussed (Domegan et al. 2016). Interactive Management maps not only barriers or problems but can also be used to identify objectives, policy options, skills or competencies (Hogan et al. 2014a). These are, indeed, these major qualities that makes — in my opinion — this methodology appropriate to effectively address the complex issue of sustainable development within the complexity of marine and coastal realms and it various stakeholders' groups.

The Interactive Management methodology has been widely applied in various contexts, both theoretical and practical, including real-life decision-making. Interactive Management was used to support city council decisions on budget cuts (Coke and Moore 1981), to co-create privatization strategies for public companies in Greece (Warfield and Cárdenas 1993), to stimulate self-governance of Native American tribes (Broome 1995), and to develop solutions to address the ethnic conflict in Cyprus (Broome 2004). More recent studies include identification of barriers and policy options for well-being measures in Ireland (Hogan et al. 2014b), development of strategies to improve entrepreneurship curriculum of the Iranian and Irish universities (Razaei-Zadeh 2014), conceptualizations of critical thinking among university students (Dwyer et al. 2014), and use of social marketing to support sustainable ecosystems of the European seas and coastal areas (Domegan et al. 2016). The last study focuses on the comparison of differences and similarities between barriers to the sustainable development of the three European seas: the Baltic, the Mediterranean, and the European part of the Atlantic ocean. Similarly to the study presented in this thesis, it uses Interactive Management methodology in nine European countries, three for each regional European sea[50], to identify barriers for change that could bring coastal societies to more sustainable lifestyles. It also aims to reinforce current educational programmes and social campaign that raise awareness about marine ecosystems in order to better address existing knowledge and information gaps.

2.2.2 The planning phase

Interactive Management usually comprises of three phases (Warfield and Cárdenas 1993): the planning (1), the collaborative workshop (2), and the follow-up (3) phases. In the first phase, the collaborative workshop(s) are planned and organized. It is when the facilitating

[50] Spain, Greece and Italy (for the Mediterranean Sea), Poland, Norway and Sweden (for the Baltic Sea) and Ireland, Portugal and France (for the north Atlantic ocean); see http://seaforsociety.eu for more details.

team is established and methodological training is provided. Information about a problem to be addressed during the main workshop phase is also explored. Trigger question(s), context statement(s) and information to be provided to the workshop participants are designed and tested (Warfield and Cárdenas 1993). The planning phase also involves developing the collaborative workshop programme, securing logistics, location, duration, and budget for the workshop(s), and acquiring materials and other resources needed for the next two phases (Warfield and Cárdenas 1993; Hogan et al. 2014a). Finally, relevant actors and stakeholders that could assist in resolving the issue at stake are identified, mapped, selected and recruited (Warfield and Cárdenas 1993; Domegan et al. 2016). The entire planning phase is crucial for the success of the workshop itself and follow-up arrangements, but two elements are perhaps more important than other: (i) choosing the right facilitator, and (ii) engaging a good mixture of participants for knowledge exchange and knowledge co-creation during the collaborative workshop.

A highly-skilled facilitator is essential to effectively run the Interactive Management collaborative workshop. Similarly to all other methodologies and meetings that include a facilitator, there are three functions that such person needs to accomplish: (i) managing interactions within the group of participants to ensure a friendly but issue-focused atmosphere and positive experience from joint discussions, (ii) stimulating dialogue and ideas exchange, and (iii) assisting the group in reaching the meeting's goals and delivering high quality outcomes (Kolb et al. 2008). If a facilitator is successful in his/her role, the participants are willing to listen to each other, to learn from each other and to collectively structure the problem at hand (Hogan et al. 2014a). It should, however, be underlined that the participants will rarely agree on all aspects of the proposed problems or solutions (Hogan et al. 2014a). The facilitator is a person that takes full responsibility for the collaborative workshop, controls the process, encourages dialogue (but not debate), manages time, and changes the workshop programme if deemed necessary (Warfield and Cárdenas 1993; Hogan 2003). The facilitator should have good communication and team-building skills, be open-minded, neutral and good at conflict mitigation as the diverse values and opinions expressed during the workshop may lead to tensions between the participants (Vennix 1996).

The workshop itself should be a forum that allows all participants with different educational levels and social statuses to meaningfully contribute to the final product (or products) but — at the same time — should not be a platform for long individual speeches, political advertising and political debates, or exchange of purely scientific theories and views (Hogan et al. 2014a). Therefore, relevant techniques should be employed to ensure the equity of the participants (Schein 1999) and empower less active and quieter members of the group to speak up (Hogan 2003). These techniques can be verbal or non-verbal. Examples of such techniques include asking questions, redirecting, referencing back, paraphrasing or active listening, voice modulation or maintaining eye-contact (Paulsen 2004). In fact, active listening is considered as one of the most important facilitator's skills (Kolb et al. 2008). Further and perhaps most importantly, a facilitator cannot — at any time — take the role of a participant. It means that

he or she can neither express opinions or ideas about the discussed problem, evaluate or assess the proposed solutions, reveal preferences for any options nor involve into discussions or debating with the members of the group (Hogan 2013). A facilitator needs, however, to have good knowledge about the problem addressed, about the goals of the workshop and the expected use of outcomes and results (Warfield and Cárdenas 1993).

Building on the different roles assigned to a facilitator (or to a facilitating team) and to participants, it is important to differentiate between three key concepts — (i) context, (ii) content, and (iii) process — that are important for the Interactive Management methodology (Warfield and Cárdenas 1993; Hogan et al. 2014a).

Context refers to the current situation, external conditions and circumstances, in which the problem and the organization is located. In other words, context defines the boundaries for the group's dialogue, it frames the group's experience and it specifies issues to be discussed, purpose(s) and goal(s) of the process (Strachan 2006); the process is here understood an Interactive Management collaborative workshop (Warfield and Cárdenas 1993; Hogan et al. 2014a). Context needs to be well defined in the planning phase and needs to be well understood by both the facilitating team and the participants. Otherwise, insights into the problem and solutions developed might not properly address the purpose(s) for which the collaborative workshop is being organized (Warfield and Cárdenas 1993). There are many factors that need to be recognized when the future context of any process is explored and defined. These factors — depending on the issues to be addressed — might include backgrounds of the participants, their education, social status, professional and family experiences, lifestyles, and power inequalities. These factors can also include resources available for the process, the expected commitment of the participants, the entity that organizes Interactive Management workshop, and the use of the process's results. It is worth underlying that what works for one group of participants might not work for another group even if some or all conditions remain the same (Strachan 2006).

Content is what participants of the workshop actually contribute to better understand or address the problem defined in the planning phase. Content is the most important part of the collaborative workshop (the second phase of the Interactive Management Methodology) and is provided solely by the participants (Hogan et al. 2014a). As noted above, facilitators should not influence or assess the content in any way.

Finally, all activities that lead to achieving goals defined for Interactive Management are called process (Hogan et al. 2014a). In the case of the collaborative workshop, the process refers to the group experiences being managed and structured (Strachan 2006). The process is solely managed by a facilitator (Warfield and Cárdenas 1993, Hogan et al. 2014a), who should actively react to what is happening within the group and change the workshop plan if required (Hogan 2003). It is crucial for the successful implementation of the Interactive Management methodology, and especially for the collaborative workshop, that both the facilitating team and the participants differentiate between these three concepts and do not

attempt to undertake tasks or actions that are not assigned to them. Failing to achieve that may severely compromise the outcomes of the collaborative workshop (Hogan et al. 2014a).

Getting the right set of participants to attend the collaborative workshop, likewise for all initiatives where stakeholders input is expected, is crucial for the knowledge co-creation and the workshop's ultimate success. In order to achieve the meaningful mixture of participants, it is necessary: (i) to define who the stakeholders (or social actors) are for the particular problem (i.e., stakeholders' identification) (ii) to identify whose knowledge and experience would be most useful to address the issues at hand (i.e., stakeholders' analysis), and (iii) to decide what actors and stakeholders should finally be invited to collaborate to secure fair representation of the previously identified stakeholders' groups (i.e., sampling procedures; Chevalier and Buckles 2013; Hastings and Domegan 2014; Orr 2014; Domegan et al. 2016).

There is no single definition of a stakeholder or a social actor. The definition has evolved in time and is context-dependent (Friedman and Miles 2009; Reed et al. 2009). For example, Friedman and Miles (2009) present over 40 different stakeholder definitions, which can be characterized by various level of openness. Some stakeholder definitions are narrow and instrumental, e.g., (i) groups or individuals whose personal goals are dependent on the process or on the organization, which — in turn — is also dependent on the very existence of these groups and individuals (Steadman and Green 1997), or (ii) actors whose support is crucial for the organization to survive (Bowie 1988). Other definitions are more open for different interests and stakes and define stakeholders as (i) everyone that has interests in what a company or an organization is doing (Frederick 1998), or (ii) as individuals, groups of individuals and organizations who have direct or indirect contacts with the company (Ruf et al. 2001), or (iii) as those whose interests are affected positively or negatively by the company's or organization's decisions (Cragg 2002). These more open definitions underline that stakes and interests cannot be limited to monetary and economic dimensions but should also include moral aspects of the relationships between humans and organizations (Hendry 2001). Therefore, some authors consider past and future generations as legitimate stakeholders (Norton 1989; Hubacek and Mauerhofer 2008) as well as the non-human livings (e.g., species), non-living nature (e.g., landscapes; Norton 1989; Starik 1995) or even spirits (Chevalier and Buckles 2013).

Perhaps the most widely used definition of a stakeholder is based on Freeman's (1984) stakeholder theory (Reed et al. 2009). This theory stipulates that "*A stakeholder in an organization is (by definition) any group or individual who can affect or is affected by the achievement of the organization's objectives*." (Freeman 1984, p. 46). This is also one of the definitions that Orr (2014) finds most suitable for environmental decision-making and stakeholder collaboration in the field of nature conservation. Such an open approach allows to embrace a wide spectrum of stakeholders, empower less privileged groups and individuals and actively inform about decisions and actions to be undertaken and their consequences. This is essential for the nature-related proceedings (Orr 2014).

Freeman's definition of a stakeholder neither explicitly refers to legitimate stakeholders nor exclude illegitimate ones. One can, however, argue that most stakeholders' definitions assume some kind of legitimacy, and, therefore, the concept of legitimacy is neither properly defined nor commonly discussed (Mitchel et al. 1997; Friedman and Miles 2002; Reed et al. 2009). According to some authors, legitimacy is less important. For example, Roeder (2013) suggests that the perceived influence on one's well-being is enough to gain legitimacy towards a project or decision to be undertaken. Frooman (1999) goes even further and proposes that legitimacy or social appropriateness of stakeholders' claims cannot be a decisive factor to acknowledge or deny a person the status of a stakeholder. Nevertheless, these voices are in minority. For the purpose of this study, I have decided to adopt the definition of legitimacy put forward by Mitchel et al. (1997) in the theory of stakeholders' identification and salience. Legitimacy is there defined as "*generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, definitions*[51]." (p. 869). To further operationalize this definition, for the stakeholder identification phase, I used three out of four legitimacy criteria (Friedman and Miles 2009): (i) limited radicalism (i.e., the discourse presented by a given stakeholder should be within the definition of sustainable development), (ii) limited will for confrontation (i.e., openness to discuss and to seek available solutions), and (iii) competences of the individuals or of the organization's representatives (to allow for meaningful discussions and knowledge co-creation). I have decided not to assess the fourth criteria suggested by Friedman and Miles (2009), i.e., the similarity of the stakeholders' language to the language used by the organization. This criterion is — first of all — relatively difficult to assess without a deeper study, and second — for the purpose of my thesis — I was looking for the whole spectrum of views and opinions on sustainable development of marine and coastal areas. Finally, and most importantly, there is no clearly defined organization against which similarities should be assessed. My study is predominantly a scientific exercise but scientific jargon would not make a good assessment factor.

All the above definitions refer to stakeholders and make no explicit difference between stakeholders and social actors. In this study, I also use these terms interchangeably. There are, however, some definitions that differentiate between 'actors' and 'stakeholders'. For example, when analysing coastal resources management in Sweden, Morf (2006) suggests that actors need to be actively involved in the conflict or in the process and that their behaviour needs to influence how the conflict is developing, how it can be managed, and what possible solutions can be implemented. Stakeholders — unlike actors — can be passive but are linked to a problem at stake through their interests or through resources they control.

[51] Mitchel et al. (1997) provides this definition after Suchman (1995) and Weber (1947). I have chosen this definition as it is rather open (i.e., can easily fit various contexts), and – perhaps more importantly – it assumes that legitimacy is, indeed, a social good that should be actively strived for (Mitchel et al. 1997). The latter is actually the main argument why this definition should be used for stakeholders' identification in enrironmental management (Mitchel et al. 1997).

Obviously, the role of 'an actor' or of 'a stakeholder' is not permanent and can be changed as the process is developing.

For the purpose of this thesis, I have chosen to follow Freeman's definition of a stakeholder. It is not only one of the most popular approaches to stakeholder analysis (Reed et al. 2009), also in nature-human interactions (Orr 2014), but this definition is also commonly used in social marketing (e.g., Hastings and Domegan 2014; Domegan et al. 2016). Freeman's stakeholders' definition embraces both active (those affecting) and passive (those being affected) stakeholders (Grimble and Wellard 1997), what allows to include actors representing the 'whole-system-in-the-room' representing micro, meso and macro scales (or systems)[52] of interactions (Domegan et al. 2016) between humans and marine and coastal ecosystems.

To sum up, stakeholder identification in this thesis is based on the 'whole-system-in-the room' approach that involves legitimate active and passive stakeholders representing three different systems: microsystem, mesosystem and macrosystem. There was yet another decision to be taken, i.e., how the stakeholders should be identified. There are several approaches to address this issue. These approaches include identification: (i) by experts, (ii) self-selection, (iii) by other stakeholders, (iv) using census and population data, and (v) using information from the previous meetings (Chevalier and Buckles 2013). Identification by experts involves persons with a deep knowledge of a problem and its context (Chevalier and Buckles 2013), who usually work in small interactive groups (Bryson 2004). Ideally, they represent different fields, organizations and diverse points of views as it increases the probability that a smaller number of stakeholders will be omitted (Domegan et al. 2016). Self-selection is based on the stakeholders' willingness to participate. In other words, information about the meeting is being announced and disseminated, e.g., through media or using social networks, and only interested stakeholders, who register to the meeting, take part in the event. In the selection by other stakeholders, first a small group of key players is chosen and then these key players are asked to suggest other individuals and organizations, which — in their opinion — should be given an opportunity to get involved. It is extremely important that these key players represent various opinions about the issue or at least are able to ensure that the final composition of the group attending the event(s) does not share one perspective. The last two methods (using census and population data, and information from previous meetings) are similar. In the first of these two, information is retrieved from available databases about the population. It is important to underline that such information should not be limited to statistical demographic data but should, if possible, include information about qualitative factors. Finally, in the last method, stakeholders are identified through reviewing minutes or other documents that were developed to document events which can be assessed as similar to the present issue at stake (Chevalier and Buckles 2013). All these methods have

[52] In the simplest way, the microsystem can be understood as an individual and its choices, the meso-system as the close environment of this individual (e.g., family, school, neigbours or peers), and the macrosystems as the broader environment (e.g., politics, laws, culture or social class; Hastings and Domegan 2014; Domegan et al. 2016).

advantages and disadvantages, and in practice, a combination of these methods is often used (Chevalier and Buckles 2013).

For the purpose of this thesis, for the maritime sectors, I have chosen an expert approach, which was — when possible — complemented with advice from other stakeholders. Identification of the general public was a mixture of census and population data with the self-selection approach. These approaches allow to best accommodate the scientific goals of the study (i.e., exploring how various maritime sectors and coastal communities conceptualize sustainable development of marine and coastal ecosystems) and the requirements of the methodology and adopted stakeholder definition (i.e., the 'whole-system-in-the-room' approach). By using these methods, I was able to maintain relatively high control over the identification and recruitment process, but at the same time, I was able to accommodate guidance coming outside academia.

In the next step, the identified stakeholders and stakeholders' groups should be analysed in order to better understand how they interact with their environment and with each other, and how they can affect or are affected by the project, the process or the decision. Stakeholder analysis allows to recognize and categorize conflicts of interests, nature and strengths of stakeholders' claims, and real and perceived power to influence the issue at stake (e.g., Babiuch and Farhar 1994; Bryson 2004; Reed et al. 2009; Mainardes et al. 2012). Stakeholders analysis is often a project on its own and it is not an easy task. There is no single method or set of methods that can be employed to analyse stakeholders for a given project or policy development (Reed et al. 2009). In addition, most methods are not easy to implement as they are generic and descriptive (Chevalier and Buckles 2013) and should often be complemented by direct interactions with identified stakeholders (e.g., Bryson 2004). Stakeholder analysis tools oftentimes need to be adapted to the local contexts in order to properly embrace local situations, terms, ideas and relations. Before the analysis is done, it is necessary to identify who should perform the analysis and for what purposes. The way these questions are being answered affects the outcomes of stakeholder analysis (Chevalier and Buckles 2013).

One of the most popular methods to evaluate stakeholders is the assessment of their interests and the levels of influence and is sometimes called 'power vs. interests' grid (Bryson 2004; Reed et al. 2009). This technique distinguishes four groups of stakeholders, i.e., (i) key players (high interests and high influence), (ii) context setters (high influence, little interests), (iii) subjects (high interest and low influence) and (iv) crowd (little interest and little influence). A similar approach is used in the technique called stakeholder rainbow (Chevalier and Buckles 2013). Here, the stakeholders are classified according to how much they can be affected by the project or the decision (three groups; little, moderate and highly affected), and inversely how much they can influence the project or the decision (three groups from low through moderate to high influence). Problem-frame maps (Bryson 2004) combine opposition or support (strong or weak) towards the project or the decision with stakeholders' power (low and high). Similarly, Layton (2015) proposes to evaluate stakeholders according to their

willingness to change the current situation and groups them as incumbents (who want to maintain status quo), challengers (who supports the change) and governmental agents (whose reactions depend on the actions and power interplay between incumbents and challengers). Roeder (2013) evaluates stakeholders' knowledge on the project or the decision, and categorizes stakeholders as (i) those who have no knowledge about the activities at stake (unsure stakeholders), (ii) those who oppose the project or decision (resistant stakeholders), (iii) those who are neutral, (iv) or supportive (support the project or the decision but in a passive way, and (v) leading stakeholders who act for the project or the decision implementation. In the urgency and salience model (Mitchel et al. 1995), stakeholders are assessed against their power, legitimacy, urgency and salience, and are grouped into eight groups, including non-stakeholders. This model is further revised by Chevalier and Buckles (2013), who use three levels of power (P), interests (I) and legitimacy (L) to arrive at similar eight groups of stakeholders (i.e., dominant (characterized by P, I and L[53]), forceful (P and I), dormant (P), influential (P and L), respected (L), vulnerable (I and L), marginalized (I), and non-stakeholders. Assessment in other methods (e.g., actor-linkage matrices) is based on the identification of synergistic and antagonistic organizations, and possible strategies for coalitions in policy development (Mehrizi et al. 2009; Reed 2009). Actor-linkage matrices are often complemented with the analysis of the moderating factors that influence relations between institutions (or policy goals) and stakeholders (Polosky et al. 2002). These factors include (i) relationship orientation (cooperative, individualistic, or competitive), (ii) trust, (iii) communication style, (iv) learning (v) power (normative, utilitarian or coercive), and (vi) reciprocity and commitment. This analysis allows to create the loyalty ladder and establish basis to assess which stakeholders are willing (or not) to get involved in the initiative in the long term. The readiness analysis helps to define capacities for self-governance and puts stakeholders' goals and strategies in the context of communities (and/or stakeholders' organizations; Plested et al. 2017). Evaluating community's readiness to change (from no awareness, denial and resistance, vague awareness, pre-planning to ownership) helps to identify what are the most important problems that prevent change, and what should be done to increase the community awareness of a problem and effectiveness of current and potential solutions (Plested et al. 2012). Similarly, for the segmentation and targeting purposes for social interventions at individual and community levels, stakeholders are assessed through three criteria: (i) personal characteristics (including demographic, psychographic and geo-demographic factors), (ii) past behaviour, and (iii) benefits sought (Hastings and Domegan 2014). Such segmentation allows determining how far (or how close) selected groups of stakeholders are to the situation desired and what constraints them from moving towards that direction. In addition, that distance can be measured according to the stages of the change theory (Prochaska and DiClemente 1983; Hastings and Domegan 2014) that classifies willingness to change into five phases starting from (i) pre-contemplation (awareness but no interests in changing status-quo), through (ii) contemplation (interest to

[53] Affiliation with the group is based on the number of assessment criteria (power, interests or legitimacy) assigned to a particular stakeholder. Required criteria are given in brackets.

change), (iii) preparation (preparation for change), (iv) action (the actual process of change), and (v) maintenance (commitment to new situation or behaviour). Ethical analysis grid (Bryson 2004) investigates who and what counts from the ethical perspective or in other words, what should be done to support common well-being and what actions should be avoided in order not to harm those most vulnerable. This analysis evaluates dependency on the government, vulnerability of identified stakeholders to the actions to be undertaken, importance and seriousness of claims, accessibility of resources, a risk to stakeholders' values, and expected policy impact on individuals and groups of individuals (Bryson 2004). Social network analysis (Reed 2009; Bodin et al. 2011) allows to assess the existence and strength of relations and ties between various stakeholders, and how these ties enable or constraints actions that different stakeholders are willing to undertake.

However, for the purpose of this thesis, I have chosen yet another classification of stakeholders. In order to ensure that stakeholders representing three scales or three systems (micro-, meso-, and macro-) are represented in the Interactive Management workshop, I use the concept of primary and secondary stakeholders and influencers (Domegan et al. 2016). This concept builds on the stakeholders' classification put forward for the strategic management purposes that differentiates various stakeholders according to their 'interests' or 'stakes' towards the company, the organization[54] (Freeman 1984) or the issues or the problem (Domegan et al. 2016). Equity stake represents the interests of owners, including managing directors, market (or economic) stake represent the interests of customers, suppliers or competitors, and kibitzers stake represents the interests of all entities that have some linkages with a company but often not in marketplace terms, e.g., governments, consumer advocates or interest groups (Freeman 1984). In the classification proposed by Domegan et al. (2016) for the purpose of identification of barriers to the sustainable development of European seas and coasts, equity stakeholders become primary stakeholders, economic stakeholders equal secondary stakeholders, and kibitzers are named influencers. Further, primary stakeholders are defined as these individuals, groups of individuals or organizations whose economic and social well-being is directly dependent on marine and coastal resources. The welfare of secondary stakeholders is dependent on marine and coastal resources only indirectly, i.e., it is connected with the well-being of the primary stakeholders

[54] In the stakeholder literature, only two groups of stakeholders are often distinguished, i.e., primary (or definitional) and secondary (or instrumental) stakeholders (Freeman et al. 2007; Freeman et al. 2010). Primary stakeholders are vital for the company or for the organization to sustain its long term survival and growth, e.g., customers, suppliers, employees. Failure to maintain good relationship with these stakeholders might cease the organization to exist. Secondary stakeholders are situated in the broader environment of the company or the organization; they can influence activities of primary stakeholders, and, therefore, the organization must consider their actions. They include competitors, consumer advocate groups, special interest groups but also media, authorities of various levels and governmental agencies (Freeman et al. 2007; Freeman et al. 2010). This classification is, however, more suitable for business analysis and does not allow to properly distinguish between micro-, meso- and macro- systems and, therefore, its extended version was assessed as more suitable for this study and implemented in the planning phase of the Interactive Management methodology. Primary and secondary stakeholders are also categories put forward by Clarkson (1995). Here, primary stakeholders are understood as these having formal links with the organization while secondary stakeholders have only informal bounds.

without whom they would not have their livelihood. Influencers' well-being does not depend on sea and its resources but these actors can impact activities of primary and secondary stakeholders, also through their power to establish legal conditions, in which other stakeholders have to operate (Domegan et al. 2016). The control that stakeholders have is not exclusively related to market processes but also to other assets such as information, communication networks or values (Hastings and Domegan 2014). Examples of primary stakeholders include fishers or naval services, hotels or beach artists can be defined as secondary stakeholders while media, non-governmental organizations or government agencies can be defined as influencers (Domegan et al. 2016). It should be, however, underlined that the above examples are context-dependent. Depending on how the context is defined (or otherwise what marine or coastal resource is being discussed), the same stakeholders' organization can be classified as a primary or secondary stakeholder. Therefore, although pragmatic in spirit, the proper delimitation of stakeholders groups is not a trivial task (Chevalier and Buckles 2013). It is often difficult to decide when certain stakeholders can be treated as individuals, and when they can (or should) be considered as a group (Chevalier and Buckles 2013). Further, some stakeholders belong to more than one group (Chevalier and Buckles 2013), and these affiliations can be flexible and can change over time (Hastings and Domegan 2014). Finally, when an organization is considered to be a stakeholder, it is necessary to identify the right person who can present the views and opinions of the entire organization and its members. Individuals representing wider communities can have their own stakeholder profile(s), and these profiles — in some cases — may override the opinions of the organization (Chevalier and Buckles 2013; Orr 2014).

In the case of the general public, categorization for primary and secondary stakeholders and influences is not helpful. In the second part of my study, I aim to assess how the people who live by the sea — but whose well-being is not directly dependent on the coastal and marine resources[55] — conceptualize sustainable seas and coasts. Therefore, I aimed to recruit the group of participants, which — to the most possible extent — resemble (some) characteristics of the target population.

Finally, the last decision concerning stakeholders is who is to be invited to the Interactive Management collaborative workshop. There are two main sampling procedures, i.e., probability and non-probability sampling (Babiuch and Farhar 1994; Bryman 2012). Probability sampling assures that each individual in the population has the same chance to be chosen (random selection) while non-probability sampling implies that some individuals are more likely to be selected than others. The first sampling procedure is relevant for the quantitative research while the second predominates in qualitative studies (Bryman 2012). There are three major approaches to non-probability sampling: (i) convenience sampling, (ii) purposive sampling, and (iii) quota sampling (Babiuch and Fahrar 1994). Some authors (e.g.,

[55] Indeed, the humans' well-being is in general dependant on the health of (marine) ecosystems (Degórski 2010; Franke et al. 2020) but I was looking for more direct (economic) connection for the purpose of this study.

Dattalo 2008) add snowball sampling as a fourth approach[56]. In the convenience (opportunistic or availability) sampling stakeholders are selected based on the accessibility criterion; the sample consists of these individuals who are readily available (Babiuch and Fahrar 1994). This sampling method has, however, the biggest sampling error. It usually does not represent the whole community and does not necessarily include their typical representatives (Dattalo 2008). In purposive sampling, the sample is designed to focus on a particular topic or question. This method aims to select these stakeholders that are able to contribute to the issue at stake in the most meaningful way, can provide important or desired information, and are most relevant to assist in answering the questions or in finding the solutions (Babiuch and Fahrar 1994, Jupp 2006). Quota sampling aims to replicate the composition of the target population; stakeholders are selected within a pre-defined population matrix and the proportion of stakeholders in each group should represent the real-life situation (Babiuch and Fahrar 1994; Bryman 2012). Snowball sampling relies on key stakeholders or other gatekeepers who are requested to recruit or assist in the recruitment of other potential participants (Jupp 2006; Dattalo 2008).

For this thesis, I have selected two different methods. Purposive sampling was used to recruit the representatives of maritime sectors to ensure access to the right knowledge and diverse points of views. In the case of the coastal communities (i.e., the general public), I used quota sampling to involve the mixture of participants that would resemble the original population.

2.2.3 The implementation phase

The implementation phase of Interactive Management is usually implemented in the form of a collaborative workshop with a serious of steps. These steps can vary process to process or workshop to workshop but in general they include: (i) identification and clarification of ideas, (ii) categorization of ideas, their ranking and selection, (iii) structuring the ideas into graphical representation, i.e., influence structure or influence map, and (iv) evaluating and discussing the influence map (Warfield and Cárdenas 1993; Broome 2006; Hogan et al. 2014a). Some authors (e.g., Hogan et al. 2014a; Domegan et al. 2016) suggest additional phase: generation of options to support the implementation of the generated ideas. The workshop is supported by the dedicated software (interpretive structural modelling software), in which all the phases are recorded (Broome 2006; Hogan et al. 2014a).

In the first step, the group of participants recruited in the planning phase is gathered together and is presented with the trigger question. The trigger question should be designed to stimulate discussions between the participants and must be well embedded in the context of the Interactive Management process (Hogan et al. 2014a). The trigger question needs to be well understood by the participants as it (…) *synthesizes, focuses, and drives the deliberations and becomes purposive.*" (Alexander 2002, p. 116). After the trigger question is presented to

[56] These four approaches do not cover all possible methods of non-probability sampling. Other techniques include theoretical sampling, criterion sampling, extreme or deviant case sampling, typical or critical case sampling or maximum variation sampling (e.g., Jupp 2006; Bryman 2012).

the participants, they silently start to generate ideas (the total number of ideas usually vary between 50 and 200), which are related to a problem in the stimulus question. It is advised that silent generation of ideas does not exceed 30 minutes in order to ensure enough time for discussions and further steps foreseen in the Interactive Management workshop (Warfield and Cárdenas 1993; Hogan et al. 2014a). Ideas generated during this phase are presented to the whole group and their meaning is clarified so that all members of the group understand them in the same way. During this process, additional ideas usually emerge (Hogan et al. 2014a). Idea generation phase should ideally continue up to the moment when participants are not able to propose any new ideas (Domegan et al. 2016). However, the time available for the workshop can work as a constraint to achieve this ambitious goal (Warfield and Cárdenas 1993). During this stage, no idea should be discarded as there are no good and bad answers. The participants should be encouraged to freely discuss the issues at hand as further steps allow to agree, which of these ideas are more or less important for the problem addressed during the Interactive Management workshop (Warfield and Cárdenas 1993).

The goal of the second step is to select the most important ideas for the structuring phase. This phase can include categorization of the ideas based on their similarity and various voting or ranking procedures (Hogan et al. 2014a). There is neither one preferred or suggested voting or raking procedure nor the guidelines on the number of ideas that should be selected and used in the structuring phase (Hogan et al. 2014a). Time scheduled for various parts of the workshop is often the limiting factor for the number of ideas to be selected. This is because structuring is indeed time-consuming task with many decisions to be undertaken by the participants (Warfield and Cárdenas 1993). It is, however, important that the ideas selected for the next phase are critical for the problem at hand, and that participants should be happy with the selected ideas (Hogan et al. 2014a).

In the third step, the structuring phase, selected ideas are compared in pairs using the same question for each comparison (Broome 2006; Hogan et al. 2014a). The goal of this phase is to define relations between the ideas. The nature of these relations, and hence the comparison (or relational) question, is a direct consequence of the trigger question. At the general level the comparison question usually takes the following forms: *"Does idea A relate in X manner to idea B?"* (Broome 2006, p. 131) or *"Does A influence B?"* (Hogan et al. 2014a, p. 404). Structuring usually leads to the influence structure (or influence map) or to the priority structure (or priority map). In the first case, comparison question focuses on relations of 'support' or 'aggravation', and the questions might read: "In the context X does idea A significantly support idea B?" or "In the context X does barrier A significantly aggravate problem B?". When the focus is put on priority, the questions can, for example, read: "In the context X is idea A more important than idea B?" or "In the context X should idea A be learned (or addressed) before idea B?" (Broome 2006).

After the comparison question is presented to the workshop's participants, they are to discuss the presented interrelation and decide if it exists (the 'yes' vote) or if it does not exist (the 'no' vote). The group should take decisions based on the consensus (Hogan et al. 2014a) but

if it is not possible the voting procedure can also be employed (Broome 2006). When the participants decide on the existence (or lack) of the relation for the first pair of ideas and the choice in entered into interpretative structural modelling software, another pair of ideas is being presented and another decision is to be taken (Broome 2006). These series of judgements allow creating the influence map that in the next step of Interactive Management workshop is presented to the participants for evaluation.

In the last step of the workshop, the graphical representation of the common perception of the problem, i.e., the influence map, is being presented to the workshop participants. The aim of this phase is to discuss the map with the participants in order to assess its accuracy, and — if necessary — to amend it (Warfield and Cárdenas 1993).

Finally, and as mentioned earlier, some authors (e.g., Hogan et al. 2014a; Domegan et al. 2016) postulate that additional step, i.e., generation of options, should be implemented. If this is the case, the participants are presented another trigger question that should stimulate generation of solutions or actions plans that could support overcoming the identified barriers or problems or support implementation of the generated ideas (Hogan et al. 2014a). The option generation is often accompanied with the voting procedures in order to select the set of the most important or most feasible solutions (Domegan et al. 2016).

The Interactive Management workshop concludes when the set of steps is implemented. However, a successful workshop needs to pass one additional assessment. The workshop participants need to critically assess the results of each step and at least the majority of participants needs to be satisfied with the results obtained, e.g., with the influence map or with the sets of most important barriers or solutions (Hogan et al. 2014a).

2.2.4 The follow-up phase

There are various goals of the follow-up phase of the Interactive Management methodology. They can include further interactions with the workshop participants, planning for the implementation of solutions generated during the workshop, or the actual implementation of the workshop outcomes (Alexander 2002). The follow-up phase may also mean planning for another round(s) of Interactive Management workshop(s) if the results obtained so far do not fit the purpose for which the workshop was organized (Warfield and Cárdenas 1993). Therefore, the content of the follow-up phase is idiosyncratic to the purpose of the Interactive Management workshop and should be planned depending on the context defined in the planning phase (Alexander 2002).

3 The Pomeranian province as a case study area

3.1 The case study area

As described in the sub-chapter 2.2, stakeholder identification and mapping are important steps to implement the Interactive Management methodology. So the first two decisions (or steps) that needed to be undertaken to implement this method — in the context of sustainable development of marine and coastal areas — were the selection of: (i) the case study area, and (i) the maritime sectors and coastal communities, which views and opinions were to be explored.

The Pomeranian province[57], one of the three Polish provinces that border the Baltic Sea[58], and the marine areas off its coast (Figure 1) were chosen as the case study for a number of reasons, which are discussed below.

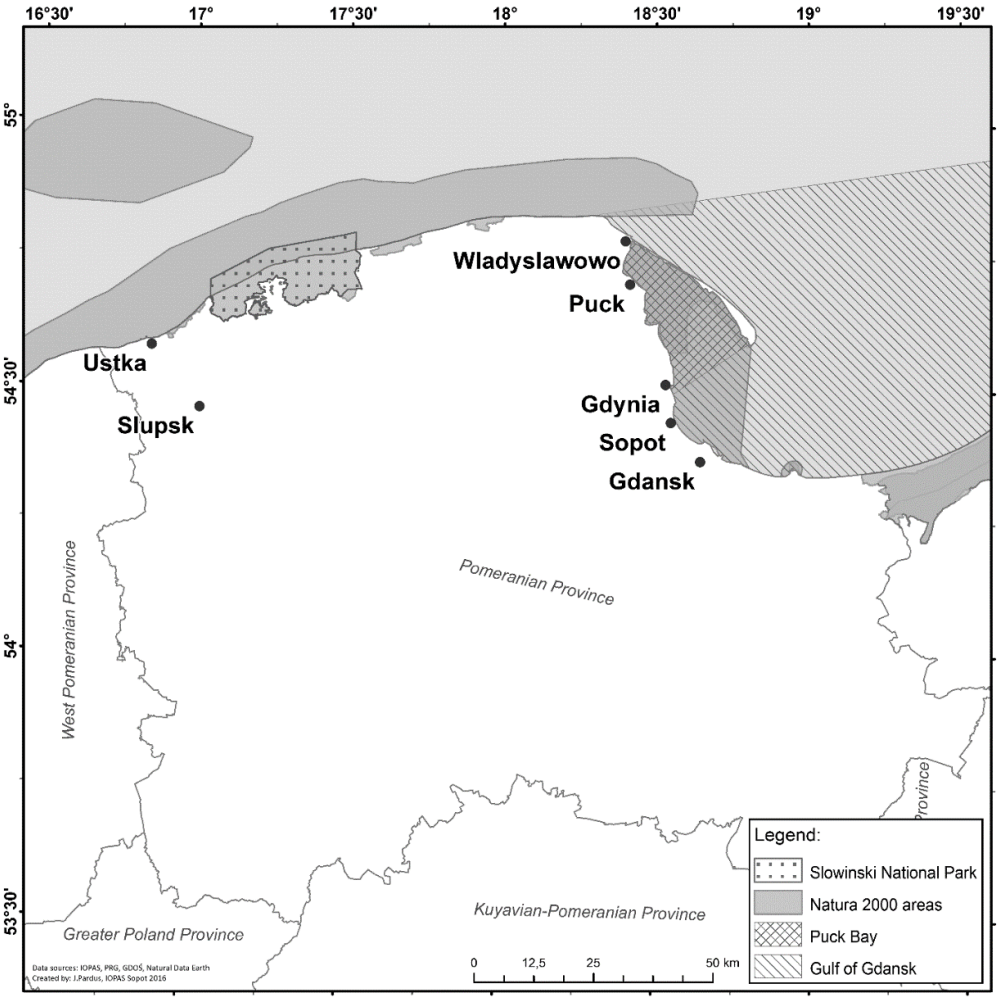

Figure 1 The case study area
Source: Created by Joanna Pardus (2016) based on data retrieved from IOPAS, PRG, GDOŚ and Natural Data Earth.

[57] It was impossible to cover the entire Polish coast due to the limited resources available for the study.
[58] The other two include West Pomeranian and the Warmian-Masurian provinces.

Firstly, the Pomeranian province in its 'Development Strategy' (DS 2012) underlines its strong relations with the marine environment of the Baltic Sea and its commitment to developing according to the sustainable development paradigm. The province strives to become an international transportation hub, aims to promote the development of shipping, logistics and shipbuilding industry, also in the context of future off-shore investments. Two ports of national importance and ten smaller ports are located within its borders (Krzymiński et al. 2014) And, indeed, both maritime and logistics sectors are important for regional economy generating respectively 7% and 6% of the whole province's production (Sagan and Masik 2014). Although in Poland fishery is a sector in decline, fishing communities are still active in this region (Krzymiński et al. 2014). Tourism is one of the best-developed sectors in the Pomeranian province and it greatly benefits from the coastal landscapes and marine seascapes (SD 2012; Sagan and Masik 2018). Many small coastal towns and villages are — to a large extent — economically dependent on tourism (Krzymiński et al. 2014). However, the SWOT[59] analysis performed for the province states that the state of the natural environment and the increased pressures towards marine and coastal ecosystems can limit the province ability to develop and impact negatively health and well-being of the province's residents (DS 2012).

Secondly, the Pomeranian province is important for marine and coastal environment and it has many protected and environmentally-valuable sites (Figure 1). Marine protected areas off the coast of the Pomeranian province are managed under three three protection instruments[60] foreseen in the Polish legal system, i.e., national parks, coastal parks and NATURA 2000 areas designated for birds and habitat protections (Opioła and Kruk-Dowgiałło 2011). All NATURA 2000 areas hold in addition the status of the HELCOM Baltic Sea protected areas (MIG 2016). Among these three (or four) forms, '*Nadmorski Park Krajobrazowy*' established in 1978 is the oldest system of marine protection in the region. '*Słowiński Park Narodowy*' was created in 1996, while the process of establishing of NATURA 2000 sites has only started in 2004 (Opioła and Kruk-Dowgiałło 2011). The province is only responsible for the first form of protection, i.e., for the '*Nadmorski Park Krajobrazowy*', while both — the national park and NATURA 2000 areas — were designated at the national level and their management is outside the province's competencies (NCA 2004). Protected areas on the coast and on the sea are currently under the large pressure from coastal municipalities and investors that strive to increase the economic utilization of these areas (Szwichtenberg 2006; Mizgajski and Stępniewska 2012). These pressures definitely fuel local and regional tensions in and outside the region (Węsławski et al. 2010; Michałek and Kruk-Dowgiałło 2015), and demands and expectations of the tourism sector are important sources of 'human' — 'nature' conflicts in the case study area (Kistowski 2005; Kistowski 2008). Indeed, the carrying capacity

[59] SWOT stands for Strengths, Weaknesses, Opportunities and Threats.

[60] In 2018 (after this study was completed), the first marine reserve was established. The existing 'Rezewat Beka' was extended to the marine waters of the Puck Bay.

of some of the valuable areas around the Gulf of Gdańsk has already been exceeded, and this process is expected to continue (Kistowski et al. 2005).

Thirdly, marine waters around the Pomeranian province include open waters of the Baltic Sea in the west and the Gulf of Gdańsk in the east, where there is a mix of brackish and marine waters. The Puck Bay with shallow waters is the most sheltered part of the Gulf of Gdańsk, and an arena for the intensive conflicts between nature conservation, tourism and fisheries (Węsławski et al. 2010). Various marine and coastal ecosystems (or areas) provide various opportunities for economic use. For example, the location of the off-shore wind farms is restricted to 12 nautical miles along the coast (MIG 2016). Fishing with drag gears is forbidden at the depths less than 20 meters and within three nautical miles from the coast (Zaucha 2010), and, therefore, different fishing strategies are relevant for various parts of the case study. Fishing with passive gears is concentrated in the Vistula Mouth and in the outer part of the Puck Bay (Węsławski et al. 2010) while intensive trawling occurs in the open waters and in the eastern part of the Gulf (MIG 2016).

Finally, marine waters in the area, and especially the Puck Bay and the Gulf of Gdańsk, are subject to different managerial initiatives with relatively significant public involvement. In fact, the Pomeranian province is one of the most socially and politically active regions in Poland with many non-governmental organizations actively involved in local and regional proceedings (Sagan and Masik 2014; Sagan and Masik 2018). The managerial initiatives include both activities related to planning economic uses of the region (i.e., marine spatial planning) and conservation (i.e., preparation of the management plans for the NATURA 2000 sites; e.g., Zaucha 2012, Piwowarczyk and Wróbel 2016). For example, already in 2008, the pilot maritime spatial plan was developed for the west part of the Gulf of Gdańsk. The pilot plan was prepared within the PlanCoast[61] project, it was not legally binding but the maritime administration, that is responsible for the Polish marine areas, considered it to be the compendium of the best available knowledge and know-how. In this way, this plan impacted actual management of the Gulf of Gdańsk being used as guidelines to inform decisions when no regulatory spatial plans were available[62] (Zaucha 2010). Throughout 2012, a series of consultation meetings were organized to consult the development of protection plans for harbour porpoises and grey seals with some of the most vivid discussions and tensions related to the Gulf of Gdańsk region. Consultation meetings related to the preparation of the management plans of NATURA 2000 area in the Gulf of Gdańsk area took place in 2013. These meetings provided a forum, where conflicts between conservation and economic uses clearly manifested. The strongest tensions could have been observed between nature conservation, fishing and tourism (Piwowarczyk and Wróbel 2016).

To sum up, the Pomeranian province as a case study allows to: (i) include all most important maritime sectors present in the Polish waters, (ii) witness conflicts for use and access to

[61] For more details see http://www.plancoast.eu.

[62] In another project BaltSeaPlan (http://www.baltseaplan.eu/) the Strategic Environmental Assessment (SEA) for this plan was prepared as an capacity building initiative.

marine resources, and (iii) explore interactions between maritime sectors and governance processes. This — in turn — ensures that this study captures the wide diversity of backgrounds, interests, opinions and values that can be potentially located within the whole spectrum of the definitions of sustainable development.

3.2 Stakeholder identification, mapping and recruitment

3.2.1 Maritime sectors

The preliminary selection of maritime sectors selected for this study followed the 'Sea for Society' report[63] (Joyce 2012) that aimed to (i) identify and describe various relationships that humans have with seas and oceans, and to (ii) link these interactions with ecosystem services (Joyce 2012) defined as direct and indirect benefits humans obtain from coastal and marine ecosystems (Hattam et al. 2014). Six areas of human activities or six maritime sectors were identified (Joyce 2012). They include (i) food supply, (ii) transport, (iii) energy, (iv) leisure and tourism, (v) human health, and (vi) coastal areas as places to live. The above classification does not include nature conservation perhaps due to controversies if protection of marine and coastal ecosystems is 'a use' itself or rather 'the strategic objective' or 'a constraint' for other marine activities (Kyriazi et al. 2013). Despite these debates, for the purpose of this study, I have decided to consider nature conservation as a sector of its own rights. No matter how it is defined, protection of the environment has spatial (areas designated for conservation) and temporal (permanent or temporary closures) dimensions what makes it at least behaving as it was the actual use (Kyriazi et al. 2013). Furthermore, nature conservation (i) often leads to conflicts with and between various maritime users and activities (e.g., Dutkowski 1995; Wollf 2015; Ramos et al. 2015), (ii) has both positive and negative economic consequences (Kyriazi et al. 2013), and (iii) has become an important issue in decision-making, especially in marine spatial planning (e.g., Qiu and Jones 2013; Jones et al. 2016). In addition, considering nature conservation as a use ensures that conservation experts and practitioners are given an equal voice and that their views on sustainability can be directly compared with experts from other maritime fields.

One Interactive Management workshop was organized for each of the identified maritime sectors. All together seven workshops took place between autumn 2013 and spring 2015. Each workshop was attended by a group of participants, who represented the variety of backgrounds, interests and opinions centred around each sector. The identification and mapping procedure followed the classification of primary and secondary stakeholders and influencers[64] (Domegan et al. 2016). Primary stakeholders were defined as individuals whose well-being is directly dependant on marine and coastal resources. Secondary stakeholders as these persons or entities whose well-being is influenced by changes in marine ecosystems but is more directly related to changes in activities undertaken by primary stakeholders.

[63] For more information about the project, see http://seaforsociety.eu/ and http://www.bluesociety.org/. The latter web site presents the concept of sustainable coastal communities developed within the 'Sea for Society' project.

[64] See sub-chapter 2.2.2 for details and justification.

Influencers have strong connections with the Baltic Sea and its resources and their activities impact either the resources or the conditions, in which primary and secondary stakeholders have to operate (Domegan et al. 2016).

Stakeholder identification and mapping were performed by a small team of experts (three to four persons) representing various disciplines of marine sciences. This team listed all possible marine actors, which could be linked to a specific sector, or more precisely to the resource(s) that a specific sector relies on. For example, in the case of food supply workshop, the recourse was defined as fish stocks; in case of the energy workshop, the resource was wind or solar power. Each actor group was assigned — through the consensus-seeking discussions — into one of the three groups. When all stakeholders listed were classified as primary, secondary stakeholders or influences, the experts selected these groups that should be represented during the workshop. The selection process was guided by the power and interests assessment (Bryson 2004) of each stakeholder group and aimed to ensure a good mixture of various participants (between 18 and 21 for each workshop). I have not adopted a fixed number of representatives for each of the three groups of participants (stakeholders). However, the number of participants in each group was similar, i.e., the groups differed between each other only by one participant (Table 11). It was done in order to ensure that no group was given dominance during future discussions. I have used a purposive sampling approach to recruit participants for the Interactive Management workshops, and — whenever it turned possible and useful — a snow-ball approach was used to complement selection by experts.

Table 11 The list of Interactive Management workshops

Maritime sector	**Primary stakeholders**	**Secondary stakeholders**	**Influencers**	**Total**
Food supply	6	6	7	19
Transport	6	7	6	19
Energy	7	7	7	21
Tourism and leisure	7	6	6	19
Human health	6	6	6	18
A place to live	7	6	6	19
Nature conservation	7	7	6	20

Source: Own elaboration.

3.2.2 Coastal communities

The individuals coming from coastal communities (i.e., the general public) were not recruited according to the classification employed for the maritime sectors (i.e., primary and secondary stakeholders and influencers). This categorization does not fit the situation when the case

study population shares similar characteristics, what is the case for the coastal communities in this study. Here, I looked for the participants who were between 18 and 70 years old and were not knowledgeable about marine and coastal systems. Their educational background and professional life were not to be related with the sea or with the coast; hence they were not fulfilling the definition of the representative of the maritime sector. The Interactive Management participants were not to be the members of or actively supporting marine-related non-governmental organizations, sciences centres, aquaria or similar organizations. They were neither to subscribe marine-related journals or magazines nor visit the science museums or aquaria more than once the year. The recruitment for the general public aimed to include both men and women in all age ranges coming from both large and small places along the coast of the Pomeranian province. Given the relatively small size of the final sample — only three Interactive Management workshops with 14 participants were organized — our sample was not representative but it aimed to represent the age and gender groups of the population in the region.

3.3 Format of the Interactive Management workshop

In order to map barriers to the sustainable development of the marine and coastal areas in the Pomeranian province, ten Interactive Management workshops were organized: seven for maritime sectors and three for the coastal communities. The workshops shared the format and only minor changes occurred between workshops run with the representatives of the maritime sectors and coastal communities.

Before each Interactive Management workshop, a facilitating team was established. The team included four persons: the chief facilitator[65], the supporting facilitator, the operator of the interpretative structural modelling software and the technical assistant who was also responsible for taking additional notes. The workshops were recorded and later transcribed in order to provide additional data for the analytical process. Each Interactive Management workshop lasted for two days and comprised of four stages:

1. identification and clarifications of barriers to sustainable development;
2. categorization of barriers, their ranking and selection,
3. structuring the barriers into a graphical representation, i.e., creating an influence map;
4. evaluating and discussing the influence map.

A short welcome session preceded the first stage of the Interactive Management workshop. In this session, the facilitating team presented the goals and format of the workshop and both the team and the participants were given a chance to introduce themselves. It was also in this session when the participants were introduced and explained the concept of and the differences between the context, the content and the process. Overview of the information provided to Interactive Management workshops' participants is summarized in Table 12.

[65] The author of this thesis was always undertaking the role of the chief facilitator.

Table 12 Overview of information provided to the participants in the welcome session

The element of the Interactive Management Workshop	**Overview of information provided**
Context	– the workshop is about identifying barriers to the sustainable development of coastal areas of the Pomeranian province and marine areas off the coast; – sustainable development has three pillars: environmental, economic and societal; – barriers can be identified at various levels, i.e., individual, community, societal, state, Baltic Sea, international and global levels[66] but as much as possible they should be linked with participants' personal knowledge and experiences;
Content	– the role of participants is to provide ideas (barriers) relevant to the context defined above;
Process	– the facilitator team is to manage the flow of activities and the exchange of information in order to stimulate discussions and archive the workshop's goals; – the facilitation team cannot influence the content so they will not involve in the discussions;

Source: Own elaboration.

In the first stage of the Interactive Management workshop — identification and clarifications of barriers to sustainable development — the participants were first presented with the trigger question: '*What are the barriers to the sustainable development of coastal areas of the Pomeranian province and marine areas off its coast?*". The question was used in this form for all workshops run with the general public. It was slightly revised and extended during the workshops for the maritime sectors and then it read: '*What are the barriers to sustainable development of coastal areas of the Pomeranian province and marine areas off its coast in relation to the X sector?*", where 'X' was the specific maritime sector (Table 11). The trigger question was shortly discussed with the group in order to ensure that it was well understood and accepted by all participants in order to allow them to generate ideas (barriers) that were relevant for the workshops' objectives. The participants were explained that they should focus on the problematic aspects of the situation, avoid solution statements, include one idea or one thought in one barrier statement and — whenever possible — be concise. It was also clarified that there were no good or bad answers and barriers as — in the workshop — we were looking for a wide spectrum of views and opinions. After being presented with the trigger question and additional explanations, the participants were asked to silently generate barriers. There was neither communication nor discussions between participants during the silent generation of barriers. This part of barrier generation usually lasted between 30 and 45

[66] The participants were advised to focus on the case study area, i.e., the Pomeranian province and the marine areas off its shores but they were explained that barriers at international or global levels can also be listed and discussed if they see strong and direct links between the sustainable development of their sector and international policy or economy.

minutes and ended up when facilitators observed that all the participants finished writing down the barriers and — when asked — they reported that they were ready to move to the next group of activities, i.e., the round-robin presentation of the generated barriers. During the round-robin stage, each participant presented one barrier to the whole group in order to explain it and clarify its meaning. The participants were encouraged to discuss the issues presented and to ask questions. At that time no evaluation of the barriers took place in this stage. During the discussion process, new ideas were emerging and even similar barriers, that differed in a subtle way, were accepted and included in the barriers' pool. All barriers presented were recorded by the facilitators on the cards and were posted on the walls of the room in a way that they could be easily seen by all participants. The round-robin presentation continued till there were no more ideas or barriers to the sustainable development of marine and coastal areas of the Pomeranian province. This stage usually lasted around three hours with a short coffee break in between.

In the second stage of the Interactive Management workshop — categorization of barriers, their ranking and selection — the participants were first requested to group the barriers into categories that were created according to the similarities of the barriers. In practice, ten blank paper sheets were posted on the wall. Under these sheets, the participants were gathering barriers that — in their opinion — shared some commonalities. However, the commonalities could not have been defined as 'a cause' or 'an effect' relationship. It was clearly explained to the participants before the grouping started. As more and more barriers were reviewed and grouped under the blank sheets, the participants were encouraged to name the category in order to guide the grouping process. The participants could — at any time — move the barriers between various categories and change the categories' names. When all previously generated barriers were distributed between the categories, the participants were requested to review the grouping once again and decide on the final names of the created categories. The participants were free to decide about the final number of categories and the initial ten sheets were only used to start and stimulate the process. However, if categories included too many barriers with quite distant commonalities, the participants were requested to re-consider the grouping and to divide the category. A similar request was issued when there were too few barriers in the category. For practical reasons related to the voting procedure, I was aiming to have four or more barriers in at least five categories. However, when participants were not happy about dividing and merging categories, their decision was considered final[67]. The second stage ended with the voting process designed to select the most important barriers for the structuring stage. First, the workshop participants were requested to select one most important barrier in each category of barriers, i.e., one vote per category. Second, they were given four extra votes (wild cards) to select four additional barriers they considered important from any category. For example, it was possible to choose four extra barriers from a single barrier category. Finally, the facilitating team calculated the

[67] During all ten Interactive Management workshops there was only one case when the participants decided to have less than four barriers in the barrier category (see 'tourism and leisure' workshop in Table 16 and Appendix 1).

number of votes for all barriers and the 12 barriers with the highest number of votes were selected for structuring. If some barriers received equal number of votes (and more than 12 barriers would enter the structuring stage), the participants were encouraged to make the final choice through deliberation, i.e., they were free to decide if all barriers are kept in the structuring pool or one or more is excluded to limit the number of barriers to 12. Workshop participants were also requested to revise and critically reflect on their choices and changes in the barriers selected for structuring were possible to represent the groups' logic[68].

In the third stage — structuring the barriers — the participants were assessing the relations between the most important 12 barriers selected at the end of the second stage in order to create the relational map. Using the interpretative structural modelling software, they were presented the number of comparison or relational questions that read: "*Does barrier A significantly aggravate barrier B?*". The participants had to make two choices: (i) if there was an aggravation relation between the two presented barriers, and (ii) if this relation was significant. The structuring stage was to stimulate discussions between the participants and the final decision (i.e., 'YES' or 'NO' vote) was expected to be taken by the group consensus. That is why the participants were asked to explain their arguments to the whole group and present the rationales behind their opinions and choices. The role of facilitators was to ensure that participants, who had different opinions on the relational questions, are identified and allowed to provide alternative reasonings. If the group was unable to reach consensus and unanimously agree on the answer to the relational question, the voting procedure was employed. The vote was taken using a show of hands (for 'YES' and 'NO' answers separately; it was not possible to abstain from voting). The 'YES' answer was selected if at least 60% of the participants supported the existence of significant aggravation relation between the two barriers. If less than 60% supported the relation, it was considered to be non-existent. The participants continued discussing the relational questions until there were no more pairs to compare. At this point, the software displayed the relational map which allowed for reconstructing the aggravation paths that can constraint achieving sustainable development of marine and coastal areas off the coast of the Pomeranian province.

In the fourth stage — evaluating and discussing the influence map — the participants were presented the influence map that was created through their decision-making process. They were invited to discuss the aggravation paths, which are one of the most important workshops' results and decide, if they properly reflect their way of thinking on the barriers to sustainable development. It was possible to discuss the relations again and change the influence map, if the group was not happy about certain placements of barriers in the map or about the relations between them. Such restructuring allows for deeper learning about particular barriers and provides better insights into the general logic of the group. In Interactive Management workshops organized in this study, the participants engaged

[68] The voting procedure took place at the end of the first day and the evaluation of the voting outcome was performed in the beginning of the day two. That allowed the participants to have a fresh look at their choices from the previous day. However, the participants were generally happy and only in two workshops (i.e., 'transport' and 'human health') the participants decided to include 13 barriers in the structuring set.

vigorously into discussing the results but, finally, no need for revisiting or revising the structure was expressed as all groups finally embrace the influence map they created.

3.4 Steps for data analysis

Data analysis (both for data collected during the workshops for maritime sectors and for coastal communities) is divided into four general steps; Table 13 presents these steps in data analysis (i.e., the analytical framework), and further links them with the research questions described in the 'Introduction' section; these steps are also briefly discussed later in this sub-chapter.

Table 13 Analytical framework for data analysis

Name of the step	Objectives of the step	Links to the research question (maritime sectors)	Links to the research question (coastal communities)
Step one: analysis of similarities and differences between the Interactive Management workshops	– Overview of the barriers generated during the Interactive Management workshops; – Identification of the major discussions points and predominating opinions towards marine and coastal areas and their sustainable development[69];	How do the representatives of maritime sectors perceive barriers to marine sustainability? How do the representatives of maritime sectors perceive links and own responsibilities towards marine and coastal areas? How do the representatives of the maritime sectors embrace the concept of corporate social responsibility? How do the representatives of the maritime sectors embrace the ambitions of weak or strong sustainability?	How the coastal communities perceive barriers to marine sustainability? What do the barriers tell about the ways, in which the coastal communities conceptualize marine sustainability?' How do the coastal communities perceive their links with marine and coastal areas? What is the level of knowledge on marine and coastal ecosystems among the general public?
Step two: analysis of barriers focusing on environmental pillar of sustainable development (strong sustainability)	– Identification and quantification of barriers related to the environmental pillar of sustainable development; – Description of the attitudes and opinions towards strong (and indirectly weak sustainability) across stakeholder groups;	How do the representatives of the maritime sectors embrace the ambitions of weak or strong sustainability? Are sectors, which well-being is more dependent on the health of marine and coastal ecosystems, more inclined to	What do the barriers tell about the ways, in which the coastal communities conceptualize marine sustainability? How far have the coastal communities progressed on the path towards marine citizenship?

[69] In case of the maritime sectors, this overview includes also the comparison between discourse between various maritime sectors. Such a comparison is not performed for the coastal communities as the group composition for individual Interactive Management workshops are not significantly different. Comparison of the opinions expressed by the maritime sectors and and by the coastal communities is performed in fourth analytical step.

	– Putting the results of my study in the broader discussions on strong sustainability;	support the ideals of strong sustainability?	What are the most significant missing links or missing elements to embrace the ambitions of marine citizenship?
Step three: analysis of most prominent areas of social interventions (multistage influence model)	– Identifications of the most influential groups of barriers that hinder progress towards sustainable development; – Identification of the areas, where potential social interventions would have the largest and most multiplying effects; – Putting the results of my study in the broader discussions on challenges and barriers concerning sustainable development;	How do the representatives of maritime sectors perceive barriers to marine sustainability? Which of these barriers are considered most important or more influential? Which of these barriers should be addressed first in order to enable more efficient marine and coastal governance?	How far have the coastal communities progressed on the path towards marine citizenship? What are the most significant missing links or missing elements to embrace the ambitions of marine citizenship?
Step four: comparative analysis	– Comparison between discourse(s) on sustainable development between the maritime sectors and the coastal communities;	How large are the knowledge and awareness gaps maritime sectors and the coastal communities?	How large are the knowledge and awareness gaps maritime sectors and the coastal communities?

Source: Own elaboration.

In step one (Table 13), I provide an overview of the ideas generated by the Interactive Management workshops' participants in order to present their opinion on barriers to the sustainable marine and coastal areas. Here, I present: (i) the basic information about each workshop (e.g., number of barriers generated, number of groups of barriers and numbers of barriers in each group), (ii) the most and the least important barriers identified by the participants, and most importantly (iii) the major points arising from the discussions on sustainable development. All together this information allows to reconstruct or describe how sustainability is understood by various maritime sectors and which approach (strong or weak) prevails.

In step two (Table 13), I focus on the barriers related to the environmental pillar of sustainable development. By doing that, I am able to further explore[70] (and to some extent quantify) the support for and internalization of the ambitions of strong sustainability. In order to assess that, I have first identified — based on the literature review — ten major groups of barriers hindering progress towards sustainable development (Table 14; Milbrath 1995; Doppelt 2003; Takács-Sánta 2007; Sibbel 2009; Singer 2010; de Paiva Duarte 2015)

[70] Some insights into these issues are already provided through the analysis of the participants'' discussions performed in step one of the analytical framework.

Table 14 Barriers hindering progress towards sustainable development

Group of barriers	**Characteristics**
Semantic	Misinterpretation and misunderstanding about sustainability concept, often resulting from imprecision and ambiguity of sustainable development definitions
Attitudinal	Lack of interests in the sustainable development concept and lack of commitment towards change; resistance to change reinforced by psychological investments in supporting the present state and the false sense of security, self-interests and failure to internalize sustainability and ecological awareness as a lifestyle and/or organizational culture
Political	Lack of or suppression of sustainability solutions at the strategic and governmental levels, often as a result of social and economic discourse and dominance of issues other than conservation or strong sustainability
Managerial	Failures to incorporate sustainability objectives into policies, tools and mechanisms which are used to steer or control the (economic) sectors and organizations
Systemic	Dominance of linear rather than system thinking; lack of holistic approach and lack of vision to change the existing paradigms, short-term thinking, tribal mentality and resistance to share information
Macro-systemic	Global capitalism and supremacy of neoclassical mindset, consumerism and commodification of nature
System paradigms	No or limited understanding of how ecosystem functions; misconceptions on relations and interdependencies between different parts of abiotic and biotic elements of the ecosystems, and between these parts and human well-being
Deficiencies in knowledge	Lack of scientific knowledge, data and monitoring strategies to reliably inform decision-making about the environment and to promote the concept of strong sustainability
Information society	Information overload, difficulties to distinguish between science, pseudoscience and junk science; no time to critically reflect resulting in stereotypes and superficial knowledge
Blue education	No or limited marine and ecological education, especially in the school curricula; mono-disciplinary approach to teaching about sustainable development

Source: Own compilation based on Milbrath 1995; Doppelt 2003; Takács-Sánta 2007; Sibbel 2009; Singer 2010 and de Paiva Duarte 2015.

Secondly, all the barriers identified by the Interactive Management workshops' participants were re-grouped into the above categories of barriers. However, in this re-grouping, following the approach adopted in de Paiva Duarte (2015), I only focused on the barriers that — when solved — would most likely (or were hoped to[71]) contribute the improved state of marine and coastal ecosystems around the Pomeranian province. The evaluation of each barrier was based not only of a name of a barrier itself but also on the more general discussions around the barriers. Barriers that purely supported economic or social pillars were included in two additional barrier categories (not presented in Table 14), i.e., 'Environment' (for barriers strictly relating to the state of the environment but not matching any group identified in the literature), and 'Other' (for all other barriers, predominantly for barriers addressing social and environmental pillars of sustainable development). Whenever a given barrier addressed more than one pillar of sustainable development, but it still included an environmental component, it was classified as falling into barriers to achieve strong sustainability. Further, I compare the results of my analysis with the broader scientific literature in order to see how different or how similar the opinions of the Polish maritime and coastal stakeholders are compared with the world-wide discourse on (marine) sustainability.

At the end of step two, and only in case of the Interactive Management workshops run with the representatives of the maritime sectors, I also compare discourses on sustainable development across the investigated sectors[72]. By doing that I am able to to see if (and how) the character of activities and their dependence on the health of the marine and coastal ecosystems influence the opinions and support for strong sustainability.

In step three (Table 13), I identified the most promising areas of social interventions using a multistage influence model (Broome 1995; Broome and Fullbright 1995). This model allows to identify the degree of influence for all individual barriers and groups of barriers included in the influence maps (Broome 1995; Broome and Fullbright 1995). In order to apply this methodology to datasets obtained in this research, all barriers (separately for the maritime sectors and for the coastal communities) were first included in one barrier pool and re-classified into new barriers categories based on their commonality. Unlike in step two of the analytical framework, barriers addressing all pillars of sustainable development were included in this re-classification. In the previous step, I was interested in the ambitions of strong

[71] Indeed, some barriers were not always easy to assess. However, when the general discussions and the general consensus of the group was that overcoming such a barrier would contribute to the improved state of the environment, then the barrier was assessed as considering the environmental pillar of sustainable development. Nevertheless, overcoming of some of these barriers might – in reality – support other goals than the protection of natural resources and natural environment.

[72] Such an analysis was performed only for maritime sectors as there were no differentiating factors between Interactive Management workshops run with the representatives of the coastal communities. The comparison between maritime sectors and the general public was performed in the 4.2.4.5 sub-chapter.

sustainability and the prioritization of strong sustainability, while in the step three, I again adopt the wider approach towards the sustainability ambitions[73].

This new re-classification step was needed to ensure that all barriers in the newly created categories are similar. It was not possible to use categories previously identified and named by the workshops' participants due to the lack of coherence between names and content of these categories in all seven Interactive Management workshops. For example, the absence of 'conflict' category does not imply that such barriers have not been present. It rather means that other issues were considered more important in the eyes of the participants and conflict-related barriers were included under a different name. Another example is the 'food supply' workshop, where three out of six barrier categories referred directly to managerial drawbacks. The re-classification was performed by a group of five researchers representing different social science expertise to avoid conceptual dominations of a particular discipline. Only one of these researchers participated in all the workshops[74]; others were external to the process but familiar with Interactive Management methodology. The re-classification was a consensus-based deliberation process. In case of disagreement, the transcripts of the workshops were used to inform the final decision.

When the re-classification was completed, for each barrier present in the influence map, the structural analysis was performed, i.e., the degree of influence was calculated. The degree of influence for each individual barrier consists of five different scores, i.e., position score, antecedent score, succedent score, net antecedent/succedent score, and influence score (Table 15). The degree of influence for the whole category is a sum of individual barriers scores, and it represents the impact that a particular group of barriers has on hindering progress towards sustainability of marine and coastal areas (Broome 1995, Broome and Fullbright 1995). In addition, to allow for direct comparison of the influence of barrier categories, the partial scores are divided by the number of barriers included in all influences maps for all seven workshops, and the average degree of influence is calculated (Broome 1995, Broome and Fullbright 1995).

[73] It was also not possible to use the barrier categories created in step two for methodological reasons. The multistage influence model is based on the influence maps, which included barriers addressing all three pillars of sustainable development.

[74] It was the author of this thesis.

Table 15 Methodology to calculate the degree of influence

The element of the degree of influence score	**Description**
Position score	Number of the stage (or a number of connections) on the influence map, where a given barrier is placed, i.e., barriers that end the aggravation path have the position score equal '1', the position scores in our study vary from '1' to 'n[75]' depending on the influence map
Antecedent score	Number of barriers situated on the left from the given barrier on an influence map, i.e., a number of barriers that aggravate a given barrier
Succedent score	Number of barriers situated on the right from a given barrier on the influence map, i.e., a number of barriers that are aggravated by a given barrier
Net antecedent/succedent score	Succedent score minus antecedent score
Influence score	Position score plus net antecedent/succedent score

Source: Broome 1995; Broome and Fullbright 1995

Finally, the comparative analysis between maritime sectors and the coastal communities is performed in order to investigate differences and opinions concerning barriers for marine and coastal sustainability between these groups whose income or livelihood is directly dependant on marine areas (i.e., maritime sectors) and these that live by the seaside but earn their living through other economic activities.

[75] If a given is included in more than one aggravation paths, the higher number of stage is used as a position score.

4 Barriers to sustainable development of coastal and marine areas off the shore of the Pomeranian province

4.1 Maritime sectors

4.1.1 Similarity of barriers and approaches to sustainable development between maritime sectors: the general overview

The participants in all seven Interactive Management workshops identified all together 420 barriers to sustainable development of the marine and coastal areas around the Pomeranian province (for the list of all barriers see appendix 1). The barriers were grouped — based on their similarities as perceived by the workshops' participants — in 52 barrier categories (Table 16). The categories' names, however, reflect groups' dynamics, subjective perceptions and reasoning, and, therefore, their direct comparability is limited. As already mentioned in the 3.4 sub-chapter, the absence of the 'conflict' category for a given group does not imply that such barriers were not identified. It rather suggests that other issues prevailed and were collectively assessed as more important to highlight. Some groups used more detailed grouping than others, e.g., in the food supply workshop three out of six categories referred to the managerial problems and in the tourism and leisure workshop two categories can be included under the umbrella of seasonality. Therefore, the categories presented in Table 16 (and compared in Table 17) should rather be considered as keywords or major themes that the particular group wished to underline than, indeed, a detailed classification of the barriers based on their similarities.

Table 16 Overview of the barriers identified during seven Interactive Management workshops for the maritime sectors

	No of barriers / No of votes	**List of categories***	**Three highly voted barriers****
A place to live	65/247	1. Deficiencies in the legal system (7 barriers/25 votes) 2. Lack of state's sufficient involvement in the marine issues (9 barriers/30 votes) 3. Lack of coherent vision for the sustainable development for the Gulf of Gdansk region (7 barriers/31 votes) 4. Overexploitation (9 barrier/29 votes) 5. Lack of cooperation and consensus-seeking (4 barriers/19 votes) 6. Low efficiency of the bottom-up initiatives (4 barriers/22 votes) 7. Lack of reliable information (10 barriers/31 votes) 8. *Insufficient education (9 barriers/35 votes)* 9. Inadequate social attitudes (6 barriers/25 votes)	1. Focus on short term economic profits from the environment (16 votes) 2. Lack of attitude of common responsibility (16 votes) 3. Lack of general knowledge about marine ecosystems and its influence on the quality of life (13 votes) 4. Low priority for sea in national politics (13 votes)
Energy	55/210	1. Politics and regulations (15 barriers/37 votes) 2. Economy (10 barriers/34 votes) 3. Societal aspects (8 barriers/34 votes) 4. Knowledge and competences (7 barriers/34 votes) 5. Conflicts (8 barriers/33 votes) 6. *Technology (7 barriers/38 votes)*	1. Conflicts of interests: fisheries, tourism, logistics, transportation, protection of the environment, renewable energy (off-shore wind farms and biogas), minerals extraction (shale gas), linear investments (13 votes) 2. The infrastructure of electrical grids requires further development and modernisation; there is a problem how to connect off-shore farms with the existing grids (13 votes) 3. Lack of technological and market solutions for solar and wind energy storage; solar and wind energy are natural resources of the coast (12 votes)

Food supply	52/190	1. *Incomplete knowledge on marine ecosystem functioning and on interactions between various parts of this ecosystem and fisheries (11 barriers/41 votes)* 2. Lack of integrated maritime management (8 barriers/30 votes) 3. Bureaucracy and centralised fishery management (11 barriers/39 votes) 4. Ineffective management of recreational fisheries (6 barriers/24 votes) 5. Insufficient marine education and promotion of Baltic Sea fish (7 barriers/31 votes) 6. The negative influence of human activities on the Baltic Sea (9 votes/25 votes)	1. Consumer awareness is not based on scientific knowledge (16 votes) 2. Lack of flexibility in fishery management, including management of living resources, controlling procedures, management of fishing areas and fishing efforts (14 votes) 3. Anglers and recreational fishers are not obliged to report their catch; as a result, it is not possible to estimate the influence of recreational fishing on the fish stocks (13 votes)
Human Health	68/216	1. Ecosystem and environment (8 barriers/28 votes) 2. Economy (8 barriers/26 votes) 3. Eating habits and behaviours (6 barriers/27 votes) 4. *Inadequate education (10 barriers/39 votes)* 5. Infrastructural constraints (14 barriers/25 votes) 6. Societal barriers (9 barriers/27 votes) 7. Power and politics (9 barriers/24 votes) 8. Financial barriers (4 barriers/20 votes)	1. Regional authorities do not fund research that could lead to solving local problems (11 votes) 2. Inability to cooperate with each other at the community level; distrust for grassroots initiatives (11 votes) 3. The industrialisation of food production (10 votes)
Nature conservation	64/220	1. Conflicts (13 barriers/35 votes) 2. Poor implementation (11 barriers/31 votes) 3. Lack of awareness (12 barriers/30 votes) 4. *Attitudes (12 barriers/36 votes)* 5. External processes (5 barriers/26 votes) 6. Inadequate communication (6 barriers/29 votes) 7. Lack of vision (5 barriers/33 votes)	1. Lack of a coherent vision of sustainable development: no implementable strategy at central level (18 votes) 2. Conflicts of interests: no attempts for reconciliation (14 votes) 3. On-land pollution (11 votes)

Tourism and leisure	51/234	1. Short tourism season (4 barriers/22 votes) 2. Limited offer off-season (6 barriers/27 votes) 3. Legal barriers (5 barriers/22 votes) 4. Conflict of interests (7 barriers/29 votes) 5. *Inconsistent spatial planning (5 barriers/31 votes)* 6. Shortcomings in local infrastructure (7 barriers/27 votes) 7. Low ethics in business (3 barriers/23 votes) 8. *Lack of education and information (9 barriers/31 votes)* 9. Informational chaos (5 barriers/22 votes)	1. Seasonality — low demand for tourist services outside the high season (14 votes) 2. Lack of tourist services off-season (14 votes) 3. Lack of infrastructure in the coastal areas for tourists and residents (13 votes) 4. Lack of coherent vision for the development in the coastal areas (13 votes)
Transport	65/209	1. Lack of communication and collaboration (11 barriers/39 votes) 2. *Lack of efficient and coherent maritime and transport policies (15 barriers/42 votes)* 3. Infrastructural barriers (5 barriers/24 votes) 4. External conditions (6 barriers/20 votes) 5. Financial and technological constraints (5 barriers/24 votes) 6. Inadequacies in the educational processes (12 barriers/25 votes) 7. Legal constraints and bureaucracy (11 barriers/35 votes)	1. Overall political and economic situation: global and in the Baltic Sea Region (14 votes) 2. Pro-environmental technologies are expensive (12 votes) 3. Lack of interest in the maritime economy at central/state level (10 votes)

**The highly voted category in each workshop is marked with Italics*
*** In case of an equal number of votes all barriers having the same score are presented*

Source: Own elaboration

Table 17 Similarity of groups of barriers identified by the maritime sectors

Group of barriers*	**A place to live**	**Energy**	**Food supply**	**Human Health**	**Nature conservation**	**Tourism and leisure**	**Transport**	**(Number of appearances) /(total votes)**
Education	35		31	39		31	25	(5) / (161)
Social attitudes	47	34		54	66			(4) / (201)
Politics and policies	30	37		24			42	(4) / (133)
Knowledge	31	34	41			22		(4) / (128)
Economy		34		46		23	24	(4) / (127)
Conflict		33			35	29		(3) / (97)
Communication and cooperation	19				29		39	(3) / (87)
Legal system	25					22	35	(3) / (82)
Anthropogenic impacts	29		25	28				(3) / (82)
Infrastructure				25		27	24	(3) / (76)
Management			93		31			(2) / (124)
Vision	31				33			(2) / (64)
External processes					26		20	(2) / (46)
Seasonality						49		(1) / (49)
Technology		38						(1) / (38)
Planning						31		(1) / (31)

**For each group of barriers a total number of votes per workshop is given.*

Source: Own elaboration

A simple comparison of the barriers' categories (Table 17) — even if it is only based on the names selected by the workshop participants — allows for identifying some common themes for various maritime sectors. Although there is no single group of barriers that appears in each workshop (barriers related to 'Education' scored highest with five appearances), there is a good consensus between the workshops' participants that the main challenge for sustainability lays within the society at large. The society is perceived as unprepared not only to embrace sustainability ambitions in their everyday lives but also to address less complex affairs in a more just and participatory approach (barriers related to 'Social attitudes' scored second). 'Policy and politics' scored third what can suggest a relatively strong top-down managerial component in (marine) management in Poland or lack of institutionalisation of important visions or concepts by the national government. Barriers related to managerial issues scored high in terms of total votes received also when compared with categories that have more appearances. This can be explained by its relative importance for the fishery sector but also by the fact that both categories ('Policy and politics' and 'Management') include relatively similar barriers. The name of category reflects subjective emphasis or subjective importance of the certain components of the governance of marine and coastal areas. It is, therefore, important to better understand what stands behind the group of barriers and how and if they influence the sectors' or the society's ability to move towards more sustainable business and lifestyles' models.

4.1.2 The discourse on barriers to sustainable development within maritime sectors

A place to live workshop: the workshop participants saw their region as strongly connected to the sea but these connections — they agreed — are not properly recognized and valued both by the local and central authorities, businesses and coastal citizens. Much of the blame was put on the neoliberal mind-set that is now the dominant way of thinking about development and it makes authorities and businesses focusing on the use of the environment, short-term (political) gains and ad-hoc managerial solutions. Consequently, there is neither long-term vision for the region prosperity nor maritime and terrestrial spatial plans that would allow coastal areas to develop in a sustainable way. This group noticed that sustainable development is often an empty phrase or symbolic commitment used with no real understanding. Everyone has heard about sustainable development but hardly anyone can explain what it really means to develop in a sustainable way. It was further discussed that sustainable development cannot be equated to the protection of habitats and species as development is a concept centred at humans. *'Only happy people who do not have to struggle to survive'* — the group underlined — are able to act responsibly and protect the ecosystems around them.

Marine areas — according to this group — are given a low priority in the national politics. The central level politicians usually do not come from the coastal regions and they do not understand the sea. Since marine areas of Poland are perceived as relatively small, marine and maritime issues are neglected and not deemed important. Without the state support, maritime economy cannot use all the opportunities that the Baltic Sea provides. For example,

areas around the main harbours could become logistics hubs or development of the off-shore renewable energy sector could become a driver for the regional development. These are big challenges that need support at the central level. The participants did agree that it is perhaps not surprising that sea is relatively unimportant from the central government's perspective as similar lack of marine awareness is observed at the regional, and perhaps more importantly, at the local levels. It manifests itself, however, in a different way. While central level authorities neglect marine issues, the local authorities often care only about 'the use'. They do little to control and limit the increasing pressures on using the coast, mass tourism is not only hardly regulated but often supported, and well-being of the local communities often comes second to the investors' needs. Some of the participants underlined, however, that this evaluation is too severe. They pointed out that it, indeed, was like that in the recent past but, nowadays, the change towards more sustainable practices can be observed. The change is of course slow, inadequate to meet all the pressing challenges and opposed by many, but it should be stressed that it has already started.

Protection of the natural marine and coastal ecosystems was an important theme in this group's discourse. The participants underlined that — unlike on land — there is no long tradition to protect marine ecosystems. There are limited possibilities to establish marine protected areas and NATURA 2000 is ineffective due to the lack of actual management plans. Conservation is also impaired by sectoral thinking and lack of coordination between marine and terrestrial management. Environmental regulations are inconsistent and incomplete and their enforcement is difficult and often inefficient. This leads to overexploitation that is at the moment difficult to stop. There was also a general consensus that the conflict between 'use' and 'environment' is unnecessarily amplified. There are no well-maintained forums that could stimulate the discussions between environmentalists and other users (e.g., fishers) what makes impossible to reach consensus that could be widely accepted. Without such a consensus — they feared — sustainable development will be on paper only.

Apart from the neoliberal mind-set, limited marine knowledge and marine awareness was considered important obstacle to achieve sustainable development's ambitions. The participants underlined that the politicians and local authorities will not address issues and problems that are not important for their voters. And since people know little about the sea, and even less about how their well-being depends on marine ecosystems, it is hardly expectable that there will be enough pressures to move towards more sustainable practices. There is no marine and regional education at schools and no relevant media programmes about marine ecosystems of the Polish coast. They found it extremely important that marine education is not limited to coastal areas. They pointed out that *'(…) whatever is done in the south of Poland, it gets sooner or later to the Baltic Sea'*. During the short vacation visits, tourists *'come and do whatever they want'* and they do not care about the environment around them. This is because — the group believed — they do not consider sea as something that belongs to them and something that is a part of their country. This cannot be changed in a short time but long term education is needed.

The energy workshop: 'Politics and regulations' and 'Technology' were the groups of barriers, which received the highest recognition during the energy workshop. However, there were relatively small differences with regard to the votes between all six barriers' groups (Table 16). Development of the off-shore wind farms dominated discussions during this workshop, perhaps because the growth of this sub-sector is most feasible around the Pomeranian province in the near future. The workshop participants deliberated on the technical challenges in a great detail and underlined their importance for the sector development in a short time horizon. Yet, they considered these barriers relatively easy to overcome as there is a stable scientific progress in technology in this field. Political and related economic barriers were considered important obstacles for the renewable energy sector to flourish as they directly influence the sector's stability and profitability. Therefore, and especially in the early stages of the off-shore energy development, significant participation and (financial) support from state was deemed crucial. So far — the participants assessed — that was not the case. No decisions have been undertaken if, when, where and how off-shore renewable energy should be developed. In addition — the participants feared — unlike in other European countries off-shore energy sector is marginalized in the energy development strategies and in the energy mix in Poland. In the participants' opinion, the sectoral strategies are not based on the expert advice and innovative approaches; rather a short term political interests prevail and rich and affluent interests are further reinforced.

The workshop participants pointed to yet another significant problem for the off-shore energy sector: the competition for space with other maritime users. They expressed the opinion that renewable energy sector is considered — by other stakeholders — a newcomer to marine areas that tries to operate in the sea space that was previously 'used' and 'owned' by other more traditional maritime sectors, especially the fishers. Such a perception leads to deep tensions and conflicts of interests between various marine stakeholders; such conflicts were voted the most important barrier to sustainability for this group (Table 16). Lack of maritime spatial plans and no regular and meaningful interactions between various sectors or actors further reinforce these conflicts making them more serious than they are in reality. The representatives of the energy sector underlined the role of open deliberation and high-quality public consultations as foundations for sustainability and ecosystem-based marine management. Such open discussions are, however, non-existent when it comes to energy development in Poland. The off-shore energy suffers from black PR, low societal acceptance for the need for its development and in general from the low public awareness of the issues related to the energy supply. The public discourse emphasises a higher unit price for energy from renewable sources (when compared with conventional ones) and it further does not show environmental and health benefits of discontinuing coal-based economy. In other words, the current discourse underlines the costs but omits externalities and these benefits that are difficult to be directly valued in monetary terms. People are often asked contradictory questions, i.e., '*Do you want clean environment?*' or '*Do you want cheap or expensive energy?*'. Sustainable development in the eyes of the energy sector should in fact be the reconciliation of these two ambitions.

Incidentally, the energy group was one out of four[76] that clearly stated the problem of confusion concerning the sustainable development concepts among different groups of stakeholders and decision-makers. Since the participants in this workshop were mainly discussing renewable energy, they considered their sector as relatively green and pro-environmental. Nevertheless, detailed relations between this sector and the environment were discussed and led to uncovering some tensions between 'conservation' and 'energy production'. Our participants complained that nature conservation is not evidence-based; since there is insufficient data to accurately decide what should be protected, where and how, there is a tendency to protect everything everywhere[77]. This group further underlined that certain elements of marine ecosystems are overprotected and that there is a general lack of flexibility and strategic planning in managing marine space. On the other hand, the majority of this group was well aware that most, if not all, large investments impact environment at least in some way, what can be especially problematic off the shores of the Pomeranian region that has high natural values. They agreed that, therefore, the location of off-shore wind farms should not only be centred at the availability of space and wind conditions but it should also consider environmental conditions, including the state and uniqueness of ecosystems.

The food supply workshop: the economic profitability of the fishery sector was the most important theme for the workshop participants. As they pointed out *'fishers do not catch fish, they catch money'*. Perhaps, therefore, majority of barriers identified during this workshop refer to shortcomings in fisheries — and to some extent — environmental management at regional, national and European levels. In fact, barriers in the highly voted category (i.e., 'Incomplete knowledge on marine ecosystem functioning and on interactions between various parts of this ecosystem and fisheries'; Table 16), despite its name, also relate to various regulations and managerial practices in the fishery sector, such as discards or industrial fishing. Incomplete knowledge in the name of this category refers to insufficient knowledge and lack of solutions that could — at the same time — protect the well-being of the fishers, the good (environmental) status of the Baltic Sea ecosystems and the fish stocks. Discards, by-catch of other fish species, division and management of fishing quota, fishing for fodders instead of fishing for human consumption and recreational fishery (angling) were all considered great challenges for this sector to be sustainable and profitable at the same time.

Conflicts with and pressures from the conservation sector were assessed equally important but they were also considered a part of mismanagement. The workshop participants mentioned too large populations of seals and cormorants and lack of willingness to define carrying capacity of regional ecosystems to limit the occurrence of these species. Many of the participants complained that there is too much focus on non-commercial use of the sea and that there are too many protection measures, especially in the semi-enclosed areas such as Gulf of Gdańsk and the Puck Bay. They suggested that they are observing the process of

[76] The other three included workshops related to 'A place to live', 'Human health' and 'Nature conservation'.

[77] Although this claim is too strong, it is not without scientific basis as for example Zaucha (2012) underlines knowledge and information gaps for proper allocation of various uses on the sea.

elimination of fishers as a profession through various pro-environmental regulations, excessive supervision over commercial fisheries and providing disproportionate support for the recreational fisheries. They complained that such solutions are the result of the black publicity that fisheries are subjected to, i.e., this sector is presented as being harmful to the sea and its living resources, and fishers themselves are not considered natural element of the sea. Overall, fishery was believed to be and presented as the sector in decline, relatively environmentally friendly and responsible, and the majority of the barriers to achieving sustainability were coming from the outside world and, therefore, beyond the sector's control.

The food supply group did underline, however, that some elements of marine ecosystems are not properly protected. The participants discussed overexploitation of living resources, inadequate protection of some fish species and of nursery and spawning grounds or the negative influence of agriculture on the Baltic Sea. They did not, however, believe that these problems can be tackled by the sector itself and underlined that they are the results of the inappropriate management and political decisions. Only one barrier — '*Too many fishers fishing with nets, and too many nets per individual fisher*' — could be considered as a direct and internal problem of the Polish fisheries; something that — at least in theory — could be regulated by the fishers on voluntary basis.

The human health workshop: discussions during this workshop focused on two groups of issues that the participants considered main obstacles to achieve sustainability. Many barriers were linked to (or explained by) neoliberalism as the prevailing mind-set or to insufficient appreciation of the region. Growth paradigm — in the opinion of the group — enforces commercialization of common goods (such as the coast and the sea), commodification of natural resources and industrialization of food production. It also leads to funding mainly these initiatives that are profitable, what encourages social and environmental inequalities. The negative effects of neoliberalism are amplified by underdeveloped civil society, social apathy, inability to cooperate and distrust among different social actors.

The participants widely talked about the coastal belt and the pressures from investors and mass tourism. They complained that too many infrastructure, and especially hotels and apartments, is being built too close to the beach and to the sea, what often results in fencing the coastal zone. This group strongly believed that beaches and sea are common goods and local authorities should safeguard equal access and equal opportunities to use them. Many members of this group supported the idea to limit the number of tourists visiting or the number of cars entering (e.g., on Wyspa Sobieszewska or Hel) and pointed out that such restrictions are successfully functioning abroad. They also believed that naturalness, uniqueness and the good quality of the environment can be assets in the tourism and leisure sector(s) but business models based on these values require cooperation between the tourism sector and the local authorities.

The participants from the human health workshop were quite concerned about increasing industrialization of food production what leads to its lower quality and disconnection

between the producers and the consumers. They pointed out that less and less local and traditional food is available, including varieties of fruit and vegetables. They believed that it is sometimes easier to get Italian or Spanish ham than a fish from the Baltic Sea. Neoliberalism and associated fast pace of people's lives were partially to blame. Families have little time to socialize outside, to look for and to cook healthy food, and, in addition, they are flooded with the commercials promoting unhealthy habits, junk food, dietary supplements or quick solutions and pleasures. As the group commented: *'It is much easier to swallow a pill than to eat an apple or a banana'*. Without changing these attitudes, it will not be possible to achieve sustainability as — for this group — sustainable development mostly builds on private choices which — in the long run — can create pressures on the authorities (and to a lesser extent on the businesses) to introduce more balanced solutions. The participants commented that as long as the main motto or main priority would be *'The Economy, stupid!'*, sustainability would be nothing more than a catchy world. The participants underlined that they are not against economic and social development but the economy is not only about (direct) benefits but also about externalities, which — in their opinion — are now ignored. Relations between humans and ecosystems should be about 'co-existence' and not about 'use'.

Members of the human health group noticed that unfortunately ecological lifestyle and good quality and environmentally-friendly produced goods, and especially food, is only available for the well-off groups of the society. They pointed out that countries like Norway, Sweden, Canada or Switzerland, where ecological values and conservation efforts rank high, are rich and people do not have to struggle to make up their living. Although Poland will not reach the levels of social and economic development comparable with these countries soon, the transition towards sustainability can be already enhanced through education and promotion of healthy habits. In general — this group believed — education is one of the most important factors that can hamper or empower sustainability in the future. However, current formal education (schools) is not prepared to meet challenges of the sustainable development. Sustainable development is, indeed, high on the political agenda but that is not reflected in the schools' curricula. Instead of teaching sustainability, the education system supports entrepreneurship and pro-market behaviours. As a results, everyone has heard about sustainable development, but hardly anyone is able to explain what it exactly is and why (and how) it should be achieved. To make this picture even grimmer, the participants pointed out that there is no education concerning marine culture, marine safety and the regional values. They also underlined (and actually voted it as most important barrier; Table 16) that there is no research commissioned that could support solving local problems. Here, they mentioned the need to address algal blooms and to create the long-term programme that would allow local authorities to request universities or research institutions to assist them in decision-making through high-quality research. Some participants postulated closer links between the research sector and local businesses (i.e., science done 'for' and 'with' business) but other criticized this idea as not feasible in practice and providing easy opportunities to misuse such funds.

The nature conservation workshop: lack of the coherent vision of sustainable development at the governmental level together with no implementable strategy was voted the most important barrier by the participants of the nature conservation workshop (Table 16). In fact, many discussions and problems identified by this group were related to politics and relations of power. Among these problems, arrogance of power and disregard for the consequences of wrong decisions were strongly emphasized. The participants noted that many decisions are undertaken based on incomplete data and their consequences are not fully recognized and understood. Most often externalities and non-monetary costs are omitted in cost-benefit analysis and the decisions that follow. Although not considered highly influential, workshop participants noticed that decision-makers neither fully understand the concept of sustainable development nor have good knowledge on sea and its ecosystems. They do not acknowledge that sea is dynamic and changes over time, and — what is perhaps even more problematic — they tend to disregard scientific knowledge and scientific data when protection plans are prepared and accepted. As a result, the protection plans are not holistic, they tend to focus on selected species and habitats, and in case of NATURA 2000 areas the plans often disregard traditional ways of life, such as fisheries. And — in the eyes of this group — sustainable development is not about nature conservation only; it is also about protecting humans within this nature. Modern nature conservation is not about creating strict reserves; it moves towards responsible use and co-existence. The role of science should be, therefore, not only to provide data what should be protected, where and how, but more importantly science should propose solutions that would be optimal in the long run both for both the people and for the nature.

Conflicts of interests and conflicts of values were considered the second important theme and second highly voted barrier category. The participants noticed that there is little knowledge on what stakeholders really need and want, and even less commitment to attempt to reconcile existing and potential conflicts. Coastal zone is a place with high tensions and many stakeholders, and sustainable development can only be achieved in a process of negotiation and compromise seeking. The participants did realize that compromise seeking is a long process and that at the end most actors will not be fully satisfied with the final outcomes. However, some level of dissatisfaction shared by the majority of the stakeholders might be inherent and might actually mean that the process was successful. There is, therefore, a need to start to create forums for the stakeholders to interact and to build trust between the conflicted parties.

Third major theme included variety of attitudinal problems. In the eyes of the workshop participants, (coastal) communities lack ecological awareness and ecological morality, and they are not willing to accept personal restrictions to limit their pressures on common goods. The nature conservation group stressed the role of early formal and informal education. Young people should be taught that *"(…) nature was inherited from out descendants and not from previous generations."*; they should be aware that humans are dependent on the environment but the environment can easily exist without *"us-humans"*. This group did not

support — in general — nature conservation tools that would exclude people from certain areas but they did support temporal closures and limitations in use. Such solutions, in this group's opinion, could only work if tourists and residents can behave responsibly. Responsible tourism should also be a part of school curriculum; it is necessary to make sure that people understand that protected areas are created for the animals' well-being and not for humans' recreation or pleasure.

The tourism and leisure workshop: seasonality was an umbrella for a variety of problems related to this sector. Two out of nine barriers categories (i.e., 'Short tourism season' and 'Limited offer off-season') directly refer to seasonality, although in all other categories short summer and underdeveloped all-year attractions were root causes or at least multipliers for many other barriers. Seasonality was seen from two different perspectives, which influenced and reinforced each other. First, short tourism season was considered as an external factor (or driver), a direct result of coastal climate, weather and relatively short and improperly organised summer holidays. The participants pointed out that these issues were in fact organizational constraints and nothing can be done to change them. They further believed that, although — in theory — the organization of summer vacations can be changed, the coastal municipalities and related businesses are too weak to establish a partnership that could successfully lobby for such solutions at the central government level.

The participants, however, noted that seasonality can be actively combated and currently little effort is undertaken to actually extend and develop summer attractions outside the peak season. They underlined that there are many stereotypes about the Baltic Sea and its coast among potential visitors. Baltic Sea is believed to be cold and dirty and the coast is presented as a place that is worth visiting only in summer. Yet, the group fairly pointed out that there is almost no offer other than sea and beach tourism[78]; eco-tourism is in its infancy, spa tourism is still poorly developed, local culture and local identity are practically non-existent as visitor attractions. Nordic walking routes, birds watching or storm watching are hardly noticed by the businesses operating on the Pomeranian coast while they are quite popular abroad. The tourism business is often satisfied with the existing '3s' (sun, sea and sand) model, does not follow new trends and new developments, but this situation can be — to some extent — justified by the commonly expressed feeling of temporariness that characterizes — in the eyes of the participants — the business conditions offered to the investors. A prime example of temporariness were the lease contracts for using the beach; since all beaches in Poland are state-owned, the right to exclusively use them is gained through the process of competing offers, it is signed for relatively short time, and, therefore, there are little incentives to invest and run business in a sustainable way. More stability (i.e., longer lease contracts) were suggested as a solution for this problem. Seasonality and (perceived) unstable operating conditions lead to unethical practices in business what is further reinforced by the short-term

[78] Interestingly, focus on the '3s' tourism seems to be a persistent problem. Despite many suggestions to develop other forms of tourisms that would be disconnected from summer season (Dutkowski 2004), it seems – in the light of the results of my study – that these calls remain unanswered.

thinking and greed of the local authorities. Both businesses and authorities attempt to earn their annual income in three or four summer months what is a huge challenge for sustainable development of the tourism and leisure sectors.

The participants underlined that these internal sectoral problems are further strengthened by the insufficient planning, both strategic and spatial. Neither strategic nor spatial planning[79] is coherent for the whole Polish coast and there is no vision for the development of coastal areas. Coastal municipalities compete with each other instead of collaborating, there are no joint promotional campaigns and no common architectural standards are being enforced. The participants complained that economic interest (of coastal municipalities) often overrides the need for enforcing spatial order, and public and private interests are often in conflict. Some participants commented that oftentimes the need of local citizens seem to be neglected as it is more important to deliver services to the visitors than increase the quality of life of the coastal residents.

Healthy ecosystems and naturalness of the coastal landscapes and underwater seascapes played secondary role in the workshop's deliberations, although one could expect that the clean environment is actually one of the foundations for the long-term success in tourism and leisure sector[80]. Environmental values and naturalness should perhaps be considered as one of the most important factors and become the core of long-term tourism strategies in the region. The weather conditions in the southern European holiday resorts surpass the southern Baltic coast in relation to the '3s' tourism. The participants were aware of the insufficient conservation of traditional natural landscapes and architecture and contamination of the sea and its beaches. They noted that the contamination comes from both anthropogenic (e.g., litter left on the beaches, eutrophication or sewage) and natural (e.g., algae or seagrass washed off on the shore) sources. The latter was not considered by some participants as contamination but '*natural organic matter'*. Other disagreed and pointed out that visitors see no difference between litter and vegetation as their knowledge on marine issues is presumably poor. Existence of large NATURA 2000 areas and other forms of nature protection regimes raised similar controversies. Overall, such areas were considered the limitation for the further sector development but some members of this group argued that these restrictions are in fact beneficial and supportive for regional biodiversity and good status of marine waters, which — in turn — are crucial for the sector profitability and sustainability in the long term.

The barriers to sustainability within 'Tourism and leisure' sector were the mixture of internal and external problems but they mainly focused on the economic pillar of sustainable development. The participants, however, did notice that many of the discussed issues could

[79] At the time of this workshop, it was not feasible to prepare marine spatial plans, although the concept was already known and deemed necessary by the workshop participants. The preparation of maritime spatial plans for the whole Polish coast is the ongoing process but specific plans (e.g., for the Gulf of Gdańsk) will only be prepared in the future.

[80] Interests in natural and cultural landscapes is expected to increase in the coming years not only among professional but also among general public (Degórska and Degórski 2019).

be solved without external intervention, by the sector and sectoral organizations themselves. They were yet unable to assess if this change has actually started and what the prospects for the success are.

The transport workshop: the participants in the transport workshop focused on growth and economic stability of their sector. Therefore, lack of interests in maritime economy at the state level and lack of coordinated maritime policies were widely discussed as important obstacles for this sector development. The absence of coordinated support is further reinforced by the myopic policies of large harbour cities, which are mainly interested in short-term economic profits. Areas that could be used to safeguard the development of ports are often sold to developers, what not only limits the future enlargement of the harbour themselves but can also create tensions between industrial and residential functions of the bordering areas. Economic and political situation world-wide and in the Baltic Sea region was also perceived as having negative influence on the sector's prospects. In relation to this topic, the participants discussed the privileged positions of the United States and China, which usually do not adopt any pro-environmental solutions in order not to decrease the competitiveness of their national businesses. The group complained that the Baltic Sea is the frontrunner in enforcing high emission and high pollution standards even if only European seas are considered. There were also comments that there are no common interests between various Baltic Sea region's countries concerning maritime transport, and that the Polish ports are in a difficult geographical location between Hamburg and Sankt Petersburg, what further diminishes their economic attractiveness.

The workshop participants were well-aware and had extensive knowledge on the relevant environmental legislation, including the 'Nitrates and Sulphur Directives', the 'Ballast Water Management Convention' and the 'Birds and Habitats Directives'; the latter in their opinion pose significant challenges for harbours and shipyards. They underlined that environmental regulations are not coherent and well-suited for the sector's needs as current legislation limits development opportunities and increases operational costs. In fact, the high cost of the pro-environmental technological solutions came as the second highly voted barrier (Table 16). Limited cooperation between business and science sectors was suggested as one of the reasons why these costs are so high. Insufficient collaboration results in no innovative solutions for maritime transport being developed, tested and produced. In addition, the workshop participants felt that the government does not accept the need and responsibility to support maritime economy and delegates the obligation to implement pro-environmental legislation to the business sector (i.e., shipping companies) only. Shipping companies in Poland do not receive any (financial) support for implementing the new pro-environmental regulations, which is often the case in other countries. The transport group underlined that sustainable development is important but it argued that it should not mean that '*environment comes first*'; hence the group was challenging the ambitions of strong sustainability. The participants highlighted that two other pillars (society and economy) are equally significant what, unfortunately, — in their opinion — is often forgotten. They felt that the needs of

environment, business and society can be reconciled but the current conflicts, especially between 'protection' and 'use', are often so strong that it is now difficult even to start dialogue or to begin the negotiations that could lead to some win-win solutions.

4.1.3 Barriers to sustainable use of marine and coastal ecosystems: environmental pillar of sustainable development

In the next step of my analysis (step two of the analytical framework; Table 13), I look at the barriers identified by the maritime sectors from the perspective of the strong sustainability approach in order to: (i) investigate which and how many barriers hinder achieving good (environmental) status of marine and coastal ecosystems, and (ii) which and how many barriers purely address the problems of pursuing economic and societal goals. By doing that, I can also reconstruct or describe what the representatives of the maritime sectors think about strong sustainability and how (if at all) they internalize it within their daily (business) activities.

In order to achieve that, all the barriers identified during the maritime sectors' workshops were re-grouped into 12 barriers groups[81] (Table 14). Ten out of these 12 barriers groups were identified based on the literature review on the barriers that hinder sustainable development. Following the approach of de Paiva Duarte (2015), these groups of barriers were further used to focus on the challenges and problems that impact the state of natural ecosystems. The other two groups included barriers addressing social and economic pillar of sustainable development. The details of the re-grouping procedure were described in the 3.4 sub-chapter.

[81] They include the following groups: (i) semantic, (ii) attitudinal, (iii) political, (iv) managerial, (v) systemic, (vi) macro-systemic, (vii) barriers related to system paradigm, (viii) knowledge deficiencies, (ix) information society and (x) blue education. Additional two groups are related to the environment and economic and social pillars of sustainable development ('Other'). For the detailed description see sub-chapter 3.4.

Table 18 Barriers for achieving strong sustainability for marine and coastal areas of the Pomeranian province

Group of barriers*	**A place to live**	**Energy**	**Food supply**	**Human Health**	**Nature conservation**	**Tourism and leisure**	**Transport**	**Total number / total votes[82]**
Semantic	1 / 4 votes	1 / 4 votes	0 / 0 votes	1 / 2 votes	1 /1 vote	0 / 0 votes	0 / 0 votes	4 / 11 votes
Attitudinal	3 / 21 votes	3 / 2 votes	0 / 0 votes	6 / 25 votes	9 / 39 votes	1 / 8 votes	1 / 0 votes	23 / 95 votes
Political	6 / 22 votes	6 / 12 votes	3 / 5 votes	0 / 0 votes	3 / 26 votes	0 / 0 votes	1 / 12 votes	19 / 77 votes
Managerial	12 / 50 votes	3/ 21 votes	18 / 75 votes	5 / 16 votes	11 / 32 votes	6 / 24 votes	4 / 22 votes	59 / 240 votes
Systemic	9 / 36 votes	3 / 23 votes	0 / 0 votes	2 / 5 votes	4 / 10 votes	1 / 13 votes	0 / 0 votes	19 / 87 votes
Macro-systemic	2 / 16 votes	2 / 10 votes	3 / 3 votes	8 / 42 votes	0 / 0 votes	0 / 0 votes	2 / 17 votes	17 / 88 votes
System paradigms	4 / 24 votes	0 / 0 votes	3 / 28 votes	1 / 5 votes	7 / 11 votes	0 / 0 votes	0 / 0 votes	15 / 68 votes
Knowledge deficiencies	0 / 0 votes	2 / 1 vote	0 / 0 votes	0 / 0 votes	4 / 9 votes	0 / 0 votes	3 / 9 votes	9 / 19 votes
Information society	7 / 21 votes	2 / 9 votes	1 / 0 votes	4 / 11 votes	2 / 6 votes	2 / 10 votes	0 / 0 votes	18 / 57 votes
Blue education	3 / 12 votes	0 / 0 votes	0 / 0 votes	2 / 5 vote	5 / 13 votes	1 / 0 votes	1 / 1 votes	12 / 31 votes
Environment	5 / 4 votes	1 / 3 votes	12 / 28 votes	2 / 5 votes	4 / 25 votes	1 / 3 votes	1 / 0 votes	26 / 68 votes
Other**	13 / 37 votes	32 / 125 votes	12 / 51 votes	37 / 100 votes	14 / 48 votes	39 / 176 votes	52 / 148 votes	199 / 685 votes

**For each workshop a number of barriers and a number of votes is indicated within a given group of category; total number of barriers is 420 and total number of votes is 1526.*

*** These are the barriers that address social and economic pillar of sustainable development.*

Source: Own elaboration

[82] The results, including number of barriers and number of votes, presented in Table 17 do not match (and, therefore, should not be compared directly with) the results presented in Table 18. It is because different grouping definitions have been used for both tables. Table 17 presents a simple categorization of groups of barriers based on the names given by the participants, which – sometimes – include barriers that are only distantly related (or only slightly similar). This is because the workshops' participants grouped a smaller number of barriers and – according to the methodology – they needed to assigns each barrier into one of the barrier groups. This problem was less significant for the re-grouping presented in Table 18 since the content of categories was much better defined and any barrier could have not been assigned into a given category. For example, in Table 17 'Education' score highest while in Table 18 'Blue education' seems much less important. This can be explained by two arguments. Firstly, 'Blue Education' is much narrower category, i.e., it only includes barriers related to marine and sustainability education, leaving outside more general issues related to more general lack of knowledge or organization of school system. Secondly, many barriers grouped under 'Education' in 'Table 17' fits better into other groups of barriers (e.g., 'Semantic' or 'Attitudinal' barriers).

Re-grouping the barriers identified by the professionals representing maritime sectors operating in the Pomeranian province showed that many problems identified did not address — even partially — the environmental pillar of the sustainable development. In other words, overcoming them would not enhance strong sustainability of the marine and coastal areas. About 54% of all identified barriers was not included in any of the barriers' groups discussed in the literature. These barriers were either related to (i) social or economic goals, both within and outside the scope of sustainable development, or (ii) directly to the state of the natural environment, which — although important — should in principle be considered as a result of achieving ambitions of sustainability rather than a direct cause of it.

Nevertheless, experts and professionals coming from maritime sectors identified barriers to achieve strong sustainability within all ten groups explored in the literature. However, oponions on relative importance of all these groups of barriers differ among scholars and the Polish professionals. For example, many scientific papers on sustainability focus on the definition of the sustainable development, rightness or wrongness of different approaches and their arbitrariness (e.g., Mawhinney 2002; Hopwood et al. 2005; Sibbel 2009; Waas et al. 2011; Holden et al. 2018[83]). These issues, however, do not seem to be important for the Polish professionals. Although semantic barriers were identified and discussed by the workshops' participants (Table 18), they constituted less than 1% of all discussed problems and received only 0.72% of all available votes reflecting its relative insignificance. All other groups of barriers received a higher score in terms of their occurrence (between 3.57% and 5.48%) with three exceptions. First, managerial barriers were discussed most often and they constitute 14.05% of all barriers to achieve strong sustainability. Second, barriers related to insufficient education and deficiencies in scientific knowledge scored lower than the average, i.e., occurrence levels at 2.86% and 2.13% respectively.

The reason why workshops' participants did not consider semantic barriers important might stem from the fact that the majority of them believed that they had pretty clear definition (or understanding) of what sustainable development is (or is not), and this understanding was rather coherent across all the sectoral groups. To put it differently, the participants did not urge to define sustainable development to themselves as a group, even though they did elaborate and re-construct other terms and concepts emerging during their discussions. In fact, poor understanding or misunderstanding of the sustainability concept — in the eyes of the workshops' participants — was not a problem within their sector but — if at all — it was located in the outside environment, in which their sector operates. They believed external forces (most often politicians, other competing sectors or society at large) misunderstand the term and, as a result, their respective sectors face challenges to develop sustainably.

It appears that all the Interactive Management workshops' participants — as a cohort — adopted the nominal and most popular definition of sustainable development (Waas et al. 2011) proposed by the World Commission on Environment and Development stating that:

[83] For the overview of the definitions and approaches see sub-chapter 1.1.

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987). The experts representing maritime sectors further underlined that sustainable development cannot be equated with nature conservation as social equity and economic prosperity are equally important. There were, of course, some differences between individual participants about their preferred combinations of the social and economic goals and environmental concerns. These differences, however, did not affect the core consensus that sustainability should not imply conservation only and that sustainability — to a large extent — can be achieved within the existing economic and social settings. Such understanding of sustainable development is perhaps not surprising for the majority of sectors — perhaps with the exception of the nature conservation — as (economic) developmental opportunities are predominant not only in the corporate discourse on ocean sustainability (e.g., Kronfeld-Goharani 2018) but also in the wider discussions on marine conservation and the Blue Growth (e.g., Kronfeld-Goharani 2015; Varjopuro et al. 2015). Use paradigm, however, is not only typical for the maritime sectors. Similar opinions are reported in many studies that investigate sustainable practices within various (terrestrial) sectors such as terrestrial tourism (e.g., Goffi et al. 2018), urban management (e.g., Lombardi et al. 2011), waste management (e.g., Hugé et al. 2013) or construction industry (e.g., Myers 2005). In fact, it seems that three-dimensional conceptualization of the sustainable development, with all three dimensions treated as equally important (weak sustainability), is prevailing for non-environmentally motivated individuals and communities (Wynveen 2015).

Interestingly, the workshops' participants were much more interested in discussing the issues related to misunderstanding on how marine ecosystems work, although at the same time barriers related to this theme did not score high[84] (rank 7 out of 10; Table 18). The maritime professionals underlined that the ignorance of the ecosystem functions and of relations between various parts of the ecosystem are, indeed, much more important problems than ambiguity of the sustainability concept. It is so because such misconceptions are further translated into managerial actions (or lack of these) which — in turn — can have serious consequences on the state of the marine environment or on the conditions that the sectors have to operate within. And, in fact, issues related to mismanagement of the natural environment and of the natural resources were assessed as most important group of barriers that delays and obstructs achieving sustainability ambitions; this significance was clear both in terms of the number of barriers (14.05%) and in terms of number of votes (15.73%).

Managerial barriers are relatively less often discussed in the literature. From the single organization perspective, managerial barriers refer to the way organization is managed and supervised. Patriarchal thinking about management and addiction to guidelines coming from the higher authorities (or managerial levels) often create systems where employees are not encouraged to take personal responsibility on how sustainably the company operates

[84] It means that the participants quite vividly discussed these issues but the time dedicated to such discussions was not reflected in the number of barriers put forward and the number of voted received.

(Doppelt 2003). From the global perspective, managerial barriers encompass issues related to limitations in traditional regulatory approaches. In other words, such barriers discuss failures of international, regional and national regulatory frameworks to properly protect the environment (Sibbel 2009). However, managerial barriers might be discussed less frequently not because of their lesser importance but because the main sustainability discourse postulates achieving sustainable development through changes in and by existing decision-making bodies and structures (Hopewood et al. 2010). Hence, all possible groups of barriers — in their essence — have managerial aspects or relate to managerial drawbacks.

Only the latter group of barriers (i.e., limitations of current regulatory approaches) was discussed by the Interactive Management workshops' participants. In the context of my study, the managerial barriers most often relate to environmental governance (e.g., protection of ecosystems and species and related cultural values), management of natural resources (e.g., fish stocks or renewable energy sources) or planning of the coastal zone and sea space (e.g., issues related to terrestrial and marine spatial planning). Barriers in this category are closely linked with the wider institutional and managerial landscapes of the Polish coast and the Polish sea. Indeed, such barriers are related to sustainable development of the coastal areas and the sea but rather in an indirect way. In practice, they can rather be addressed in the context of or through a given process, e.g., when marine spatial plans, species protection plans or management plans for NATURA 2000 areas are being prepared, and not through actions or processes dedicated entirely to sustainability challenges. The workshop participants criticized — in practice — the lack of the process or the outcomes of it. The maritime professionals often did not discuss why certain drawbacks appeared. For example, the participants criticized lack of proper protection of spawning and nursery grounds or improper planning of the waterfronts but they did not analysed in detail what were the (root) causes for these problems[85]. Successful conservation depends on many factors, including for example participation, conflict management, flexibility of regulations, integration of policies and knowledge or data availability (e.g., Blicharska et al. 2016). Hence, problems leading to unsatisfactory solutions or outcomes can arise from any aspect of the conservation processes. To further illustrate this issue, lack of maritime spatial plans was identified as a barrier for sustainable development and was often raised during the Interactive Management workshops. In Poland the process is now in progress but it is already clear that some maritime actors (e.g., fishers) are not happy about how the process is developing (e.g., Piwowarczyk et al. 2019a; Piwowarczyk et al. 2019b) and it remains to be seen, if satisfactory planning outcomes are still achievable.

[85] The workshops' participants discussed, however, some more general issues that potentially can contribute to the criticized managerial solutions. The social phenomena discussed, such as for example insufficient public consultations, social apathy or low level of social engagement, are indeed a part of the problem for inclusive governance of the marine realm (Piwowarczyk et al. 2019a). They are also a challenge for the overall decision-making processes in Poland (e.g., Kronenberg and Bergier 2010). These phenomena were, however, most often discussed in a wider context so my data does not allow for direct linking of these issues with selected or all identified managerial barriers.

Managerial barriers are somewhat connected to or arising from political barriers. Political barriers emerge from the countries' insufficient commitment to implement the sustainable development goals (e.g., de Paiva Duarte 2015). Indeed, when resistance towards practical implementation of sustainability is significant, long-term political goals (even if they embrace sustainability ambitions) are not translated into short-term policies (Van Vuuren et al. 2014) and then into managerial solutions or actions. Polish maritime professionals noted not only issues directly related to practical implementation of sustainable development ambitions at the central level but they also pointed out to fragmented sectoral strategies, which do not aim to balance various uses and users. Instead — according to the workshops' participants — they support unsustainable solutions, often petrifying status quo and promoting elite stakeholders. Interestingly, affluent stakeholders were differently defined during various workshops and in various contexts. For example, fishers, who participated in this study, perceived off-shore wind energy as a strong and rich player that threatens their long-term existence and well-being. The renewable energy sector, however, did not perceive itself as privileged or preferentially treated. In fact, its representatives indicated preferences for other energy sources, and especially for coal.

Indeed, policy integration and cooperation between various sectors are important steps towards sustainability as well as real and not only superficial governmental commitments (Stafford-Smith et al. 2017; Caiado et al. 2018). Unfortunately, in Poland all three issues listed above seem to be a problem. Fragmentation of sectoral policies and lack of a clear vision and priorities for the (sustainable) development of marine and coastal areas was not only indicated by the marine professionals in this study, but it is certainly a well-recognized problem in marine governance in Poland (e.g., Zaucha 2014a; Zaucha 2018; Piwowarczyk et al. 2019a; Piwowarczyk et al. 2019b). The idea of sustainable development does exist in the Polish law; it is included in the Polish Constitution as well as in the Act on the Environmental protection (Bukowski 2005). However, this concept is rather poorly operationalized, i.e., currently there is no sustainable development strategy for Poland. Such a strategy was adopted in 2000 but in was later repealed and a new document — up to date — has not been prepared (Kronenberg and Bergier 2012). Moreover, the sustainable development concept is included predominantly in the environmental legislation (Bukowski 2005) and it is hardly ever discussed by the constitutionalists (Olejarczyk 2016). Sustainable development is, therefore, a concept that is underestimated and its importance often remonstrated (Olejarczyk 2016). Indeed, it is hard to find any references to it in the economic and social legal acts (Bukowski 2005).

Among attitudinal barriers, in the literature, much attention is directed towards limited commitment to embrace sustainability and towards the resistance to change (e.g., Millibrath 1995; Hopwood et al. 2005; de Paiva Duarte 2015). Polish maritime experts did discuss both issues with more focus placed on the first one. They noticed that sustainability is often an empty phrase and that neither sectors, cities nor provinces make sustainable development their priority. The experts also pointed out that the same is true for the coastal communities

that neither understand the sea nor truly care for its sustainable use. Attitudinal barriers were, however, mainly identified by the sectors that were less business-oriented (i.e., 'human health' and 'nature conservation'). Only five out of 23 attitudinal challenges were put forward by the representatives of the more traditional maritime sectors (i.e., tourism and leisure, energy and transport). In practice, almost all attitudinal barriers discussed underlined lack of interests in sustainable development within the outside organizations and institutions, including society at large, and not within entities representing own sector. Only two barriers[86] can be assessed as discussing problems within entities or individuals representing own sector. This is perhaps not entirely surprising for the 'nature conservation' and 'human health' workshops to place barriers outside their sectors but, indeed, it is somewhat unexpected that preferences for business-as-usual over transformation was not mentioned during the other five meetings, especially that the composition of the group attempted to represent the whole-system-in-the-room[87]. The reason for this may stem from the fact that the majority of barriers to sustainable development (or to its environmental pillar) seems to originate from outside the sector and these barriers are often perceived as an effect of the widely-criticized top-down management. This further suggests that the participants did not internalize sustainable development and delegate the responsibility for its achievement elsewhere to regional decision-makers or even to national government (which they paradoxically criticize for other decision or for lack of lack of the decisions[88]). It is also true that the workshops' participants did consider their own sectors as relatively 'green' or 'friendly to the environment' and often doing as much as they can effort- and profit-wise.

Such attitudes are not typical for the maritime businesses only and my results are in line with the outcomes of many other studies concerning organizations' social responsibility. Small and big companies around the world are increasingly aware of the need of eco-efficiently and of more sustainable behaviour (e.g., Málovics et al. 2008; Koe et al. 2014). The same trend can be observed in Poland (Kronenberg and Bergier 2012). However, it is also true that the majority of companies' efforts are predominantly motivated by the business' reasons, growth and survival in the market (Málovics et al. 2008), and are often limited to must-responsibility or at most to should-responsibility[89] (Young and Tilley 2006; Heikkurinen et al. 2019). These levels of responsibility towards sustainable development are not enough to address issues at larger scales, wicked environmental problems and to move towards ecological equity or strong sustainability solutions (e.g., Málovics et al. 2008; Heikkurinen et al. 2019). Sustainable

[86] These include: 'Some investors underestimate the importance of environmental aspects of energy investments; this results in slowdown of the investment process (in case of the 'Energy' workshop) and to less extent 'Lack of attitude of common responsibility' (in case of 'A place to live' workshop).

[87] I.e., the primary and the secondary stakeholders and the influences.

[88] See the section related to 'Managerial' and 'Political' barriers.

[89] As discussed in Málovics and co-authors (2008) corporate social responsibility practices can be divided into three groups: (i) must-responsibility, (ii) should-responsibility, and (iii) can-responsibility. The must-responsibility is short-term and limited to the consumers' current needs and to legal requirements. The should-responsibility reflects the long-term time horizon and consumers' or societies' (future) expectations. Finally, the can-responsibility relates to the promotion of the common goods and it can enhance companies' better reputation.

entrepreneurship has indeed some potential to promote sustainable development but business-based solutions are not enough. Therefore, there is a strong need for more active role of governments in promoting sustainable solutions (Albareda et al. 2008; Sibbel 2009; Spence et al. 2011) and supporting (pro-environmental) innovations (Kardos 2002; Engert et al. 2016) but most importantly achieving strong sustainability requires changes in the consumptions patterns and more awareness on the consumers-citizens side (Heikkurinen et al. 2019). Most of these postulates, and especially more active role of governments, was shared by the workshops' participants of my study.

It is worth underlining that such a change — from focus on growth and productivity to the can-responsibility — can be even more challenging for the companies in Poland; a country with a post-transition economy. Social and economic conditions are one of the external factors that shape the corporates' willingness to act and to develop in a sustainable way (Engert et al. 2016). During the transformation phase[90], many processes hindered the possibilities for the Polish economy and for the individual companies to develop in a sustainable way, pushing them towards unsustainable practices (Geise 2005). These processes included increasing economic disparities between groups of peoples and regions, structural unemployment, increased poverty, social exclusion, demographic changes, pollution and abuse of the natural environment (Geise 2005; Kronenberg and Bergier 2012). Maritime sectors faced the same problems and, in addition, were confronted with issues specific for the coast and the sea, including structural transformation of ports and shipyards (Zaucha 2012), increased demand for recreational services (Węsławski et al. 2010) and new restrictions on how to use the previously unregulated marine space (Piwowarczyk and Wróbel 2016). These negative processes were further exacerbated by the disappointment with public institutions (Kolarska-Bobińska 2003), including poorly run public consultations (Celiński et al. 2011), and — at the societal level — by low ecological awareness and low level of social capital and trust (Kronenberg and Bergier 2012). Even though these problems are being addressed and some have been already overcome, such a heritage does influence the sustainability discourse both in the companies and among consumers. Indeed, environment and sustainability are considered of secondary importance if societies and communities still strive to achieve well-being or to satisfy their basic needs (Costi 1998). This central planning (or authoritarian) and post-transition legacy is yet another factor that explains why sustainable development is predominantly perceived as an idea to be implemented by the top-down processes, i.e., the workshops' participants did point out to their relative worse situation when compared with companies from 'old' European countries.

Interestingly and in contradiction with calls for more active role of civil society (e.g., Heikkurinen et al. 2019), the participants of my workshops were sceptical if sustainable solutions can be introduced though consumers' and citizens' influence. They expressed doubts about social capital and environmental awareness of the decision-makers and the

[90] After its accession to the European Union in 2004 Poland no longer belongs to the transition economy countries.

society at large. They discussed that the members of the (coastal) society — acting both as citizens and consumers — do not manage to take their decisions based on the sustainability criteria and it was not expected to change in the near future. Although this overall assessment might be considered too harsh, it is difficult to deny that sustainable consumption or consumers' demand for sustainable products and services is still relatively low both in Poland (Kronenberg and Bergier 2010; Kronenberg and Bergier 2012) and world-wide (e.g., Young et al. 2010; Lim 2017). Sibbel (2009) provides some examples on how consumers can influence the market (e.g., through boycotting or supporting campaigns) but the success stories of such actions are still scarce. Even if consumers and citizens are environmentally concerned, these concerns often do not translate into more pro-environmental daily choices and lifestyles even in the countries that have a better economic standing than Poland (e.g., Easman et al. 2018; Parry-Wilson et al. 2019).

The representatives of the maritime sectors, indeed, put most of the responsibility to achieve the sustainable development on the decision-makers and governments. They see their own role and the role of the citizens as secondary. Although it lays outside the scope of this study, it would be interesting to investigate if introducing or improving participatory co-governance within sectors, maritime spatial planning or conservation planning could increase the sense of agency, control and ownership, and ultimately lead to better internalization of strong sustainability. Participatory and inclusive governance is widely postulated in marine and environmental management (e.g., Jones et al. 2016), is considered a foundation of legitimate governance (e.g., Suškevičs 2012), and it supports the implementation of the agreed solutions and creation of the feeling of agency and control (Hassler at al. 2018). However, its effects on the conservation are to a large extent poorly recognized (e.g., Blicharska et al. 2016).

Macro-systemic barriers include the variety of issues related to capitalism, consumerism, globalization, productivity fetish and commodification of nature (e.g., Singer 2010) and were discussed during five Interactive Management workshops (Table 18); interestingly this group of barriers did not appear during the 'nature conservation' workshop. Supremacy of neoliberal mind-set was especially important for the 'human health' workshop. Although Polish maritime professionals discussed barriers to achieve sustainability arising from (global) capitalism, they did not, however, perceive these barriers as ultimate obstacles[91]. In other words, they believed that sustainable economy and sustainable society can be achieved within the current economic system and that 'greening the (economic) system' is not only desirable but also feasible. Different studies on barriers to sustainability from the United States (Bestvina 2012) and Brazil (de Paiva Duarte 2015) suggest that current economic model(s) is perceived as preventing the transformation to long-term sustainability. At times, international organizations and international regulations established to protect (global) environment might be perceived as conflicting with and impinging free market and its

[91] There were some opinions in the 'human health' workshop that transformation to sustainability will not be possible in the current form of capitalism with too much focus on productivity and growth. Yet, it seems that the participants in this workshop still agreed that changes are possible within this system and a total revamping or reconstruction of the political and economic system is not needed.

effectiveness (Sibbel 2009). When these various studies are compared, they illustrate the well-known dualism in thinking about current economic system, i.e., that it is flexible enough to allow achieving sustainability goals (status quo) or that it is not, and new approaches and theoretical perspectives are needed (Söderbaum 2000; Newton 2003; Hopewood et al. 2005; Söderbaum 2017).

The supporters of the status quo (or else of neoliberal or neoclassical economics) see the need for change but this change can be achieved within the current economic and societal boundaries through ecological modernization (Hopewood et al. 2010). Neoliberal and neoclassical economics focus on markets and, indeed, the markets are the key to provide the desired change (e.g., Heal 2000). Environmental problems should be solved through proper pricing (that include the costs of negative impacts), subsidies or tax incentives (Söderbaum 2000; Newton 2003). Money is considered a common denominator and natural resources and ecosystem services can be monetarized, sold and bought on the actual or imagined markets (Söderbaum 2000). This way of thinking has led to the development of methods of economic (monetary) valuation of nature or of human welfare derived from the utilization of nature (e.g., Brander and Crossman 2017). Principles of economy (and of economic quantification) are believed to support both the conservation itself and its wider acceptance by decision-makers and the public at large (Heal 2000).

New approaches (e.g., ecological economics) focus on the reform of current economic paradigm as neoliberal theories do not bring (and hence probably cannot bring) the transformative change (Van Vuuren et al. 2014). These new approaches call for new pro-environmental technology, science and information, and deep modifications of markets and governments (Hopewood et al. 2010; Caiado et al. 2018). They underline the prominent role of subjectivity, dialogue and knowledge co-production (Söderbaum 2000). Ideologically, the role of GDP in measuring societal progress and well-being is denied (Söderbaum 2017) and ecological morality (Newton 2003) and environmental justice (Hopewood et al. 2010) is being actively seek for.

Polish maritime professionals, indeed, were either not well aware of this ongoing debate or not interested in it. As noted above, the general consensus during all the seven workshops was that change is feasible in the current economic and societal model(s). This is, in fact, a prevailing option in the current sustainability discourse and practice (Hopewood et al. 2010), and this approach is not expected to change in the near future (Kumi et al. 2014).

According to de Paiva Duarte (2015, p. 431) further research are needed to investigate and stimulate deeper reflections on macro-systemic barriers to investigate "*(…) if individuals feel disempowerment or would it make them even more determined to find ways to address obstacles?*". This is not the call in case of the Polish maritime sectors. Since current form of capitalism is not — in the eyes of the workshops participants' — the ultimate obstacle to achieve sustainability, it would be interesting to explore how the needed change is conceptualized and what tools, actions and solutions are needed to move towards strong sustainability. Such deeper reflections are, indeed, needed as in the Polish context the

'environment or development' dilemma is still among mainstream discourse (e.g., Grodzińska-Jurczak and Cent 2011) and there is a tendency to delegate responsibility for environmental protection elsewhere (e.g., Piwowarczyk et al. 2013); these two issues are also visible in this study. Perhaps studies on capitalism or nature commodification and their relations with the sustainability ambitions could stimulate maritime professionals to reflect on changes in the economic paradigm(s) and on the deep political commitment needed to deliver them.

Lack of system thinking and lack of holistic approach are considered the major problems within systemic barriers to sustainability (e.g., de Paiva Duarte 2015). Similarly, absence of implementable ecosystem-based approach to marine resources management is also the major problem within marine governance literature (e.g., Arkema et al. 2006, Boyes and Elliot 2014). However, above challenge, although discussed during five out of seven Interactive Management workshops, received only limited attention and recognition. The workshops' participants were more concerned about other systemic barriers, i.e., focus on short time horizon, absence of the long-term vision(s) or problems with information sharing. These issues, in addition, were predominantly discussed from the single sector perspectives what points out to the issue of fragmentation. This sectoral approach was perhaps enforced by the workshop settings, i.e., each workshop was organized around one theme (see Table 11) and the participants' expertise was largely sector-related. However, the presence of influencers was foreseen to ensure that more general views were represented and that sectoral divisions are be easier to overcome. Indeed, such sectoral settings did not prevent the group members to discuss more general issues concerning the dominant economic models, social situation of coastal communities or science and education systems. Holistic approach is, in practice, non-existent in the Polish marine governance, land and sea management is not properly interconnected (Wojcieszyk 2011; Piwowarczyk and Wróbel 2016; Zaucha 2018), and integrated coastal zone management still faces significant challenges (Cieślak 2006). In addition, there are no easy to implement tools and solutions that could ensure a smooth and efficient shift towards ecosystem-based marine management in Europe (Boyes and Elliot 2014), perhaps because ecosystem-based management itself is still not a fully operationalized concept (Rodriguez 2017).

The remaining three group of barriers — deficiencies in knowledge, information society and blue education — are all connected with data, knowledge and information needed to support the sustainable development (Table 18). Deficiencies in knowledge refer to availability of scientific data that are essential to properly inform decision-making processes (e.g., Sibbel 2009). This category of barriers was not considered very important by the participants of this study; indeed, it was discussed during three out of seven workshops only (Table 18). Although deficiencies in knowledge refer to choices made by individuals, organizations and decision-makers, marine professionals in Poland focused on the last group. During the workshops, knowledge and expertise were mainly discussed as a tool that can support decision-making and conflict resolution; the tool that can offer an objective compromise that should be

acceptable for all the involved actors. Lack of or insufficient knowledge was, therefore, considered the main problem but the problem that could potentially be solved by collecting the dispersed knowledge, commissioning (or executing) more research and obtaining more datasets. Interestingly, the majority of participants believed that scientific data actually supports 'their claims' and 'their stakes'. If their rights were not supported at the moment, the participants believed it is because existing datasets are wrongly interpreted, '*wrong data sets*' are being used or there is a '*missing element of the whole system*' that should be further investigated.

Science was, indeed, considered as a form of neutral authority but the authority that is sometimes misused or overused. Such a perception of science is not uncommon among Polish marine stakeholders (e.g., Piwowarczyk and Wróbel 2016; Piwowarczyk et al. 2019b). Interestingly, the maritime stakeholders did not discuss in detail the need for knowledge intergration. Knowledge coming from outside natural science, i.e., from social science (on economy and culture) and from other knowledge bearers (e.g., from stakeholders, citizens and non-governmental organizations) is now considered pivotal for successful co-management of marine areas (e.g., St Martin and Hall-Arber 2008; Raymond at al. 2010). Indeed, there are many more issues related to knowledge deficiencies that are discussed in the literature that were not mentioned by the Polish marine professionals.

The Polish maritime experts have mentioned only in passing difficulties to collect the dispersed knowledge. But in fact, a lot of environmental data is produced but is not used in decision-making processes due to the issues related to its systematic collection and summarizing for the managerial needs (e.g., Dicks et al. 2014). Even if such data are gathered and translated into a form that could inform decision-making, it can be difficult to ensure proper knowledge uptake (e.g., Cvitanovic et al. 2015) as opportunities for science to influence practical solutions are limited in time, i.e., during so-called policy windows (Rose et al. 2017). Proper knowledge exchange requires institutional, individual and financial capacities[92] (Cvitanovic at al. 2016) and, in fact, these skills are often lacking in the Polish marine management practice (e.g., Zaucha 2012; Zaucha 2018; Piwowarczyk et al. 2019b). The proper training that could enhance individual skills for knowledge exchange should be delivered to marine planners and experts (Gissi and de Vivero 2016; Calado et al. 2019) in order to ensure that future planning embraces the ambitions of sustainable seas and oceans. Similarly, policy- and decision-makers (Rose et al. 2018) and the representatives of the scientific community (Reed et al. 2014) should also enrol into such trainings. Better understanding between various actors involved in marine management could stimulate (i)

[92] Institutional capacities require 'culture of knowledge exchange' that includes training opportunities and high recognition of work related to stakeholders' involvement. Financial capacities are related to funds made available for research, and for maintaining data accessibility and data exchange. Data accessibility and data exchange should be granted dedicated funds that should be separated from financing research. Individual capacities include good knowledge on both science and decision-making processes, openness, excellent communication skills and ability to work with a diverse group of people, who often use their specific jargon (Cvitanovic at al. 2016).

better cooperation between decision-makers, stakeholders and scientists, (ii) better knowledge brokering, (iii) co-designing the research questions, and (iv) co-creation of the research programmes (Reed et al. 2014; Bednarek et al. 2018), which are again crucial for achieving efficiency in marine and environmental management (Bednarek et al. 2018) and long-term strong sustainability.

Barriers related to blue education relate to drawbacks on how marine and sustainable development issues are being taught in formal and informal education (e.g., Millibrath 1995). This group of barriers was not particularly important for the Polish marine professionals; it was mentioned during four out of seven workshops and received only 2.03% of total votes (Table 18[93]). The barriers identified by the Polish marine experts pointed out to lack of (or insufficient) marine education at school resulting in lack of awareness of the sea. And, indeed, Polish educational system fails to provide effective environmental education and the students' knowledge is far from satisfactory (Kobierska et al. 2007). Similarly, marine education in Polish schools is rare, also in the coastal areas (Niedoszytko et al. 2019). In line with these research, the workshops' participants pointed out that currently informal marine education provides more opportunities to learn how the marine ecosystems function but its focus is local and regional. They emphasized the need for more coordinated and state-level campaigns and educational programmes as education was seen as an important component of sustainable society.

Education does play a significant role in tackling sustainability challenges in the long term (e.g., Sibbel 2009). Modern education, however, needs to adopt more open and innovative approaches (Wulff and Johannesson 2019) and the modern educators *'(…) have to teach their students to think, to discover, to develop their skills and break the paradigm of the traditional school, ceasing to be an information transmitter.*' (Caiado et al. 2018). Indeed, learning by doing and personal experiences with the ocean are now considered the most effective ways to increase ocean literacy among people and to increase their concerns about marine life (Guest et al. 2015). However, such innovative tools are rather difficult to implement in the school reality due to lack of time, lack of resources and teachers' limited knowledge on marine issues (McPherson et al. 2018).

Finally, barriers related to information society include problems arising from humans' limited cognitive capacities (e.g., Milbrath 1995; Sibbel 2009). Overload with information, some without scientific evidence, makes it difficult for some actors to find time to reflect on an issue or to investigate the issue deeper (Milbrath 1995). Many of the barriers identified by the marine professionals reflected problems related to partial and superficial knowledge and popular myths about marine and coastal ecosystems. The workshops' participants did mention issues with how information is created in the popular media, i.e., that it rather focuses on sensational news and shallow novelty than on providing reliable scientific facts in an understandable way. They were concerned about limited and relatively unsuccessful

[93] Please see details in Table 18 for more information on differences between the barriers related to 'education' and 'blue education'.

promotional and informational campaigns about the marine environment and the sustainable development.

Problems related to limited cognitive capacities are not, however, new. They are not limited to information society or new communication technologies and, perhaps even more importantly, they are not unique for the sustainable development debate (Marien 1994; Bawden and Robinson 2008). Discussions on information overload, information quality or distinguishing between 'knowledge' and 'propaganda' were vivid in the pre-technological Europe and date back to the seventieth century (Badwen and Robison 2008). The problem of information overload got expanded by the development of the new information and communication technologies that allow a great number of actors to send a great number of often conflicting information in the variety of forms and channels (Gorman 2003). As a result, too much information is available what makes it difficult for the average individual to manage it and use it to inform decisions on daily basis (Mulvihill and Milan 2007; Djordjevic and Cotton 2011). Decisions undertaken by consumers and by citizens are — as a result — made on random or accidental information and are more dependent on personal characteristic of the individual person than on the information available (Sibbel 2009). Indeed, too much information can be misleading not only for the general public but also for the experts and professional who are responsible for the protection of the environment and for the environmental policy-making (Bougherara et al. 2007). Despite these long lasting and unsolved challenges, cognitive barriers are often not considered central in discussing problems how to move towards more sustainable society but are treated a sub-theme of secondary importance (Mulvihill and Milan 2007). Perhaps, this is because the solutions to these barriers — to much extent — lay outside the sustainability science and are being predominantly addressed by information science that seeks ways to better understand human information behaviour (Bawden and Robinson 2008).

4.1.4 Differences in the perception of sustainable development among maritime sectors

Maritime sectors that are less dependent on the healthy marine ecosystems tended to be more focused on economic growth and to have limited concerns about the state of the marine environment. Management of marine and coastal resources is the most important group of barriers for all sectors but 'human health', which considered issues related to global economy and neoliberal mind-set as prevailing. According to the workshops' participants, these failures of free market were, however, closely related to governance failures. The participants — under the global economy topic — discussed, for example, the industrialization of food production or lack of funding for unprofitable initiatives. High rank of the managerial and policy barriers in the Polish marine sustainable development discourse follows the word-wide dialogue on ocean affairs, in which different forms of management take the prime and the most visible place (Kronfeld-Gohrani 2015). The participants representing 'nature conservation' sector considered attitudinal problems and lack of knowledge on how nature functions as more profound than the failures of the managerial system(s). Drawbacks in education were relatively more important for 'nature conservation' and 'a place to live'

groups, which both seem to best endorse and internalize the sustainable development concept as a mixture of three different goals (or ambitions) with the exceptional position of nature conservation. The participants representing the 'human health' workshop did underline the three dimensions of sustainable development but — as mentioned above — they were critical about the current economic system. It is, therefore, not completely clear, what they postulated as the economic objectives of sustainable development.

'Tourism and leisure' sector, although considered itself relatively green and environmentally friendly, focused in principle on economic development just as all other economic sectors. This is nothing surprising as such trend is well documented in the research on tourism sustainability (e.g., Buckley 2012). Environmental strategies in this sector are predominantly focused on increasing income, for example, through gaining 'green' reputation or through customers' voluntary actions (Aragon-Correa et al. 2015). Such attitudes may stem from the fact that tourists themselves are not willing to change the way they travel and make their holiday arrangements, and, indeed, sustainability is not a decisive factor in their vacation choices (e.g., Miller et al. 2010; Villarino and Font 2015). There are, therefore, no or limited bottom-up incentives for this sector to become more concerned about sustainability what was also quite clearly spelled out by the workshop's participants.

The representatives of the fishing sector were highly concerned about the state of marine environment. However, these concerns were mainly related to the short- and long-term possibilities to sustain fishers' (economic) well-being and their way of life. The fishers did consider themselves as "*taking care of the marine ecosystems*", although there is a consensus, especially among marine ecologists, that fishery — as a sector — fails to achieve sustainable management and ensure healthy fish stocks in healthy marine ecosystems (e.g., Hilborn 2007). Fishers' attitudes and political pressures they exert are often considered important elements of this failure (Daw and Grey 2005). What is perhaps promising, the results of this study suggests that there has been some change in the Polish fishers' thinking about short-term and long-term profitability of their sector. Although the workshop participants did complain about environmental regulations and saw the sources of their problems outside their own communities, they did notice the need for new managerial solutions that would allow fisheries to survive in the long-run despite expected short-term income losses and even reduction in the fishing fleet size. Such 'readiness-for-change' attitudes were hardly the case for any other economic sector, with exception for the 'human health', 'a place to live' and 'nature conservation'; all of these sectors can be characterized as not being directly profit-dependant and, therefore, less profit- or economy-focused.

Somewhat surprisingly, the majority of stakeholders in all workshops, with the exception of 'nature conservation', did not consider conflicts as major barrier(s) for achieving sustainable development of marine and coastal areas[94]. Understanding various stakeholders, their values,

[94] Conflicts as the barrier category appears only in three out of seven Interactive Management workshops (Table 17) and only in case of two workshops ('nature conservation' and 'energy'; Table 16) conflict-related barrier is included in the top-three voted barriers.

tensions and conflicts between their values is, indeed, an important challenge in management and decision-making to support sustainability ambitions (e.g., Caiado et al. 2018; Raymond et al. 2019). More specifically, conflicting uses, interests and values are one of the most widely discussed challenges for effective nature conservation (Blicharska et al. 2016) and for the successful spatial management, including maritime spatial planning (Jones et al. 2016). So why did our participants neglect the issue? The analysis of the workshops' discussions does not provide a clear answer to this question. I can speculate that sustainable development — at the very general level — is perceived as relatively vague and disconnected from the real social and economic life. In the Polish context, there are no managerial initiatives that would be directly linked to sustainable development. Managerial processes most often relate to nature conservation or spatial planning, where conflicts and tensions are clearly visible (e.g., Grodzińska-Jurczak and Cent 2011; Pietrzyk-Kaszyńska et al. 2012; Piwowarczyk and Wróbel 2016). Representatives of the nature conservation sector are different in this respect, i.e., selection between 'use' and 'conservation' (or 'non-use' or 'limited-use') is a primary choice that needs to be made. In other words, this choice determines the character of space, i.e., its commercial or non-commercial status. The competition between different economic users (or sectors) does not address directly the characteristic of the place; rather the struggle is over the division of benefits and influence and potential changes in the future.

How about preferences for strong or weak sustainability? Results of this study suggest that the concept of strong sustainability is outside the main discourse among maritime stakeholders in Poland. All groups commonly acknowledged three pillars of sustainable development and underlined (perhaps apart from the 'nature conservation' and 'human health' groups and with some voices of opposition in the other five) that (i) the very core of sustainable development is to balance different needs, (ii) that all three pillars are equally important, and (iii) that environment should not take priority. In fact, some of the voices clearly spelled out that sustainable development is the concept that can hold back too prominent role that nature conservation is gaining in the legal and managerial systems. There are perhaps different reasons for that. Revenues (or profitability) can be one of the explanatory factors for the 'energy', 'transport', 'tourism and leisure' and 'fishery' groups. Participants of 'human health' workshop criticized the current economic model in Poland but they were more concerned with societal problems and lack of social justice and equality. Only when these problems are solved, in the opinion of this group, the real sustainability can be achieved. The 'human health' group, however, demonstrated relatively weak links to the sea and to the coast; many of the issues discussed would be equally relevant for other parts of Poland. 'A place to live' and 'nature conservation' groups were perhaps — in their discussions — most willing to accept (and to support) the need for strong sustainability. Although the participants of the 'nature conservation' workshop did put some arguments for strong sustainability and they did support 'ecosystems-come-first' approaches, it is not entirely clear if strong sustainability is their preferred choice as noticeably they called for conservation that would allow co-existence with other uses. Members of the second group ('a place to live') seemed to believe that strong sustainability is not a feasible choice. They underlined that

conservation is a 'use' for majority of actors and especially for the decision-makers. There are not many opportunities to change such views so it is much more pragmatic to accept it and try to pursue the protection measures within the current settings. And, indeed, the barriers they identified referred more to practical implementation problems and lack of knowledge and awareness, than to a need for transformation of the current definition of both 'conservation' and 'sustainable development' accepting the weak sustainability paradigm.

4.1.5 The multistage influence model for barriers to achieve sustainable development of marine and coastal areas

4.1.5.1 Higher rank categories and group of barriers: on overview

Across the seven Interactive Management workshops 420 barriers to sustainable development of marine and coastal areas around the Pomeranian province were identified. These barriers were again[95] re-grouped into 26 barriers groups based on their commonality[96]. These barriers groups were further clustered into yet another hierarchical categories (i.e., higher rank categories) based on the definitions of the barrier groups (Table 19). This re-clustering is the first step to create the multistage influence model for the barriers to achieve sustainable development of marine and coastal areas of the Pomeranian province.

[95] The first re-grouping was performed to distinguish between barriers for environmental, social and economic pillars of sustainable development (see sub-chapters 3.4 and 4.1.3).
[96] For the detailed description of the methodology see sub-chapter 3.4.

Table 19 Higher rank categories for the sustainable development of marine and coastal areas around the Pomeranian province

Higher rank category	Group of barriers*	No of barriers / number of votes**	Short description and examples of barriers***
Economics	Economic paradigm (3)	10 / 41	Barriers related to drawbacks arising from neoliberal economy and failures of the free market (e.g., *Neoliberalism: pressures of the free market and growth*);
	Markets (7)	35 / 125	Barriers related to changes on (international) markets (demand and supply issues), lack of proper branding and (financial) support for Polish the companies and their products (e.g., *Lack of technological and market solutions for solar and wind energy storage; solar and wind energy are natural resources of the coast*);
	Funding (3)	16 / 59	Problems with financing various initiatives and actions, including these that are not profitable but socially desired (e.g., *Lack of financial system to support investments in distributed energy resources; distributed power systems are high risk investments for private financial institutions*);
			.
Public engagement	Participation (2)	16 / 48	Barriers including shortcomings of the formal consultation processes, limited use of the consultations results and issues related to civil society (willingness to get involved; e.g., *Disregard for the opinions of various users and stakeholders*);
	Communication (1)	24 / 62	Different communication issues between and within science, decision-makers, business, media and society at large (e.g., *Insufficient information on renewable energy is provided to the society; black PR*);
	Cooperation (4)	14 / 76	Barriers arising from lack of or insufficient collaboration and cooperation between various stakeholders and marine actors (e.g., *Lack of cooperation between different actors*);

Knowledge	General and ecological knowledge (6)	12 / 72	Barriers related to lack of or insufficient general knowledge as well as to knowledge on marine and coastal ecosystems (e.g., *Lack of general knowledge about marine ecosystems and its influence on the quality of life*);
	Science and scientific data (3)	16 / 53	Barriers related to lack of or insufficient scientific and technological knowledge, problems with data availability and data accessibility; problems connected to improper use of scientific data or knowledge are also included in this category (e.g., *Decisions are undertaken based on incomplete knowledge; mythologizing and overemphasizing selected environmental issues; protecting "everything" because there is no knowledge what should really be protected*);
	Education (3)	24 / 67	Barriers arising from general drawbacks in science and education systems, including marine and ecological education and maritime and vocational trainings (e.g., *Imperfect system of (maritime) higher and vocational training*);
Governance	Legislation (9)	28 / 108	Barriers originating from deficiencies in legal system, including poor enforcement of existing regulations (e.g., *Too many regulations that are difficult to explain or inexplicable*);
	Mechanisms and instruments (4)	17 / 63	Barriers related to poor or insufficient managerial mechanisms and instruments that could support implementation of obligations put forward by legal acts; limited flexibility of existing mechanisms that are not well-suited to the sectors' reality (e.g., *Lack of flexibility in fishery management, including management of living resources, controlling procedures, management of fishing areas and fishing efforts*);
	Monitoring (1)	7 / 13	Limited monitoring efforts to support managerial bodies and decision-makers in assessing effects or progress towards plans and goals (e.g., *Lack of proper supervision over anglers and recreational fishers*);
Policies and strategies	Vision (6)	10 / 85	Barriers related to definition of the overall vision for the region and maritime sectors' development (sustainable and/or purely economic; e.g., *Lack of transformation vision of the Polish energy sector towards development of renewable and off-shore energy sub-sectors*);

	Policies (3)	23 / 63	Barriers linked to translations of the (sustainable development) vision(s) into high-level policies, local and regional strategies, sectoral policies and guiding documents (e.g., *Lack of consolidated and realistic transport policy*);
	Planning (2)	10 / 43	Barriers related to implementation of the (sustainable development) visions and other goals through planning processes and decisions taken at different organizational levels (e.g., *Lack of marine spatial plans*);
Human impact on the environment	Protection and conservation (1)	12 / 23	Barriers related to improper environmental management and conservation decisions, including setting of the conservation priorities (e.g., *Lack of control over the implementation and achievement of conservation measures and sustainable development principles; planning vs reality*);
	Pollution (2)	15 / 42	Barriers describing various forms of polluting marine and coastal ecosystems (e.g., *Eutrophication*);
	Environmental concern (2)	16 / 49	Barriers arising from human activities and their negative influence on the quality of the environment and living marine resources (e.g., *Excessive seal population, increased infections with parasitic nematodes (Anisakis) within this population, threating the health of cod stocks*);
Sectoral issues	Infrastructure (5)	26 / 77	Barriers linked to insufficient infrastructure of different types, including poor public transportation and infrastructure for tourism and recreation (e.g., *Lack of transport connections on the land (to complement maritime transport)*);
	Tourism and seasonality (3)	15 / 68	Barriers related to internal organization of the tourism sector due to high seasonality of marine and costal tourism in Poland (e.g., *Seasonality — low demand for tourist services outside the high season*);
Attitudes	Attitudes and beliefs (3)	21 / 75	Barriers linked to the prevailing societal attitudes and to stereotypes and misconceptions about the sea and the sustainable development (e.g., *Lack of attitude of common responsibility*);
	Awareness (4)	7 / 51	

			Barriers addressing issues related to lack of or insufficient social and ecological awareness (e.g., *Low social awareness on marine issues*);
Competing uses	Conflicts (5)	11 / 69	Barriers related to existing and potential conflicts of interests and values and temporal and spatial conflicts over marine space (e.g., *Conflicts of interests: fisheries, tourism, logistics, transportation, protection of the environment, renewable energy (off-shore wind farms and biogas), minerals extraction (shall gas), linear investments*);
	Balancing uses (0)	14 / 20	Barriers arising from the plethora of marine stakeholders and their competition for space (e.g., *Many users/stakeholders operate in the same limited space; problems with balancing space and economic needs — fisheries, maritime transport, wind farms, energy sector, tourism*);
Holistic system	Short-term (3)	8 / 49	Barriers related to lack of holistic approach to marine management, sectoral thinking and making decisions based on short time horizon only (e.g., *Myopic local policies of the large harbour cities (Gdynia, Gdansk, Szczecin, Świnoujście*);
	Connections-disconnections (1)	13 / 25	Barriers arising from land-sea and human-environment interactions, managerial and financial schemes, and lack of close cooperation between science and industry (e.g., *Focus on use: lack of harmonious coexistence with sea and nature*);

* The number of barriers appearing in the all seven influence maps is given in brackets.

** Total number of barriers is 420 and total number of votes is 1526.

*** Examples of barriers are in Italics after the description of the group is provided.

Source: Own elaboration.

The representatives of the maritime sectors captured the complexity of the human-ecological system and were well aware of the governance processes in their close social environment. Therefore, the barriers to the sustainable development in the Pomeranian province (Table 19) reflect the variety of challenges to effective marine and coastal management as identified in the previous studies (e.g., Burbridge 1997; Gallangher 2012; Kidd and Shaw 2014; Blicharska et al. 2016; Jones et al. 2016; Piwowarczyk et al. 2019b).

The variety of barriers to achieve sustainable development (higher rank categories; Table 19) seems to overlap with some of the barriers identified for the environmental pillar of sustainable development (Table 18). Indeed, some of the groups (e.g., 'managerial' in Table 18 vs. 'governance' in Table 19) seem to have similar content. However, higher rank categories are defined broader, and they address all three pillars of sustainable development (i.e., economic, social and environmental). In addition, the Interactive Management workshops' participants generated very specific barriers (e.g., related to their specific business conditions) that are perhaps located outside the major discourse on sustainability. Such barriers, although their links with sustainability are often clear, do not easily match any barrier categories used for the evaluation of strong sustainability (Table 18), and, therefore a new classification is more useful for the multistage influence model. For the purpose of this model, using the categorization based solely on participants' narratives can possibly lead to uncovering new meanings and conceptualizations of sustainable development of marine and coastal areas. These new higher rank categories are, therefore, shortly discussed below[97].

The highest number of barriers and the highest number of votes were assigned to problems related to the economic conditions (i.e., higher rank category 'Economics'; Table 19). Economic conditions are external factors that influence decisions made by individuals or organizations concerning (un)-sustainable behaviour (e.g., Málovics et al. 2008; Ahnström et al. 2009) but they are not an explicit part of evaluation frameworks for governance effectiveness or legitimacy of the managerial processes (e.g., Suškevičs 2012; Saunders et al. 2019b). As previously mentioned, economic challenges, especially globalization and consumerism, are, indeed, considered important barriers to sustainability and its environmental pillar (de Paiva Duarte 2015). Since economic factors influence actions of the organizations, economic incentives[98] are effective tools to promote protection of the environment and conservation initiatives (Jones 2014). Economic incentives use market forces, including property rights, to steer or change the (economic) behaviour of individuals

[97] However, some of the arguments and discussions points are similar to issues risen in sub-chapter 4.1.3, where problems related to environmental pillar of sustainable development were discussed.

[98] Jones (2014) lists all together five categories of incentives. In addition to the (i) economic incentives, these categories include (ii) legal, (iii) interpretative, (iv) knowledge, and (v) participative incentives. Legal incentives refer to introduction and use of various legal acts and other formal regulations. Interpretative incentives promote awareness and embracement of cultural and/or ecological values in order to create support for environmental policies and goals. Knowledge incentives promote knowledge integration, i.e., respect and use of information and data coming from various knowledge bearers (local, traditional, sectoral, expert and scientific). Finally, participative incentives promote c0-governance and active involvement of all interested actors in order to promote and increase the feeling of openness, agency and ownership (Jones 2014).

and organizations towards desirable directions. They include economic compensations, licences, concessions, customary rights or direct financial support for selected initiatives (e.g., opportunities for alternating the income sources; Jones 2014). Economic incentives can be, indeed, quite effective mechanisms to promote sustainability beacuse perceived limitations in accessibility and use of marine resources is an important source of resistance towards conservation measures and (marine) protected areas (e.g., Roberts and Jones 2013; Ruiz-Frau et al. 2015).

Relatively high position of problems related to public engagement and civil society (higher rank category 'Public engagement'; it is the category with the second highest number of barriers (54) and 186 votes; Table 19) might indicate that top-down management and planning has becomes (or is perceived as) less and less effective way to communicate with informed stakeholders. Maritime professionals and experts have a confidence in their knowledge and they become more aware of the tools that can (or should) be used to have their interests included in decision-making processes (Piwowarczyk and Wróbel 2016; Piwowarczyk et al. 2019b). And yet, in Poland consultations are still most often illusionary (Celiński et al. 2011) as many Polish institutions are not prepared to properly acknowledge the importance of social involvement (Kronenberg et al. 2016). Polish (terrestrial) planning culture is to a large extent authoritarian and expert-driven with limited stakeholders' involvement (Piwowarczyk et al. 2019b). The same can be said for marine planning and management (Cieślak et al. 2017), although the last experiences, i.e., preparation of marine NATURA 2000 management plans (Piwowarczyk and Wróbel 2016) and more importantly of marine spatial plans (Piwowarczyk et al. 2019b) proves a shift towards more open, transparent, inclusive and participatory governance. Coastal cities and towns are less open for such procedures (e.g., Piwowarczyk et al. 2013) and, indeed, much of the discussions during the workshops was centred around citizens' right to influence and meaningfully interact with municipalities. Lack of participatory approaches is not a problem that is typical for Poland or marine areas only but is quite well recognized and described in environmental (e.g., Blicharska et al. 2016) and marine (e.g., Jones et al. 2016) management throughout Europe. Insufficient participation was also identified as the second most important constraint for coastal sustainability by the coastal managers in the United Kingdom (Gallagher et al. 2004).

Problems related to knowledge deficits (higher rank category 'Knowledge'), governance shortfalls (higher rank category 'Governance') and lack of proper strategies and policies at different levels (higher rank category 'Policies and strategies'; Table 19) are widely recognized both in the European seas (e.g., Gallagher et al. 2004; van Tatenhove 2013; Kidd and Shaw 2014; Piwowarczyk et al. 2019a) but also in the Polish marine areas[99] (Dutkowski and Kulawczuk 2009; Zaucha 2012; Piwowarczyk and Wróbel 2016; Piwowarczyk et al. 2019b).

[99] Similar groups of barriers in relations to the environmental pillar of sustainable development were discussed in the sub-chapter 4.1.3. Therefore, I do not repeat this discussion here; rather I provide additional insights on how these barriers can be addressed.

There is an extensive material available on what are the causes of these issues or how to address them properly in different contexts (i.e., various types of habitats, economic sectors or governance process) and geographical scales. For example, in the context of marine spatial planning[100] Zaucha (2012) lists six types of information gaps that hampers decision-making about the marine space. They include (i) lack of information, (ii) lack of spatial attribution of (these) information, (iii) lack of will to share information (disclosure gap), (iv) lack of information of dynamic of the development of marine areas (temporal gap), (v) communication gap (linguistic and terminology issues and misinterpretation of the same datasets), and (vi) lack of recognition of the importance of the reliable data (institutional gap; Zaucha 2012). Much of these knowledge gaps were indeed discussed during the Interactive Management workshops analysed in this study. In the same context of marine spatial planning, Piwowarczyk et al. (2019a) identify 18 groups of barriers to effective preparation of marine spatial plans, which — among other — includes issues related to knowledge (e.g., insufficient incorporation of non-scientific knowledge), tools and mechanisms (e.g., limited capacity and tools to ensure meaningful stakeholders' participation) and policy integration (e.g., different planning paradigms and conflicts between weak and strong sustainability[101]). Taking into consideration the number of challenges and their complexity, there is no one uniform solution on how to address them in marine spatial planning, or elsewhere in marine or environmental governance. In fact, many of them were already described as far as in the early 90ties (e.g., Opschoor and van der Straaten 1993; Opschoor 1994[102]), and, despite large progress in the field, many remained unsolved (e.g., Caiado et al. 2018). Nevertheless, addressing these challenges is a constant learning process and various ideas and tools are being developed and tested and they include for example (i) incorporating more social science research to inform decision-making (Blicharska et al. 2016; Bennet 2019), (ii) introducing (social) marketing solutions to promote ocean sustainability (Domegan et al. 2016), (iii) incorporating community values as a way to support co-ownership (Gee et al. 2017), or (iv)

[100] Marine spatial planning, especially in the Baltic Sea area, is an interesting example in relation to the sustainable development as its goal is to balance social, economic and environmental goals through the process of allocation of marine space to marine uses and users (Ehler and Douvere 2009). HELCOM (Helsinki Commission – a governing body of the Convention on the Protection of the Marine Environment) and VASAB (Cooperation between ministers responsible for spatial planning and development known as Vision and Strategies around the Baltic Sea) broad-scale maritime spatial planning principles (HELCOM-VASAB principles) underlines that marine spatial planning should strive to achieve long-term sustainability and good environmental status of the Baltic Sea ecosystems. Consequently, the sustainable development and the ecosystem approach are the first two of ten HELCOM-VASAB planning principles (Zaucha 2014b).

[101] Examples included in brackets were identified in the paper as key problems with the highest possible significance for the success or failure of marine spatial planning processes (Piwowarczyk et al. 2019a). These barriers were relevant not only for Poland but also for other Baltic region countries participating in the study, i.e., Germany, Sweden, Denmark, Latvia, Lithuania, and at the pan-Baltic level (Piwowarczyk et al. 2019a).

[102] For example, institutional failures defined by Opschoor (1994) include transactional, government and empowerment failures, which are further divided into eight more detailed groups. These issues were identified as hampering the shift towards more sustainable development and, despite large progress in the field, many issues still remain unsolved (e.g., Caiado et al. 2018).

employing co-evolutionary approaches to study sustainability and marine governance (Kemp et al. 2007, Jones et al. 2016).

Attitudinal problems (higher rank category 'Attitudes'; Table 19), although relatively small in number, were considered important in terms of votes. Such problems are, indeed, widely discussed in the sustainability literature (e.g., de Paiva Duarte 2015) but for a long time they were not widely discussed in the mainstream marine governance discourse. Some authors (e.g., Gallagher 2010; Jones 2014) did mention the need to change social actors' beliefs and behaviours as a necessary condition for transitions towards sustainability in the coastal areas. Recently, the issue started to receive more attention following the popularization of the ocean literacy concept (e.g., Fletcher and Potts 2007; Dupont and Flauville 2017). Increased understanding of marine ecosystems functioning, links between ocean and human health and well-being as well pro-environmental social and consumer choices can create personal responsibility for the marine and coastal ecosystems. Such responsibility is perhaps the first step to create marine citizenship and marine ownerships (McKinley and Fletcher 2012) and stimulate behavioural change towards sustainable seas and coasts (Domegan at al. 2016).

Relatively few barriers and little importance was assigned to lack of holistic approach (higher rank category 'Holistic system': 25 barriers and 89 votes; Table 19) and competition between different sectors (higher rank category 'Competing uses': 21 barriers and 74 votes; Table 19). This is somewhat surprising as both issues are relatively high on marine research agenda (e.g., Gallagher 2010; Jones et al. 2016; Støttrup et al. 2019).

The holistic (i.e., whole-of-system or system) approach is the foundation of the ecosystem-based management (Kay and Adler 2005); ecosystem-based management does not focus on the single component(s) of the (marine or coastal) system but on (i) the links and interrelations between these components (Støttrup et al. 2019), and on (ii) the changes that take place within the components, the links and in the system itself (Kay and Adler 2005). Ecosystem-based management is, however, a concept that is still not easy to operationalize (e.g., Link et al. 2019) and up-to-date its successful implementation world-wide is rare (Link and Browman 2017). There are multiple reasons for that, including lack of clearly defined goals and objectives, insufficient stakeholders' involvement, insufficient governance frameworks, lack of international mandate for the large scale operationalization of this approach and finally lack of sufficient scientific tools and data[103] (e.g., Smith et al. 2017; Link et al. 2019). Many of these problems have also been discussed during the Interactive Management workshops with relation to achieving sustainability. It is, therefore, possible to

[103] Lack of sufficient knowledge to support ecosystem-based management is especially evident when human dimension needs to be considered in marine and coastal management. There are significant problems to translate (qualitative) social science into forms and/or indicators that are now most commonly used in planning and management (e.g., Breslow et al. 2016; Link et al. 2017). In addition, natural and social science data are in general collected separately and, therefore, they are disconnected from each other (Leenhardt et al. 2015). However, social science is crucial to keep humans and their well-being in the whole-of-system approach (Leenhardt et al. 2015; Blicharska et al. 2016). Its wider application in environmental management and decision-making increases the efficiency, acceptability and equity of the managerial processes and their outcomes (Bennet et al. 2017; Charnely et al. 2017).

conclude that system approach to managing marine and coastal areas is not high on the maritime professionals' agenda as to a large extent it is still more 'scientific' than 'practical' concept[104].

Conflicts between planning paradigms and between various sectors and uses are, indeed, an important obstacle to effective environmental conservation (Blicharska et al. 2016) and successful marine spatial planning (Piwowarczyk et al. 2019a). The conservation conflicts[105] are in fact most often discussed problems concerning effective implementation and management of NATURA 2000 network(s) (Blicharska et al. 2016). The reasons of the relatively low position or low importance of the conflict category definitely needs further investigation. At this stage, I can speculate that these results may stem from low confidence in the institutions of the state, including science. The social actors blame these institutions or political arrangements — instead of accusing one another — for the existing conflicts, i.e., so the conflicts are inherently related to mismanagement or failures of the policies and management. In other words, conflicts are not considered the root or primary causes; they are rather created in response to the unfair treatment of one sector against other.

The last two higher rank categories — 'Human impact on the environment' (43 barriers and 114 votes; Table 19) and 'Sectoral issues' (41 barriers and 145 votes; Table 19) — are discussed last not because they include the smallest number of barriers or received the smallest number of votes but due to their specific character and limited possibility to compare with other studies.

Indeed, the 'Human impact on the environment' includes barriers that can describe the bad or inadequate state of the environment and pollution sources (group of barriers 'Pollution') or consequences of mismanagement of above mentioned pollutions (quality of the environment; group of barriers 'Environmental concerns'; Table 19). These groups of barriers can — to a large extent — be assessed as results and not the causes of the lack of the sustainable development of marine and coastal areas. Many of them — such as for example eutrophication (Thornthon et al. 2013) or overfishing (Jentoft and Chuenpagdee 2009) — can be classified as wicked problems, i.e., problems that are characterized by (i) high level of complexity and scientific uncertainty, (ii) with many competing values and stakes, (iii) limited governability, and (iv) by tendencies to re-appear and to get re-defined in a given time frames (Balint et al. 2011; Alford and Head 2017). Wicked problems have no final solution[106], they

[104] Some authors, however, argues (e.g., Link and Browman 2017) that we are currently observing a shift "*from the "what's, why's and when's" to the "how's" of operationalization and implementation*" of the ecosystem-based management in the management practices around the world.

[105] Blicharska and co-authors (2016) defined conservation conflicts as '*actual or potential conflicts between N2000 site protection and resource use, human well-being or tourism, potential problems industrial/infrastructure development within or in the vicinity of N2000 sites, threats to N2000*'.

[106] Since there is no definite solution for the wicked (environmental) problems, addressing them is not about finding the ultimate solution to overcome the problem. It is rather about facilitating the stakeholders' interactions that enables stakeholders to define actions or forums to interact with each other and with the wicked problems. Therefore, it is a constant process of re-definition and re-

are context-dependant or definition-dependant (Rittel and Webber 1973; Alford and Head 2017), and "*(…) are often symptoms of larger issues; they are problems within other problems.*" (Jentoft and Chuenpagdee 2009). Hence, they can often be considered to be both a cause and a result of lack of sustainable development of marine and coastal areas. In the literature, such wicked environmental problems are often presented as a separate managerial problem or discussed from the perspective of management practices (Kronfeld-Goharani 2015). So indeed, the issue of sustainable fisheries is discussed separately (e.g., Hilborn 2005; Hentrich and Salomon 2006) and specific solutions how to achieve it are put forward (e.g., Parma et al. 2006) in isolation from the wider sustainability challenges. In other words, the literature most often focuses on barriers and problems in relation to achieving sustainable fisheries and only indirect links with sustainability of seas and oceans are showed or discussed (Kronfeld-Goharani 2015).

The last group of barriers ('Protection and conservation') within the higher rank category 'Human impact on the environment' deals with managerial drawbacks, including setting of conservation priorities, related to direct conservation and protection actions and measures (Table 19). Such barriers are widely discussed in the scientific literature (e.g., Blicharska et al. 2016) and a number of barriers and challenges are recognized, among which at lack of systematic conservation planning is perhaps the most important one (e.g., Giakoumi et al. 2011; Fraschetti et al. 2018). At international level, lack of shared vision between countries is equally important hampering effective conservation at international level and creating coherent network of marine protected areas (Mazor et al. 2013; Fraschetti et al. 2018).

The Polish maritime experts were, indeed, concerned about setting (or non-setting) of conservation priorities and measures but did not directly discuss the issue of conservation planning. They, however, indirectly approached it while complaining about the unexpected results of the protection measures. And indeed, there is some evidence of little overlapping between conservation areas selected through systematic and non-systematic planning (Giakoumi et al. 2011). Strong political commitment (e.g., Giakoumi et al. 2012) and meaningful stakeholder involvement (e.g., Duhalde et al. 2017) are crucial to change the current network(s) of protected areas and design the new one that could better reflect the newest scientific findings.

Finally, the higher rank category 'Sectoral issues' (Table 19) gathers barriers related to (i) organization of the tourism sector, including seasonality, and (ii) deficiencies in various types of infrastructure. Seasonality is, indeed, a major and well discussed problem in tourism that affects the sustainability of this sector (e.g., Baum 1999; Butler 2001). The negative effects of seasonality are especially evident in the coastal areas as in summer the coasts tend to experience higher influx of tourists than other geographical regions; hence the negative effects of seasonality are multiplied (Martín et al. 2014). Seasonality has two main and

addressing the problem depending on a changing context, including social, economic and environmental factors (Head and Alford 2008).

strongly interrelated dimensions, i.e., a natural and an institutional dimension[107] (Baum and Lundtorp 2001). And indeed, both dimensions were discussed by the Polish marine professionals[108]. In fact, the majority of the seasonality-related barriers found in various studies around the world[109] were at least tackled in my study.

Barriers other than seasonality related to the organization of the tourism sector and included barriers such as *'Little focus on eco-tourism throughout the year', 'Lack of alternatives to beach-oriented tourism'* or '*Spa tourism is poorly developed'.* This points out to issues associated with limited investments and limited development of other tourists' attractions than sun, sand and sea ('3s'). These barriers, nonetheless, are indirectly related to seasonality since they are — as pointed out both by the workshops' participants and the scientific literature (e.g., Baum and Hagen 1999; Dutkowski 2004; Cannas 2012) — attempts to diversify the off-season offer and overcome the root seasonality issue.

The final group of barriers ('Infrastructure'; Table 19) underlines the deficiencies in current infrastructure and the need for its development. However, discussions during the workshops focused on economic development of the respective maritime sectors and on how lack of infrastructure constraints such development. Only a small part of discussion directly, or more often indirectly, approached the relations between ecology and infrastructure, which are now one of the most important issues within the sustainable infrastructure discourse (Ferrer at al. 2018). Sustainable infrastructure is now expected to support socio-economic goals but — at the same time — maintain the functions and good state of the natural ecosystems (Ainger and Fenner 2014). In other words, sustainable infrastructure should reduce or at least optimize the use of resources during its whole life-time, provide positive[110] or minimize the negative impact on the environment, address the stakeholders' needs and maximize the societal wealth (Pandit et al. 2017).

As mentioned above, the Interactive Management workshops' participants most often did not discuss infrastructure from the ecological perspective. Within this sustainability theme, they mentioned carbon footprints of cars, advantages of inland water and train transportations or recycling of large investments, but these topics did not receive much attention, what can lead to the conclusion that the marine professionals were either not

[107] A natural dimension relates to climatic and weather conditions while an institutional dimension includes human actions and policies. Policies cover organizational arrangements designed by relevant agencies or institutions/ministries (e.g., organization of summer and public holidays). Human actions relates to individual travel decisions undertaken by individual tourists resulting from social, cultural and economic factors (Baum and Lundtorp 2001; Butler 2001).

[108] The most vivid and in-depth discussions obviously took part during the 'tourism and leisure' Interactive Management workshop but the issue was also discussed by the representatives of other maritime sectors.

[109] The overview of the most important seasonality-related problems can be found for example in Baum (1999). The problems include the variety of issues concerning both the supply and demand side of the tourism industry as well as labour market and stakeholders' management issues (Baum 1999). Competition with other sectors for seasonal employees (e.g., with agriculture) and alternative use of non-tourism facilities (e.g., transforming school into accommodation facilities) can further reinforce the seasonality patterns (Baum and Hagen 1999).

[110] A given infrastructure has a positive impact on the environment when building it has less negative impacts than no investment at all (Ainger and Fenner 2014).

familiar with the concept of sustainable infrastructure or they did not consider it important. Further, they did not mention the issues of green procurement, strategic asset management, relational contracting, collaborative partnerships, ecosystem services, green and blue infrastructure, which are now considered important tools or methods to support sustainable development and sustainable infrastructure (e.g., Arts and Faith-Ell 2012; Lenferink et al. 2013; Ainger and Fenner 2014; Degórska and Degórski 2017).

4.1.5.2 From higher rank categories to the multistage influence model

The previous sub-chapter presents and characterizes the higher rank categories that are the result of the re-grouping of all barriers identified by the representatives of the Polish maritime sectors. In this sub-chapter, these new barrier categories are linked with the influence maps (Figures 2-8) to reveal patterns across all seven Interactive Management workshops, i.e., to create a multistage influence model.

The influence maps present the aggravation path(s) for the selected highly-voted barriers in each Interactive Management workshop. Each map is a graph with barriers as nodes and links (arrows) indicating the relation '*significantly aggravates*'. An *aggravation path* is a path in this graph that starts from a barrier from which the links only originate, and that ends with a barrier from which no links originate.

In the 'A place to live' influence map (Figure 2), there is one fundamental driver, '*Lack of general knowledge about marine ecosystems and its influence of the quality of life*' (barrier 1). Because all the five aggravation paths in this map start from barrier 1, this is the main aggravator or the most influential barrier for all other challenges to achieve sustainable development of the marine and coastal areas in the Pomeranian province. In this map, there is more than one aggravation path because of *ramifications*: some barriers are origins of more than one arrow. The first ramification occurs at '*Lack of knowledge about the threats resulting from the state of the marine environment*' (barrier 2), so in this map this barrier also aggravates barriers along all the five paths.

The shortest aggravation path in this map is the one in which the arrows go from barrier 1 to barrier 2, which in turn is linked to '*Lack of consistent vision for long-term regional development*' (barrier 3), and then to '*Lack of marine and terrestrial spatial plans*' (barrier 4). This means that barrier 1 aggravates barrier 2, barrier 1 and 2 both aggravate barrier 3, and barrier 1, 2, and 3 together aggravate barrier 4.

When two or more barriers appear in one box, it means that there is a reciprocal relation between these two (or more) elements. For example, there are three barriers that are reciprocally interrelated, i.e., '*Low commitments to undertake any actions resulting from strong belief that citizen initiatives can change nothing*', '*Short-term management and planning by local authorities*', and '*Lack of agreement between the stakeholders*'.

In five of the remaining six maps (Figures 2-7; ‘Transport’ is the exception), there is more than one main aggravator. One map (‘Tourism and leisure’, Figure 6) consists of three subgraphs such that none of the barriers in one of three influence any of the barriers in the other two.

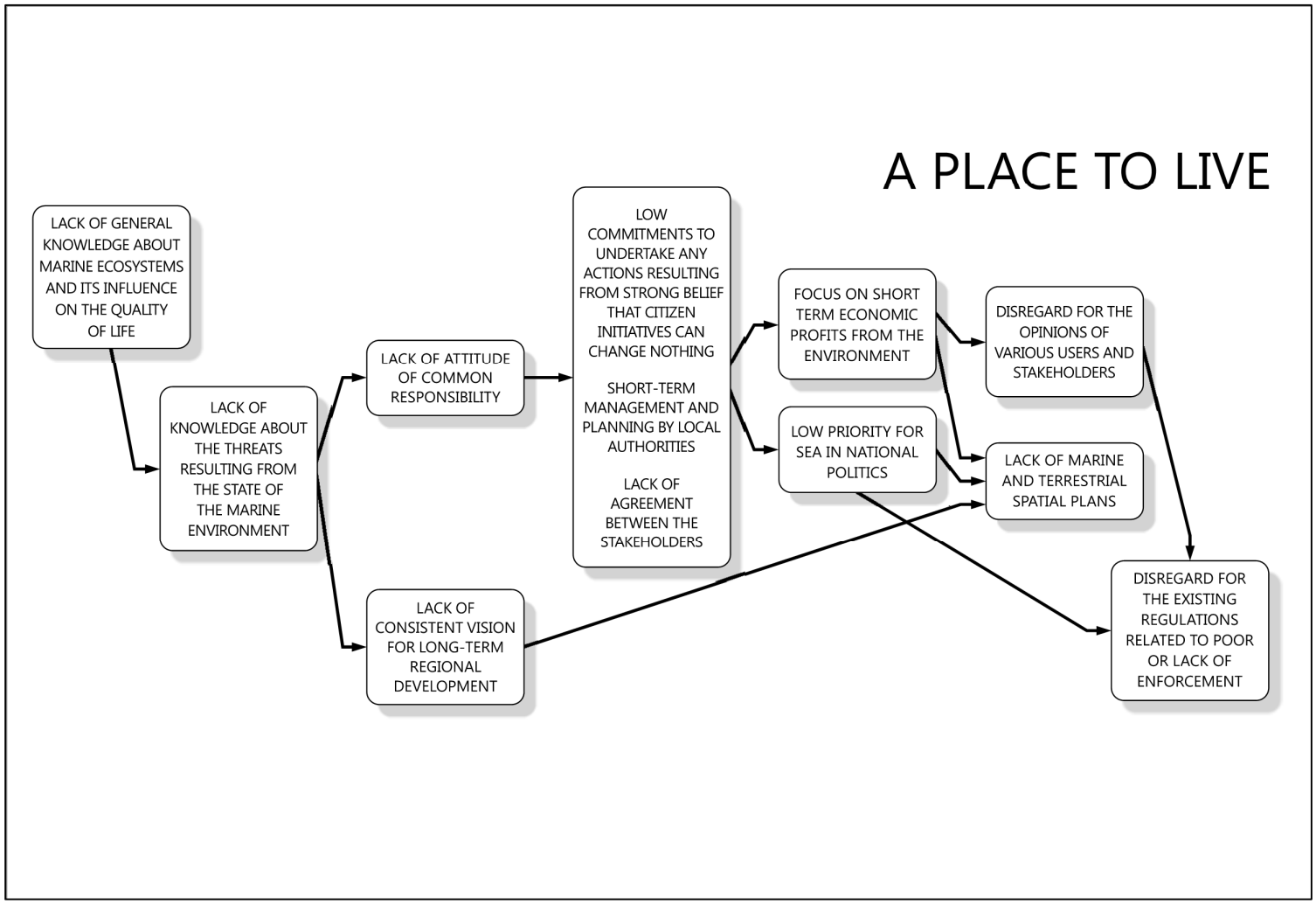

Figure 2 The influence map for the ‘A place to live’ workshop
Source: Prepared by Stanisław Węsławski based on the author’s data.

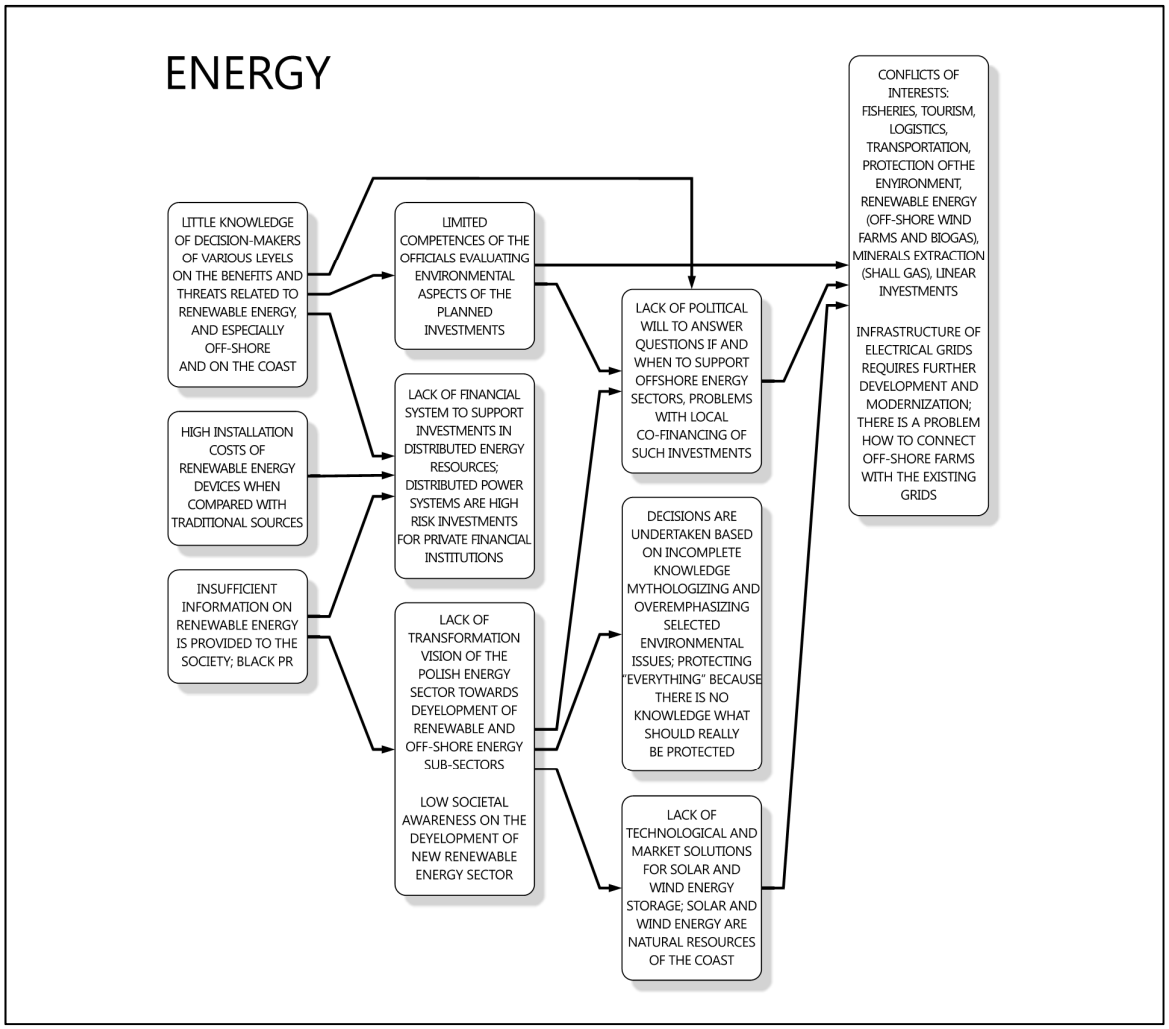

Figure 3 The influence map for the 'Energy' workshop
Source: Prepared by Stanisław Węsławski based on the author's data.

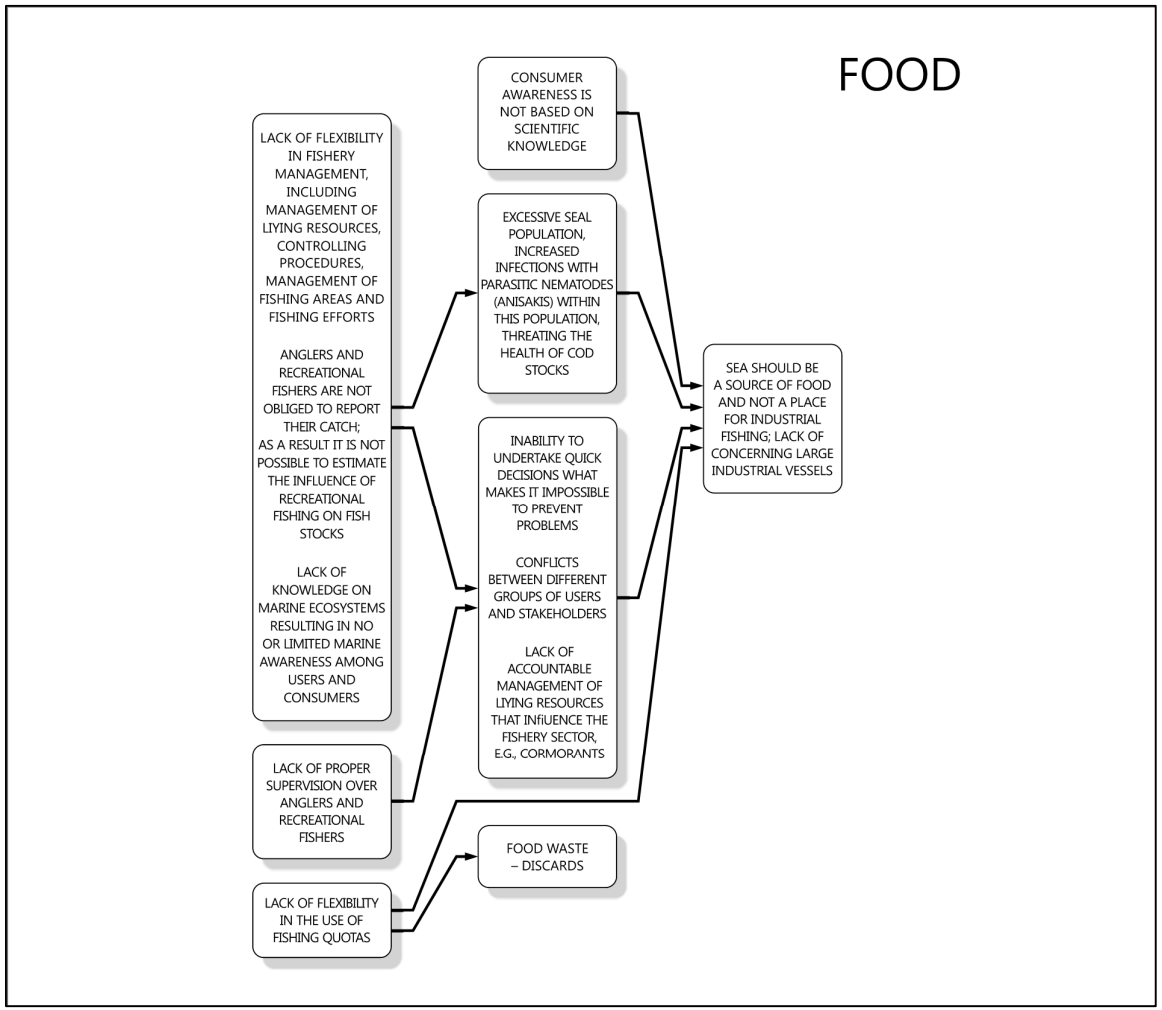

Figure 4 The influence map for the ‘Food supply’ workshop
Source: Prepared by Stanisław Węsławski based on the author’s data.

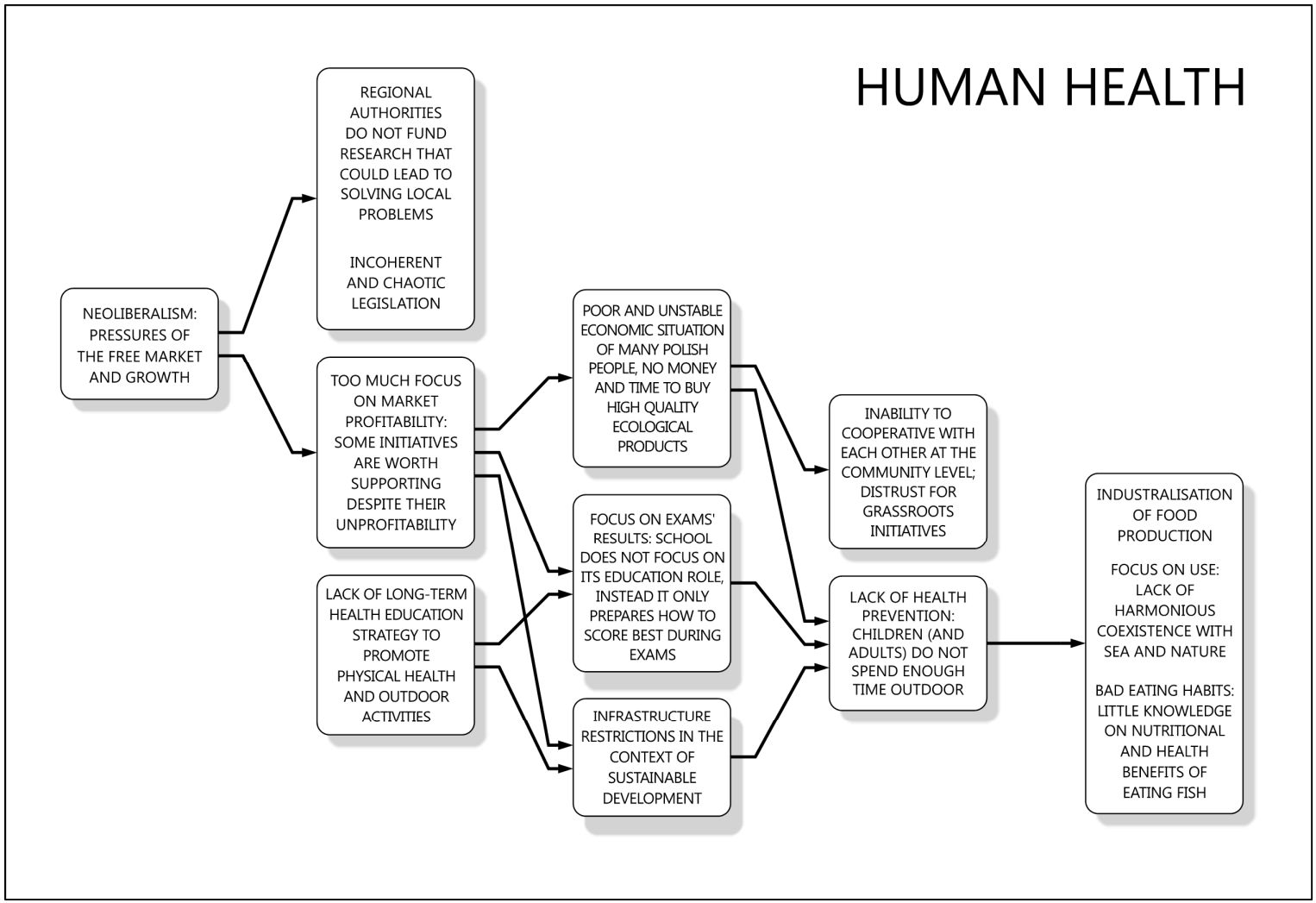

Figure 5 The influence map for the 'Human Health' workshop
Source: Prepared by Stanisław Węsławski based on the author's data.

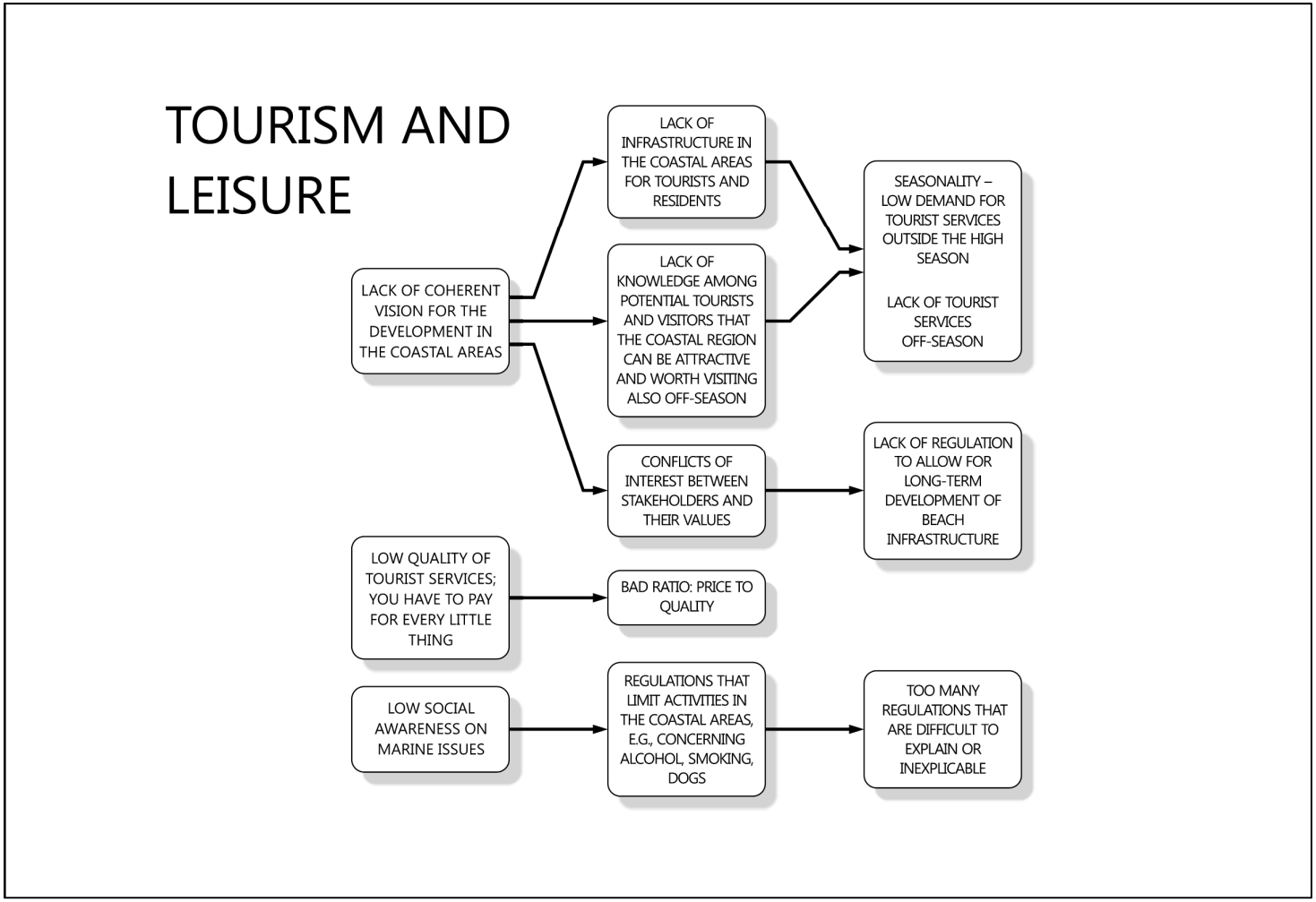

Figure 6 The influence map for the 'Tourism and leisure' workshop
Source: Prepared by Stanisław Węsławski based on the author's data.

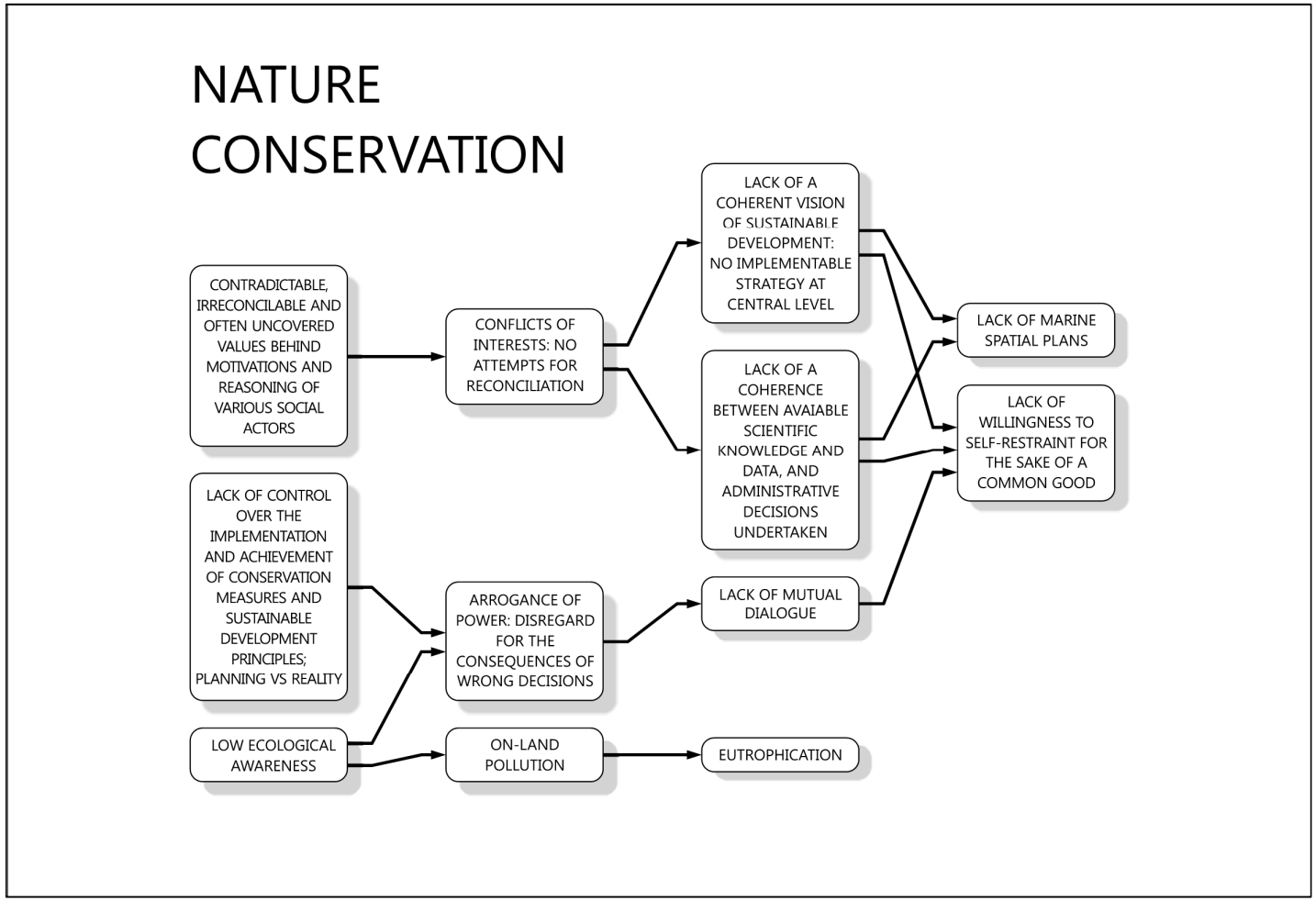

Figure 7 The influence map for the ‘Nature conservation’ workshop
Source: Prepared by Stanisław Węsławski based on the author’s data.

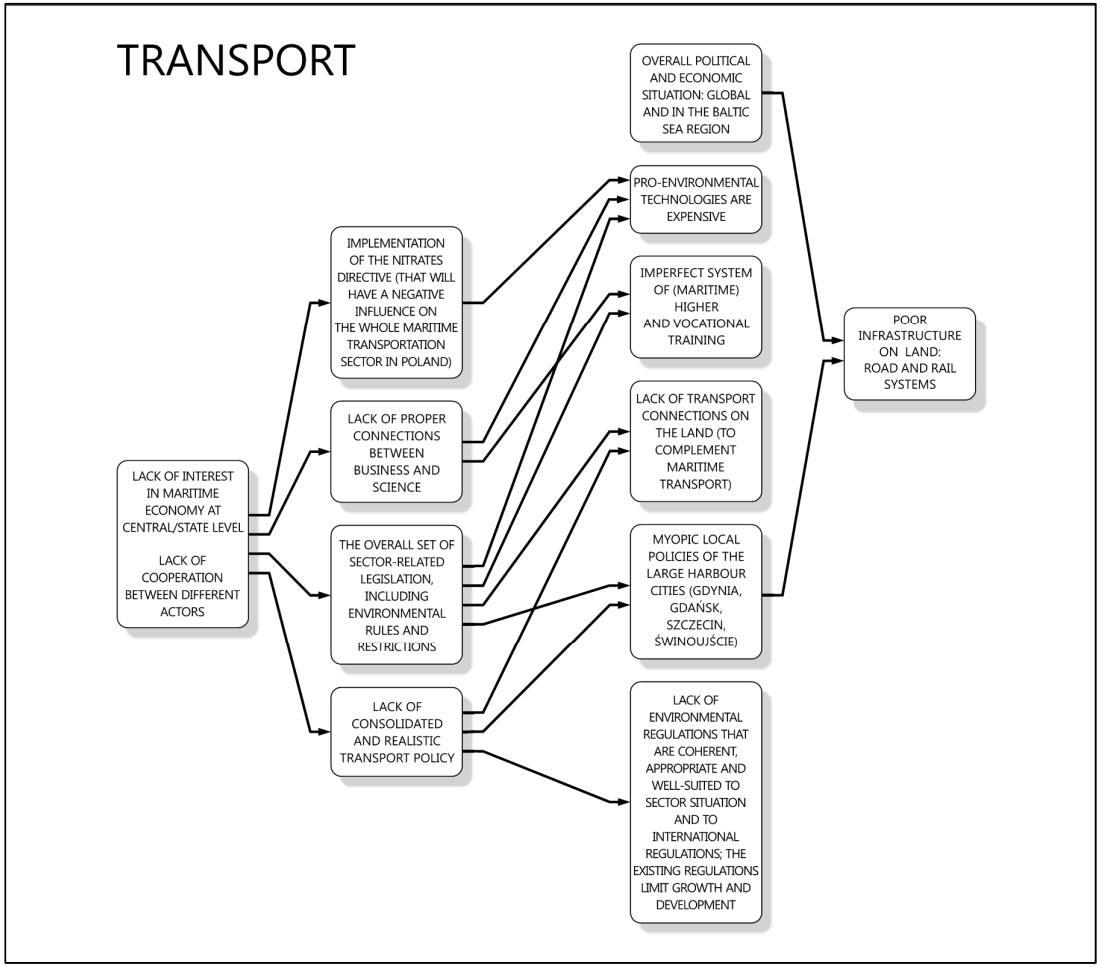

Figure 8 The influence map for the 'Transport' workshop
Source: Prepared by Stanisław Węsławski based on the author's data.

The multistage influence model is created based on the aggravation paths of the 86 barriers included in the seven influence maps. For each of these barriers, a set of scores is calculated, i.e., the position score, the antecedent and the succedent scores, the net antecedent/succedent score, and the influence score (see Table 15 in the 3.4 sub-chapter). In order to illustrate how these scores were calculated, Table 20 presents scores for the selected barriers from the 'A place to live' influence map.

At the end of the first stage of the process, each barrier is described by a set of scores similar to these presented in Table 20. In the next step, for all higher rank categories, the sum of these scores is calculated, and then divided by the number of items (barriers) in a given higher rank category (Table 21). This number represents the average degree of influence needed to establish the multistage influence model (Broome 1995, Broome and Fullbright 1995).

Table 20 Examples of the scores for the 'A place to live' influence map

Barrier	**Position score [1]**	**Antecedent score [2]**	**Succedent score [3]**	**Net antecedent / succedent score [4=3-2]**	**Influence score [5=1+4]**
Low priority of sea in national politics	2	6	2	-4	-2
Lack of consistent vision for long-term regional development	2	2	1	-1	1
Focus on short term economic profits from the environment	3	6	3	-3	0
Short-term management and planning by local authorities	4	3	5	2	6
Lack of attitude of common responsibility	5	2	8	6	11
Lack of marine and terrestrial spatial plans	1	9	0	-9	-8

Source: Own elaboration.

Table 21 The structural analysis of the higher rank categories

Name of category [1]	**Total items [2]**	**Position score [3]**	**Average position score [4=3/2]**	**Antecedent score [5]**	**Succedent score [6]**	**Net antecedent /succedent score [7=6-5]**	**Average net antecedent /succedent score [8=7/2]**	**Degree of influence [9=3+7]**	**Average degree of influence [10=9/2]**
Attitudes	7	24	3.43	8	28	20	2.86	44	6.29
Knowledge	12	33	2.75	30	46	16	1.33	49	4.08
Public engagement	7	19	2.71	18	27	9	1.29	28	4.00
Human impact on the environment	5	12	2.40	6	10	4	0.80	16	3.20
Policies and strategies	11	27	2.45	30	38	8	0.73	35	3.18
Competing uses	5	12	2.40	13	11	-2	-0.40	10	2.00
Economics	13	25	1.92	31	28	-3	-0.23	22	1.69
Governance	14	25	1.79	40	20	-20	-1.43	5	0.36
Holistic system	4	10	2.5	20	9	-11	-2.75	-1	-0.25
Sectoral issues	8	12	1.5	27	7	-20	-2.50	-8	-1.00

Source: Own elaboration.

Finally, based on the average degree of influence, the multistage influence model was generated (Figure 9). It shows the aggravation paths of the 10 higher rank categories. Similarly to the influence maps, the categories situated on the left have more influence than the categories situated on the right. In other words, (social) interventions will be more efficient and have the multiplying effects if they target barriers (or groups of barriers) with the higher average influence score.

The multistage influence model for the Polish maritime sectors (Figure 9) has ten categories of barriers grouped into six stages, where 'stage 1' has the highest influence and 'stage 6' the lowest. This means that (i) barriers related to 'Attitudes' (stage 1) hinder sustainable development of the marine and coastal areas with the highest level of influence, and (ii) they significantly influence (aggravate) the remaining categories in the influence model. Barriers related to 'Holistic system' and 'Sectoral issues' (stage 6) exercise the lowest degree of influence and all the barriers (in eight higher rank categories) within the five previous stages impact barriers grouped under stage 6. The negative average influence score suggests that these higher rank categories exercise no influence on other groups of barriers and are — to much extent — the result(s) or the manifestation(s) of the problem rather than the core cause.

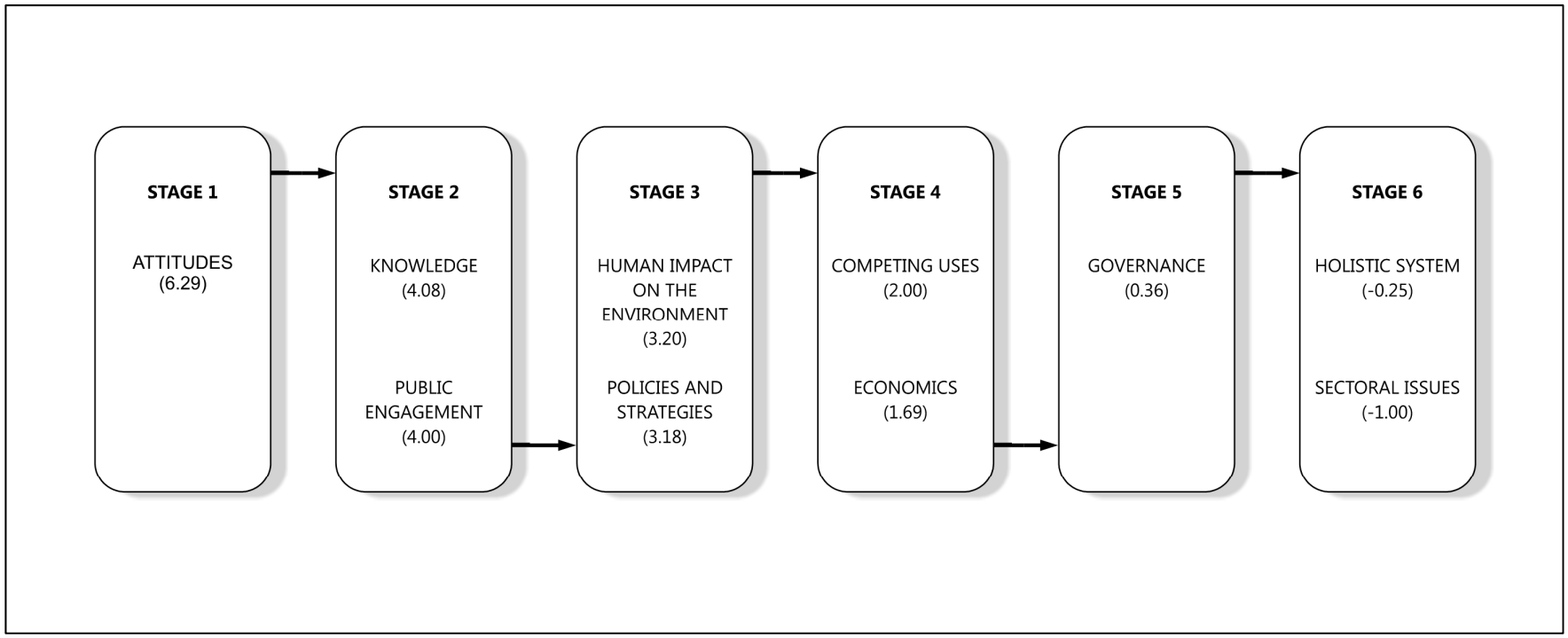

Figure 9 The multistage influence model for the Polish maritime sectors
Source: Prepared by Stanisław Węsławski based on the author's data.

4.1.5.3 Implications of the multistage influence model

The multistage influence model should be considered as a roadmap or practical guideline for the decision- and policy-makers of different levels that are responsible for the implementation of the sustainable development. This model can assist in identifying areas of interventions where the change could have the strongest and multiplying effects. In other words, interventions undertaken in earlier stage(s) of the influence model can help to overcome barriers in the later stages.

In this study social attitudes were recognized as most important barriers hindering the sustainable oceans and coasts. However, the specific sectors hardly pointed to themselves as the source of the problem. The inadequate attitudes and limited awareness was most often located in the external environment, i.e., with the decision-makers, officials and authorities, the competitive sectors and the general public. The analysis of the results, however, shows that the sectors themselves did not embrace or properly understand the concept of hard sustainability (see sub-chapter 4.1.3 for details); hence there is some room to address this issue within the studied sectors themselves. Therefore, specific social interventions should be planned considering the whole-system arising from the Interactive Management workshops and not only the multistage influence model. In addition, this example demonstrates the need for the feedback loops that leads from the initial problem definition, research undertaken to understand the problem and the evaluation of the results to inform problem (re-)definition (i.e., for the social marketing research process; Hastings and Domegan 2014).

In the ideal world of unlimited time and (monetary) resources, the multistage influence model portrays the perfect action plan — addressing the earlier stages in the model first would make addressing the later stages much easier. However, the reality or the practice of the social interventions is more complicated. Often, addressing the barriers in the later stages (in the model presented here, barriers related to 'knowledge', 'policies and strategies' or 'governance'; Figure 9) is more feasible in terms of cost and time. Furthermore, the effects of the interventions in later stages of the model may be more immediate. Such opportunities should of course be used as they appear. While doing so, individual(s) responsible for the interventions should, however, be aware that the actions would have greater and more durable effects if they included elements affecting the earlier stages — in this influence model, aiming to increase the awareness of the targets groups.

In addition, the multistage influence model points out to barriers or challenges that (i) may hamper the success of the planned interventions, or (ii) can support the development of possible solutions or remedies to the detected problems. For example, changes in legislation (intervention in the field of 'governance') could enforce more pro-environmental or more sustainable behaviour of companies and individuals but the durability of such behaviours is uncertain. Changes in social and business behaviour would be limited to short-term must-

responsibility (Málovics et al. 2008) imposed by external motivations[111], i.e., regulations (Binney et al. 2006). Such a level of engagement would probably not persist if legal requirements changed[112], re-opening the possibility for more unsustainable strategies in the future (Binney et al. 2006). It does not, however, mean that changes in legislation are not needed; they are, indeed, quite an important and effective instrument when effects are needed fast (Binney et al. 2006). Yet, they should be accompanied with other actions that would allow for the internalization of the 'new' behaviours and for the actual value change (Bellamy 2006; van der Werff et al. 2013; Hastings and Domegan 2014).

There is no simple answer to the question if pathways to marine and coastal sustainability in Poland are similar to these in other European countries. Studies of similar complexity for marine and coastal areas are scarce. Domegan et al. (2016) used the Interactive Management approach to identify barriers to sustainable marine ecosystems across Europe. Eight European countries (Greece, France, Ireland, Italy, Poland, Portugal, Spain and Sweden) were involved in this previous study; but each country held only two Interactive Management workshops with randomly selected marine sectors. These sectors included the same sectors as in the study presented in this thesis apart from nature conservation, i.e., health, food supply, energy, transport, tourism and leisure, and a place to live. However, the multistage influence model has not been calculated in Domegan et al. (2016). Instead, the importance of the barriers groups was measured, using the total number of votes for each barrier category. Table 22 presents the comparison between the barriers to sustainability in Domegan et al. (2016) and the Polish case study presented in this thesis.

[111] For the explanation on the must-responsibility see sub-chapter 4.1.3. The concept of internal vs. external motivation arises from the social marketing, i.e., the MOA framework lists three aspects (motivation, opportunity and ability) that are crucial for effective and durable behavioural change campaigns (Binney et al. 2003; Binney et al. 2006). In this framework, motivation is defined as the readiness to engage or to behave in a particular (or desired) way; motivation, in this context, can be both intrinsic and extrinsic (Binney et al. 2003; Binney et al. 2006). Opportunity refers to external conditions (e.g., time or money) that can support or restrict the willingness to act while ability describe the skills and knowledge that is needed to act or change the behaviour (Binney et al. 2003). The MOA framework has been further developed into MOAB framework (Parkinson et al. 2016), where the nature of behaviour has been added.

[112] In the time of economic crisis, decision-makers will most likely be under pressure to reduce the environmental regulations and in consequence reduce the companies' operational costs (e.g., Markandya et al. 2002).

Table 22 Comparison between the European and Polish barriers to sustainable marine and coastal ecosystems

The European study (Domegan et al. 2016)		**The Polish study (this thesis)***	
Category name**	**Number of votes**	**Category name****	**Number of votes**
Knowledge deficit	177	Markets	125
Conflict	172	Legislation	108
Legislation	164	Vision	85
Research and innovation	129	Infrastructure	77
Marine governance	116	Cooperation	76
Planning	114	Attitudes and beliefs	75
Communication and dissemination	113	General and ecological knowledge	72
Global issues	107	Conflicts	69
Attitudes and beliefs	102	Tourism and seasonality	68
Collaboration	99	Education	67
Sustainability	94	Mechanisms and instruments	63
Strategy and policy	93	Policies	63
Economic imperative	91	Communication	62
Coastal impacts	89	Funding	59
Politics	88	Science and scientific data	53
Food	77	Awareness	51
Short-term view	72	Environmental concern	49
Resistance to change	70	Short-term	49
Pollution and protection	64	Participation	48
Education	64	Planning	43

* For the Polish study the component of the higher rank categories were used as they showed the greatest similarities with the barriers groups presented by Domegan et al. (2016)

** 20 highly voted barriers categories were presented

Source: Own elaboration based on Domegan et al. (2016) for the European case study.

Both studies (Domegan et al. (2016) and the one presented in this thesis) use the same methodology but comparisons should be made with care. Firstly, the number of votes cannot be compared directly — this chapter reports the results of 7 Interactive Management workshops with 135 participants, while the pan-European study had 16 workshops and 249 participants. This implies that there should be a significantly larger number of votes the pan-European study. However, this number is not given. Therefore, it is not the number of votes but rather the order of categories that provides more meaningful information for any comparisons to be made. Secondly, although the names of the categories are similar, and

sometimes even the same, the actual content of the categories is probably different as the pool of barriers was obviously different in the two studies [113].

Nevertheless, some similarities are easily detected. In both case studies, barriers related to legislation scored high (third rank for the pan-European study and second for the study presented here; Table 22). In the first ten positions, four more similar groups of barriers appear, i.e., participants in both case studies recognize (i) problems related to knowledge deficit (1st position in Domegan et al. (2016) vs. 7th in this study), (iii) conflicting interests (2nd vs. 8th, respectively), (iii) attitudinal issues (9th vs. 6th), and (iv) lack of or limited collaboration (10th vs. 5th) as relatively important (Table 22). It is, therefore, possible to conclude that barriers to sustainable coasts and seas both in Poland only and across Europe are not significantly different. In addition, problems related to marine governance score high (5th rank) in the pan-European study but seem less important for the Polish maritime sectors. However, barriers related to drawbacks of mechanisms and instruments of marine governance are just outside the top ten for Poland (11th rank out of 26 categories) suggesting that this topic was also deemed relatively important by the Polish marine professionals.

There are, however, some differences between both case studies. Barriers related to markets received most votes in the Polish study. In contrast, economic issues do not seem to score high in the pan-European study. However, it is not certain, what categories in the pan-European study the category 'markets' in the Polish study can correspond to. In the analysis presented here, category 'markets' is defined as barriers related to changes on (international) markets (demand and supply issues) and lack of proper branding and (financial) support for Polish companies and their products. This category could have some overlap, therefore, with three different categories in Domegan et al. (2016) or combination thereof: 'global issues', 'the cost of things', 'entrepreneurship'[114]. So it is possible that if the barriers in these three categories were categorized differently, economic issues would receive higher prominence in Domegan et al. (2016). On the other hand, 'global issues' in Domegan et al. (2016) might have more in common with international politics and international relations than with the economic problems, and the fact that the barriers related to the economic issues were not pooled together in the pan-European study while they did emerge prominently in the Polish one suggests that these issues were more important for the Polish marine professionals.

Perhaps less controversially, barriers related to 'infrastructure' (4th position in Table 22) and 'tourism and seasonality' (9th position; Table 22) are more important in the Polish context than in the pan-European one, where they fall far outside the top ten categories of barriers (they have positions 26 and 22, respectively, in Domegan et al. (2016)).

The differences between the Polish study presented in this thesis and the pan-European study presented by Domegan et al. 2016 are not easy to explain. But out of 8 countries participating

[113] Domegan et al. (2016) do not define all the bariers' categories appearing in the pan-European study. Given the larger number of barriers in in the pan-European study, one can expect that its categories are defined narrower than categories in the Polish case study.
[114] Domegan et al. (2016) do not define these categories.

in the European study, only Poland is a post-transition EU country. The transition from planned economy to market economy in Poland was rapid with strong emphasis on profit, private property (and its superiority over public ownership), entrepreneurship, survival of the fittest (Kochanowicz 2014; Kronenberg 2015), social and economic exclusions (Tickle 2000). Maritime economy and maritime sectors faced new challenges such as structural changes in ports and shipyards, increased unemployment, collapse of the fishing sector, greater demand for tourism and leisure services and new EU-introduced regulations concerning environmental protection and green energy (Węsławski et al. 2010; Zaucha 2012; Piwowarczyk and Wróbel 2016). The paradigm change in nature conservation was indeed challenging as it moved from the position in which natural environment has "*(…) no intrinsic value aside from the serving of human needs*" (Kluvánková-Oravská et al. 2009, p. 189) to the introduction of actual conservation measures (Cykalewicz 2005; Opioła and Kruk-Dowgiałło 2011). The consequences of the socialist heritage have still a significant impact on the Polish economy and society and this will not change in the near future (Geise 2005; Kochanowicz 2014; Tymiński and Koryś 2015). On the contrary, it is expected that Poland will fall into the middle income trap (Prusek 2019) and will remain inferior (peripheral[115]) when compared with western European Union's countries (Tymiński and Koryś 2015). Poland is (and most likely will be) characterized by (i) relatively lower incomes and higher economic inequalities, (ii) limited innovation and entrepreneurship culture(s), and (iii) inefficient public institutions[116], (e.g., Kochanowicz 2014; Prusek 2019) what would lead to difficulties to unblock real social and economic potential and achieve the ambitions of knowledge-based economy and society (Tymiński and Koryś 2015; Prusek 2017).

The participants of the Polish Interactive Management workshops were aware of these problems either directly (through specific barriers they created) or indirectly (through deliberations about economic and social situation and transition period in relation to the other barriers). This can support the claim that the unique Polish situation (when compared with the other countries included in the pan-European study) is the cause of the higher recognition of the market and economic issues. Interestingly, problems related to current neoliberal economic paradigms are listed as a separate category in both studies (this category is ranked at the 21st position in the Polish study and at the 13th in the pan-European study[117]) suggesting perhaps more societal development or more societal awareness of the western societies, which are perhaps more aware that constant growth is not possible.

The transition period can also serve as an explanation for the relatively high position of the problems related to insufficient infrastructure. On the other hand, the most likely explanation

[115] Kochanowicz and Marody (2007) list two main pillars of the peripheral and backward nature of the Polish economic culture when compared with western Europe countries. The first pillar relates to governance and institutional ineffectiveness and the second one to entrepreneurship, including ambiguous attitude to wealth.

[116] Inefficient public institutions – among other – can create the situation where the competitive of western European companies can increase even more due to insufficient public policies or interventionism.

[117] Under the assumption that the economic imperative category does, indeed, match the economic paradigm category in this study.

for the much higher position of the 'tourism and seasonality' category in the Polish study are the differences in the sample composition and the context of the study. The Polish case focuses on the Pomeranian province region, in which the economy of many small towns and villages is based on tourism (Krzymiński et al. 2014). The European sample is more diverse: it included countries where the tourism sector is strong and countries which economy is less dependent on this sector, countries with different weather conditions, and countries with much more opportunities for cultural tourism.

Coming back to the multistage influence model, it is easy to notice that — despite high importance of the economic issues[118] measured in the number of votes — their influence is relatively smaller (1.69; Figure 10). In other words, the workshops' participants perceive economic issues as quite important but — since they are not root causes — their influence on sustainable seas and costs is relatively lower than other barrier categories. Similar relations occur for the other higher rank categories (Figure 10).

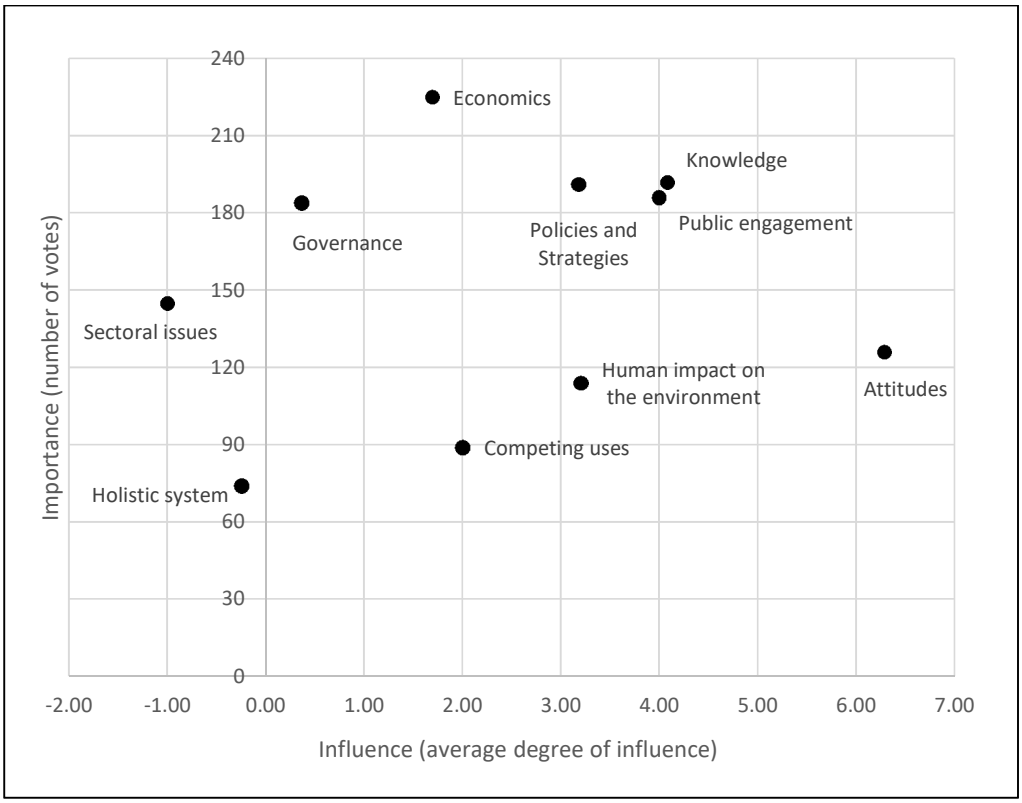

Figure 10 Importance versus influence: comparison for the maritime sectors

Source: Own elaboration.

[118] Economic issues (i.e., the higher rank category 'Economics') embrace three barrier categories, i.e., 'Economic paradigm', 'Markets' and 'Funding'.

Figure 10 shows that despite receiving a relatively small number of votes, higher rank category 'Attitudes' does — in fact — constitute a more important challenge than categories with higher vote counts. Similarly, the categories 'Governance' or 'Economics' are less influential than their number of votes could indicate. This is because the multistage influence model allows to differentiate between primary (root) causes and secondary causes (which sometimes can also be symptoms or effects). It is possible that if a multistage influence model were built by Domagan et al. (2016) [119], it might be as well the case of the pan-European study that categories with less votes (such as 'Attitudes and beliefs') would be more influential than the categories with more votes. That could perhaps make the results of these two studies even more similar.

The conceptualization of the coastal sustainability (Gallagher at al. 2004) and the proposals for coastal sustainability standards (Gallagher 2010) provide some additional insights concerning coastal sustainability. In the above mentioned work, coastal and resource management experts in the UK reconstructed the notion of coastal sustainability (Gallagher et al. 2004), what allowed for the creation of the six overarching principles for the evaluation of the sustainability (Gallagher 2010; Table 23). The overarching principles are further broken down into assessment criteria that allow to assess how efficient and how sustainable a given management regime is.

[119] Unfortunately, Domegan et al. (2016) do not provide all the information necessary to calculate the multistage influence model for the barriers described there.

Table 23 Key constructs and overarching principles of coastal sustainability

Key constructs of coastal sustainability*	**Overarching principles for coastal sustainability management****
Balance	Planning
Participation	Participation
Conservation and recourse efficiency	Communication
Scientific efficacy	Integration
Futurity	Responsibility
Integration	Balance
Education and training	
Planning	
Communication	
Problem solving	

* 10 out of 23 most popular key constructs are provided here

** The overarching principles are clusters of key constructs and they can be further broken down into more detailed elements; for example, the planning principle include reflectivity, adaptivity and futurity while the participation principle is broken down into acceptability, trust and transparency.

Source: Adapted from Gallagher et al. 2004 (for the key constructs of coastal sustainability) and Gallagher 2010 (for the overarching principles).

The sustainability constructs and overarching principles can be considered clusters of ambitions (or otherwise clusters of problems or barriers) for sustainable seas and coasts. Two themes — public engagement and knowledge and education — score high in both studies (Figure 10; Table 23) representing the wider issues of knowledge and stakeholder integration in marine and coastal management (e.g., Kidd 2013; Saunders et al. 2019ab); these two issues seem to be less prominent for environmental management at least when compared with other problems (Blicharska et al. 2016[120]). Interestingly, holistic character of sustainability does not seem important for both the British coastal managers and for the Polish maritime professionals. Only 0.6% of the respondents in UK find holistic approach as prominent part of sustainable development; similarly, in the Polish case study the higher rank category 'holistic system' was assessed relatively unimportant and uninfluential (Figure 10). Indeed, in the pan-European study, 'holistic vision' was also of secondary significance, i.e., it was classified on the 23rd position out of 38 barrier categories (Domegan et al. 2016). These results confirm

[120] In their evaluation of the functioning of the European NATURA 2000 network, Blicharska and co-authors (2016) list most common problems concerning successful conservation. The challenges that was most often discussed include (i) conflicts, (ii) managerial practices, and (iii) the mixture of values, attitudes and perceptions regarding the protected areas.

that — although holism or holistic approach is widely postulated as a foundation for sustainable management (e.g., Kay and Adler 2005; Zaucha 2014b) — systemic approach (or ecosystem-based management) is rare in practice.

But what is perhaps most striking — when comparing the British, the Polish and the European studies — is that the respondents in UK do not discuss attitudes and values of coastal actors towards the sea and the coast. The issue of marine awareness is considered of primary importance in the other two studies (Figure 10; Table 22) and the world wide movement towards ocean literacy (Fauville et al. 2019) proves the significance of the problem. I can speculate that this difference may stem from the time difference between the studies, i.e., the British study is the earliest one when the concepts of 'science for society' or 'science with society'[121] were only emerging (Owen at al. 2012).

Barriers to marine and costal sustainability in the Pomeranian province can further be evaluated in two more contexts, i.e., they can be compared with the constraints arising for sustainable development in Poland and world-wide. Both contexts or both approaches do, however, require to move away from sea and coast towards more general ambition of sustainability and the sustainable development goals.

So are marine areas and/or marine sectors in the unique situation when compared with other geographical regions or businesses activities in Poland? Does the uniqueness of the multi-dimensional marine environment impact the perception of sustainability? At the very general level, the groups of barriers for the maritime sectors (Figure 10 and Table 19) and for elsewhere in Poland (Table 24) look similar. However, I believe that this similarity is rather artificial and — to much extent — it results from the level of aggregation (or otherwise the lack of specificity), at which the barriers are presented[122], i.e., the national level.

[121] It is, however, fair to add that – although attitudes were not identified as a separate construct for coastal sustainability – the human behaviour was meant important. Communication was actually meant as a tool to transmit "(…) *information to stakeholders to enable understanding*." (Gallagher et al. 2004). This idea was further developed in the costal sustainability standards (see Gallagher 2010 for details).

[122] The majority of barriers presented in Table 24 are based on the expert evaluation and not on direct interactions with stakeholders and other social actors. Therefore, they should be considered as more genuine challenges applicable for the whole country and no specific sub-groups (for example, related to a given region or the given sectors) can be differentiated.

Table 24 Barriers to sustainable development in Poland

Themes	**List of identified barriers[123]**
Consequences of the transformation period[124]	- Increasing social and economic inequalities (between individuals and geographical regions) - Increasing social poverty - Structural unemployment - Demographic changes - Financial crisis of the state - Pollution and degradation of the natural environment
Economic	- Difficult economic situation of many companies - Relative low demand for sustainable products and services - Focus on economic development (economy or environment dilemma) - Lack of financial compensations related to restrictions in use in the protected areas
Policies (state, regional and local)	- No deeper understanding what sustainable development is - Lack of public agencies or authorities that would be fully responsible for the implementation, evaluation and monitoring of the sustainable development principles - Lack of coordination between various ministers with regard to the implementation of sustainable development - Low priority of nature conservation in national politics - Conservation policies are not well integrated with sectoral policies, especially at the municipal level - Lack of monitoring standards to evaluate the progress towards the ambitions and goals of sustainability - Lack of support for clean and renewable energy
Legal system	- Dysfunctional legal background - Low law enforcement - Poor and inefficient institutions

[123] None of the papers included in the evaluation has clearly stated if the discussed barriers address strong or weak sustainability. However, given their generality, it seems more appropriate to assume that they do not specifically focus on strong sustainability or environmental pillar of sustainable development. Therefore, the comparison with the multistage influence model seems more appropriate.

[124] Some of these barriers have been already partially of completely overcome (e.g., Kronenberg and Bergier 2012) but some still represent important challenge for the modern Polish society (e.g., Prusek 2019).

	- Bureaucracy
Business	- Lack of ethical standards - Lack of separate units responsible for sustainable practices within companies
Society	- Generation and regional gaps, i.e., the older generations and the inhabitants of villages and smaller towns are less likely to adopt the long-term time horizon - Underdeveloped public society, including relative weakness of the Polish third sector (non-governmental organizations) - Insufficient mechanisms for incorporation of societal partners into decision-making processes - Consumerism and related environmental issues related to increased traffic and waste production
Attitudes and awareness	- Lack of ecological awareness - Limited awareness of the sustainable development ambitions among local authorities - Passivity and no willingness to change own behaviour - Delegation to "change the world" elsewhere - Mistrust between various actors and between actors and decision-makers - Negative image of business and ambiguous attitudes towards wealth and entrepreneurship
Knowledge	- No or limited knowledge on sustainable development - Insufficient use and access to information on the environment - Few easily transferable good practices for business sustainability[125]
Science and education	- Lack of clear incorporation of sustainable development in the school curricula - Lack of or insufficient number of well-trained teachers and educators in the subject of sustainable development - Formal and informal education focus on conservation and not on the holistic approach to sustainable development - Lack of innovative methods for teaching about sustainable development

[125] There has been a substantial development in this field and many options are available for the interested companies. Some most common initiatives include the programme for cleaner production, environmental management standards (ISO), 'Eco-Management and Audit Scheme (EMAS)' 'Responsible Care' Programme or standards related to corporate social responsibility (Jarzębska 2007a, Jarzębska 2007b). Examples of corporate social responsibility standards include for example 'Account Ability' or 'Social Accountability standards' or 'Global Reporting Initiative' (Jarzębska 2007b). However, incorporation and use of such standards is more challenging for small and medium-sized enterprises (SME; Sokołowska-Durkalec 2017) and, indeed, it is more challenging for this sector to use sustainability in their promotional strategies (Kronenberg and Bergier 2012).

	- Lack of or limited number of social campaign concerning sustainable development - Lack of proper support for science and innovation sector to develop solutions to address the sustainability challenges

Source: Own compilation based on Kistowski 2003; Geise 2005; Kuzior 2005; Lisicka 2005; Wodzikowski 2005; Lewicka-Strzałecka 2006; Skowroński 2006; Jaśkiewicz 2008; Brendzel-Skowera 2009; Banas 2010; Borys 2010; Grodzińska-Jurczak et al. 2010; Kronenberg and Bergier 2012; Brochocka 2013 and Makarewicz-Marcinkiewicz 2015.

Indeed, almost all groups of barriers identified for Poland, apart from the barriers clustered under the 'Business' theme, are also relevant for the maritime sectors and maritime stakeholders. I can speculate that the lack of business barriers in the study of maritime sectors may originate from two reasons. First, the representatives of the maritime sectors who participated in my study considered their sectors to be relatively environmentally-friendly and operating in a relatively sustainable way. It was quite common for them to locate barriers to sustainability outside their own sector and perhaps that is why the participants saw no need for ethical standards. In addition, some of the sectors (such as fisheries or maritime transport) are indeed quite well-regulated at European or international levels and some standards are imposed by law. Secondly, the setting of my study did not focus on individual organizations but rather at sectors or uses what could be a reason for not discussing organizational issues inside own companies and other entities. That would explain the absence of issues related to who or what department or unit are responsible for the implementation of the sustainable practices within companies.

There are, however, some significant differences. Although barriers identified at the national level are neither ranked nor evaluated for their importance, I may conclude — given the number of barriers — that problems related to (i) transformation period, (ii) current policies, (iii) attitudes, and (iv) science and education are relatively important. Three out of these four groups of barriers (apart from the transformation period) are, indeed, important in the eyes of the maritime actors. As discussed before, the heritage of the previous political and economic system was clearly spelled out by the workshops' participants but it was assessed to be of secondary importance compared with the other economic issues. It should, however, be underlined that the consequences of the transformation period were more widely discussed in the relatively earlier papers and that some of the issues included in Table 24 has been at least partially solved.

The maritime experts did underline some issues that were not deeply elaborated on in the previous work concerning barriers to sustainability in Poland. Four issues appear to be most distinctive: (i) public engagement, (ii) competing uses, (iii) scientific knowledge, and (iv) characteristics of the ecosystem (the sea). The three first group of barriers are included as separate groups in the multistage influence model (Figure 10); the fourth one is a part of higher rank category 'knowledge' (Table 19). It is also somewhat interesting that the need for holistic or systemic approach in the process of achieving sustainable development was not even mentioned in the Polish context. This is perhaps not a striking difference as such approach was not deemed important by the maritime professionals either. Nevertheless, its complete absence is indeed surprising as ecosystem-based management is not entirely a marine concept (e.g., Long et al. 2015) and its applications is as well possible in the terrestrial ecosystems (e.g., Belin et al. 2005; Steenberg et al. 2019). It is, however, true that ecosystem-based management is mostly discussed in relation to seas and oceans (Long et al. 2015) and terrestrial applications of ecosystem-based approaches are mostly discussed in relation to the forestry management (Long et al. 2015; Epple et al. 2016).

Coming back to differences between the state level and marine barriers to sustainability, I believe that it is quite striking that the issue of conflicting interests and uses is not discussed at the national level. The 'environment' or 'economy' dilemma is listed among the sustainability barriers as well as low priority of environmental conservation but sectoral conflicts are not even mentioned. Although 'environment' or 'economy' dilemma refers to the managerial or planning paradigm (Piwowarczyk et al. 2019a) and it can be recognized as the umbrella conflict that can embrace the majority of tensions in environmental management, it is also true that in practice it is more likely that conflicts will emerge between selected sectors (and nature conservation; e.g., Blicharska et al. 2016; Jones et al. 2016) or between the sectors themselves (e.g., Jones et al. 2016; Piwowarczyk et al. 2019a). Examples of specific conflicts in marine management and planning[126] include (but are not limited to) conflicts between: (i) biodiversity conservation and fishing (e.g., Pecceu et al. 2016 in the North Sea; Zaharia et al. 2012 in the Black Sea or Sørensen and Kindt-Larsen 2016 in the Baltic Sea), (ii) biodiversity conservation and tourism (e.g., D'Anna 2016 in the Mediterranean; Piwowarczyk and Wróbel 2016 in the Baltic Sea), (iii) nature conservation and renewable energy (Johnson et al. 2016 in the Atlantic) or infrastructure development (e.g., Andrulewicz et al. 2010; Bielecka and Różyński 2014 in the Baltic Sea). Specific conflicts between sectors include tensions between fishing and off-shore energy sector in the Baltic Sea (e.g., Piwowarczyk et al. 2019b) or conflicts between fisheries and tourism in the Mediterranean (e.g., D'Anna et al. 2016). Less evident conflicts, i.e., conflicts not directly related to 'uses' include for example situations, where land-based activities (e.g., farming) influences the quality of the marine waters (e.g., Bonsdorff et al. 1997; Fammler et al. 2018). In fact, Kay and Adler (2005) underlines that conflicts (and trade-offs) are core to coastal management and planning[127], and these two tools are, in practice, the processes of agreeing the trade-offs needed to ensure long-term well-being. Furthermore, framing majority of coastal issues as conflicts *„is useful in that mechanism for their management become in effect strategies for conflict resolution"* (Kay and Adler 2005, p. 52). Using this perspective urges to communicate neutrally or positively about the (coastal) conflicts and focus on collaboration and possible

[126] Such conflicts are, of course, not limited to marine conservation but are also related to on-land (terrestrial conservation). Blicharska and co-authors (2016) list conflicts with forestry, farming or tourism. Other examples of terrestrial conflicts include (i) the selection of actual conservation sites (e.g., Cent et al. 2013), (ii) predation of wild species on domestic animals, (iii) attacks on humans (e.g., Torres et al. 2018), (iv) problems to safeguard rights of indigenous people to keep their lifestyle (e.g., Adams et al. 2004) or, (v) the biofuel use (Koh and Ghazoul 2008).

[127] In the general and most common ways conflicts are perceived as negative events or situations and are accompanied by the negative metaphors, where 'mess' or 'communication breakdown' are, indeed, the most positive ones. However, from the theoretical perspectives conflicts are not inherently positive or negative and almost all definitions include some positive elements such as the notions of 'aspirations' or 'strategy' (Daniels and Walker 2001). Communicating about conflicts, or otherwise conflicts metaphors or narratives, can be either negative, neutral or positive and a choice of the communication style influences or shapes, how the conflicts can be addressed and dealt with (Hocker and Wilmont 2018). The negative narratives underline the 'danger perspective' and urge individuals and parties not to get involved. Neutral communication offers elements of 'opportunity message' but it usually implies win-lose scenario. Positive conflict metaphors are focused on 'collaboration' and 'interactions', which can lead – if the conflict is properly managed – to win-win solutions (Hocker and Wilmont 2018).

constructive outcomes. Adequate framing (or communicating about) certain issues is an important element of managerial practices as it impacts the perception of various options and solutions as more or less logical or more or less feasible. Such a perception can ultimately be a decisive factor of what is selected and how it will be implemented (Crompton 2010).

The above examples illustrate conflicts between 'sectors' and 'over the space'[128]. However, conflicts on the sea and in the coastal zone are not limited to conflicts between users and uses. Other forms of conflicts include conflicts of values, conflicts over facts or knowledge, and over priorities and available public funds (Wehr 1979; Beatley 2009; Walsh 2019). All these conflicts are relevant for addressing sustainability challenges. The conflict of values is focused on criteria or adequacy of actions (Wehr 1979). In the sustainability context, it can be illustrated by the situation, when some individuals perceive some actions as complying with the ambitions of sustainable development while other are deeply convinced that the same action destroys the natural ecosystems (Noss 1995). Conflicts on facts of knowledge relates to disagreement of reality, i.e., what it accurate and what properly describes the issue or the phenomenon (Dutkowski 1995; Wehr 1979; Walsh 2019). The problem of multiply knowledge sources (i.e., scientific, traditional, professional, indigenous), their validity and accessibility is also a part of this category (e.g., Saunders et al. 2019a). The conflicts over priorities most often are link to the scarcity of public funding that in turn often determine which problems can be addressed and which actions can be undertaken (Dutkowski 1995; Beatley 2009).

The above classification is relevant to describe various types of conflicts, and is not limited to tensions between 'nature' and 'economy'. These conflicts in nature resources management can be approached differently. For example, they can be grouped according to the roots of competing goals (leading to disagreements; Dutkowski 1995). In this classifications, the conflicts arise due to (i) scarcity of natural resources, (ii) indivisibility of some elelments of natural capital (e.g., climate or aestheitic qualities of selected landscapes), and (iii) various relations with the nature and related various (managerial) models[129] to be applied to address human-nature relationships (and conflicts). In addition, they are often excerbrated by perceptions (or misperceptions) of the general public and deficiencies in managerial and planning tools and mechanisms (Czochański 1993; Solon 2005; Degórski 2015)[130], including public participation (e.g., Piwowarczyk and Wróbel 2016).

Public involvement, collaboration, social learning (as methods of working through the conflict) were proposed as solutions in the majority of conflicts and case studies listed above. This is, therefore, surprising that this issue is not considered the important barrier in the sustainability literature in Poland (Table 24). Indeed, this is the second important difference between the opinions expressed by maritime experts and sustainability discourse at the national level. The Polish maritime professionals assessed barriers related to meaningful

[128] These conflicts can sometimes be described as interests-based (Wehr 1979).
[129] These models are the result of opinions, ideologies, habits, customs or cultures of various groups of actors (Dutkowski 1995).
[130] Although on some fields the situation is slowly improving (e.g., Degórski 2016).

public engagement (higher rank category 'public engagement') as third most influential group of barriers (influence score 4.0; Figure 10). The country-level barriers do mention 'insufficient mechanisms for incorporation of societal partners into decision-making processes' (Table 24) but concern of the representatives of the maritime sectors go beyond that, i.e., to the issues of the uptake of the consultations results and fostering and actively stimulating communication forums between various stakeholders. Lack of deeper elaboration on the participation problem is even more surprising as low effectiveness and low trust towards public consultation is a well-known problem in Poland (Celiński et al. 2011) and is not limited to marine issues. In fact, Polish marine planning (both spatial and for environmental protection) is much more participatory and open for deliberation than terrestrial planning (Piwowarczyk et al. 2019b).

The review of the participation literature (e.g., Daniels and Walker 2001; Scheffran 2006; Stoll-Kleeman and Welp 2006; Rosel and Ganwerk 2010; Irvine et al. 2016; Kenter 2016; Kruger et al. 2018; Eriksson et al. 2019; Gee et al. 2019; Janssen et al. 2019; McKinley et al. 2019; Saunders et al. 2019b) suggests that the problem is not in the lack of deliberative mechanisms[131] (as there are many tools and approaches available that can guide the stakeholders interaction processes) but rather in their practical applicability, i.e., to implementation capacity, time, funds, skills, leadership, collaboration culture (including relationships between actors) and organizational and social contexts, in which mechanisms are to be implemented[132]. But perhaps the core problem — that is often overlooked — is the underestimation of the sound public judgement in contrast to raw public opinions based on emotions and wishful thinking (Yankelovich and Friedman 2010). Creating sound public opinions or shared public values requires all sides of the conflict to work through it (e.g., Daniels and Walker 2001). 'Walking through the conflict' is the *"process in which they [the participants] gradually assimilate the consequences of various paths of action"* (Yankelovich and Friedman 2010, p. 2) and can create shared values which often are only created through dialogue and joint interactions (Irvine et al. 2016).

The third difference between marine sustainability and country-level sustainability refer to issues related to availability and use of scientific knowledge and data. Only one barrier at the state level refers directly to the science sector (Table 24) but it considers support for sustainability solutions rather than data availability for the management of natural environment, which was the core of this study discussions. The reasons for that may link with yet another difference: the inherent characteristics of a given ecosystem (i.e., the sea and the coast in the case of this study). Many of the barriers identified at the regional coastal level were directly arising from the nature of the ecosystem; the multi-dimensional character of the sea that makes is more difficult to experience and to understand when compared with

[131] As per the barrier identified at the state-level (Table 24).

[132] These conclusions are partially confirmed by my study. Although I have not directly investigated problems related to successful participation, barriers related to public engagement were considered relatively influential (Figure 9 and 10). The workshops' participants pointed out to issues related to how the consultations were organized, they criticized their formats, capacities of the facilitators and limited uptake of their results.

typical terrestrial setting. The same is true for the conservation on land and on the sea. Such regional context was, however, part of this study settings and it was imposed by the Interactive Management trigger question. Therefore, it would be interesting to investigate if similar settings applied to other ecosystems in Poland, would result in more regionalized or context-dependent barriers and if marine education, marine awareness or marine citizenship[133] can also be applied to other ecosystems. In addition, the workshop participants discussed the marine culture but this concept is transferable to other ecosystems or regions, i.e., mountain culture in the Tatra Mountains. And indeed, discussing regional-related or strongly-contextualized problems might not be relevant for the country-wide assessment. I would argue, however, that while issues related to sustainability education were well-represented (Table 24) they overlook the problem of regional education or otherwise linking sustainability challenges to local or regional communities and ecosystems. These levels, and especially municipalities (Fenton and Gustaffson 2017), are increasingly important for addressing the sustainability challenges[134] (Newman 2006) as global or international levels are often not enough (Purvis 2004).

Finally — after placing this study's results in the context of marine/coastal sustainability and the country level barriers to sustainable development — some additional insights can be provided through comparisons with international (or world-wide) assessments. These comparisons have, however, some important limitations as large-scale evaluations usually focus on the set of sustainable development goals (SDGs). The SDGs are part of the United Nations 'Transforming Our World: The 2030 Agenda for Sustainable Development' and are currently regarded one of the most important efforts to support transformation towards more sustainable practices. They are also the unique intergovernmental framework agreed and adopted by both developed and developing countries around the world (Bebbington and Unerman 2018). It is also believed that these goals will increase the significance of sustainability on the political agenda and will generate more serious commitments and more funds for various types of actions (Terema et al. 2016).

There are 17 SDGs (and 169 targets; Salvia et al. 2019) but only one of them (SDG 14 — Life below water) is directly relevant to the main theme of this thesis. It calls for conservation and responsible use of oceans, seas and marine resources (Salvia et al. 2019). Other SDGs can be linked indirectly with the ambition of sustainable coasts and seas but they also embrace goals and regions going beyond the sea and the coast. For example, SDG 7 (Affordable and clean energy), SDG 11 (Sustainable cities and communities), SDG 13 (Climate actions) or SDG 15 (Life on land) include elements that are important for marine and coastal sustainability; and

[133] All these concepts were discussed in the Interactive Management workshops and assessed as lacking to various degrees.

[134] It should be noted, however, that sustainable development cannot be achieved at local level only without proper support from national governments and international organizations and agreements. National and international settings can create constraints that prevent local communities and companies to get involved in more sustainable practices (e.g., Soussan 2004). Implementation of the sustainable development is in fact neither "*the successful international collaboration*" or "*participatory actions at the local level*" (Grainger 2004 p.84) but it needs to be a combinations of scales (Grainger 2004; Newman 2006).

indeed, such elements were discussed during the Interactive Management workshops undertaken in this study. Furthermore, the SDG 14 (Life below water) is among the least researched sustainable development goals world-wide and but also in Europe (Salvia et al. 2019). The presented conclusions are perhaps more applicable to more intensively studied goals, such as 4 (Quality Education), 11 (Sustainable Cities and Communities) and 13 (Climate Action; Salvia et al. 2019). Such global assessments, and their conclusions and recommendations, often do not differentiate between the recommendations for developed and developing counties (or continents) and provide insights to some more general or genuine mechanisms and trends.

Despite these limitations, putting the results of my study in the international context provides some interesting insights. Although the global assessments deal with many issues that were beyond the interests of the Polish maritime stakeholders[135], two problems (or otherwise two major recommendations) are considered most influential, i.e., education for sustainable development (e.g., Stafford-Smith et al. 2017; Caiado et al. 2018; Popovič et al. 2019; Salvia et al. 2019) and public participation and involvement (e.g., Bowen et al. 2017; Saito et al. 2017; Stafford-Smith et al. 2018; Caiado et al. 2018; Shulla et al. 2019). These two issues — to much extent — comply with the multistage influence model that was created based on results of the Interactive Management workshops (Figure 9). The latter issues — participation and involvement — is a direct representation of stage two of the influence model with the influence score 4.0. Education for sustainable development aimed to raise awareness and stimulate pro-sustainability actions (e.g., Chin and Jacobson 2016) is in fact a combination of the first two stages on the influence model, i.e., the attitudes (6.29) and knowledge (4.08) categories (Figure 9), although obviously the Polish maritime experts' categories are defined wider.

Public engagement is considered the foundation in pursuing social transformation and challenging the prevailing (economic) paradigms and lifestyles (Dlouhá and Pospíšilová 2018). And indeed, moving towards sustainable societies and sustainable economies is the paradigm change. The issue of participation and involvement has already been widely discussed in this thesis[136], however, the international dimensions provides some further guidance or new elements to complement the expectations of the Polish maritime stakeholders.

First, it clearly points out to the need of cross-scale, cross-country and multi-stakeholders' (or multi-sectoral) partnerships (e.g., Saito et al. 2017; Shulla et al. 2019). Such partnerships, similarly to national or local proceedings, have proved to be quite efficient ways to practically tackle social challenges (e.g., Yan et al. 2018), to re-inforce and re-frame current public

[135] These issues include for example combatting (extreme) poverty, collaboration between developing (and/or low-income) and developed countries, transfer of knowledge and know-how between these countries (e.g., Bowen et al. 2017; Stafford-Smith et al. 2017; Caiado et al. 2018; Salvia et al. 2019).
[136] See relevant previous sub-chapters, i.e., 4.1.5.1 and 4.1.5.2.

debates or existing metaphors[137] (e.g., Sol et al. 2013; Treichel et al. 2017), to co-create new or shared knowledge (e.g., Sol et al. 2013) and shared values (e.g., Irvine et al. 2016). There are also evidences that such informal and non-hierarchical structures and organizations can, indeed, enhance individual or sectoral responsibility (e.g., Mena and Palazzo 2015; Fowler and Biekart 2017), lead to increased trust and transparency, and greater acceptance (e.g., Aarson 2011; Soma et al. 2018) of negotiated consensuses and compromises[138].

Secondly, these global assessments underline the role of diversity, including views, values and traditions that might significantly differ around the world (Meuleman and Niestroy 2015). Hidden and unspoken preferences might undermine progress towards sustainability solutions as achieving SDGs *"(…) is not a technical exercise, run by "value-neutral" experts"* (Meuleman and Niestroy 2015, p. 12313). Cultural differences and individual and social behaviours that are driven by them are resistant to globalisation processes and, therefore, can either become assets or constraints in moving towards sustainability (Nurse 2006). In fact, culture is an important identity of communities and nations and it can become — through its links to 'a sense of place' or 'sense of home' — a powerful mechanism to protect ecosystems and nature over the long time (Meuleman 2013). However, if cultural differences are not properly embraced and proper communication channels and collaboration forums are not created, they can lead to governmental failures and preservations of unsustainable practices and societies Interestingly, cultural differences do not play a role only between western and eastern countries, or between high- and low-level incomes states, but they also manifest themselves among the European Union countries (e.g., the Netherlands, France and Great Britain; Meuleman 2013).

Thirdly, creation of the multi-cultural and multi-stakeholders' partnerships is not enough. Such partnerships to be successful need to ensure meaningful exchange between its members and between the members and the external environment (Treichel et al. 2017). Therefore, there is an emerging role for 'external facilitators' or 'orchestrators' who can shape such interactions and stimulate 'conversations' and knowledge-co-creation (Klingebiel and Paulo 2015). In the long run, such actions would ideally allow to achieve the required compromise; the compromise that would be perhaps sub-optimal for the individual actors, but optimal in addressing the problem for which the partnership has been created (Fowler and Biekart 2017). Various actors are suggested to be able to fulfil such a role but science and

[137] What can be especially important when discussing the conflicts and changing the existing conflict metaphor to more positive one (Hocker and Wilmont 2018). See footnote 127 for more details about the issue of framing the conflicts.

[138] The success of such partnerships are of course dependant of many factors and their existence does not solve immediately contribute to solving important issues. Pattenbeg and Wiederberg (2015) identify nine conditions for successful and durable collaboration, i.e, (i) partner mix, (ii) leadership, (iii) goal setting procedures, (iv) available funding and funding conditions, (v) professional and committed management, (vi) processes of evaluation, in-depth reflections and institutional learning, (vii) meta-governance, (viii) political and social contexts, and (ix) character and nature of problems being addressed. MacDonald and co-authors (2019) add additional condition – i.e., marketing and promotion – which together with financial and organizational capital and internal management structures is assessed most important for long-lasting success.

academia (e.g., Dhoulá et al. 2013; Sedlacek 2013; Dentoni and Bitzer 2015), and especially transdisciplinarity research (in't Velt 2013), are often suggested in the context of sustainable development.

4.2 Coastal communities

4.2.1 Overview of the barriers generated by the representatives of the coastal communities

The participants in all three Interactive Management workshops identified 166 barriers to sustainable development for the marine and coastal areas around the Pomeranian province (for the list of all barriers see appendix 2). These barriers — similarly to the barriers generated by the maritime sectors — were grouped into barrier categories based on their similarities. The representatives of the coastal communities grouped 166 barriers into 22 barrier categories (Table 25). These categories represented the importance of various themes or issues that the participants wished to underline in each workshop separately (Table 26).

It does not, therefore, mean that, despite the absence of the 'tourism category' in the first workshop (Table 25), barriers addressing this sectors were not discussed. The participants in the first workshop did generate barriers related to the tourism industry but they simply included them under different keywords (or under different themes), i.e., in different barrier categories. For example, tourism-related barrier *'Seasonality in coastal tourism'* is included under 'Power and politics' category, *'Roads and tourists' attractions are not properly marked'* is a part of 'Infrastructure' category and *'Mass tourism'* adds to 'Degradation of the natural environment' category. However, it is fair to say that tourism-related issues were considered — by this group — as less important than other elements, what is actually reflected in the names of the categories.

The same case can be made for the second coastal community workshop. Although Table 25 shows that 'Legal system' and 'Education' categories did not appear in this workshop, the participants did list problems relating to these two themes. For example, the barrier *'Unclear local regulations'* is a part of 'Central and local management', and the barrier *'Problems with the education system in Poland: schools and universities do not teach practical skills'* is included under the theme named 'Labour market'. Similarly, during the third workshop the participants generated a few barriers related to economics, e.g., the barrier *'High taxes put on the companies'* is a part of 'Law and administration (decision-makers for us)' category. Management-related barrier — *'It is not clear which agency or which authority is responsible for a given issue; the system of competences and responsibilities is complicated, and it is difficult for an average person to find help'* is included in the same category 'Law and administration (decision-makers for us)'.

Table 25 Overview of barriers identified during three Interactive Management workshops for the coastal communities

	No of barriers / No of votes	**List of categories***	**Three highly voted barriers****
First workshop	53/154	1. *Social attitudes (8 barriers/27 votes)* 2. Degradation of the natural environment (8 barriers/20 votes) 3. Infrastructure (9 barriers/26 votes) 4. Legal regulations (8 barriers/23 votes) 5. Financial aspects (5 barriers/22 votes) 6. Education and information (5 barriers/16 votes) 7. Power and politics (10 barriers/20 votes)	1. Unclear regulations, which are hard to understand and to interpret (11 votes) 2. Lack of social responsibility of local citizens towards coastal cities; this lack of responsibility is especially evident in simple daily activities that everyone undertakes (10 votes) 3. Too high operating costs (including high taxes) for public and private companies (8 votes) 4. No or insufficient education on sustainable development at schools (8 votes)
Second workshop	50/168	1. Transport and communication (6 barriers/22 votes) 2. Power and control mechanisms (5 barriers/20 votes) 3. Central and local management (4 barriers/20 votes) 4. Society (7 barriers/20 votes) 5. *Labour market (4 barriers/29 votes)* 6. Tourism (9 barriers/20 votes) 7. Ecology (6 barriers/18 votes) 8. Investments in the region (9 barriers/19 votes)	1. Problems to travel, even within larger cities, by public transport (11 votes) 2. Coastal municipalities and communes do not cooperate to support sustainable development around the Gulf of Gdańsk (10 votes) 3. Bureaucracy (10 votes) 4. Lack of well-educated people that could meet the requirements of the modern labour market (10 votes) 5. Lack of ideas and strategies to develop marine tourism around the Gulf of Gdańsk; in addition, access to existing infrastructure is very limited (10 votes)
Third workshop	63/154	1. Local communities (we for ourselves) (11 barriers/22 votes) 2. Science and education (the modern nation) (5 barriers/22 votes)	1. Too many rules and regulations (9 votes) 2. Lack of social responsibility (8 votes) 3. Lack of or insufficient public transportation in the region (8 votes)

		3. *Social awareness (we, you, they) (12 barriers/29 votes)* 4. Law and administration (decision-makers for us) (8 barriers/22 votes) 5. Environment (we for the future) (12 barriers/23 votes) 6. Infrastructure (what bothers us) (5 barriers/17 votes) 7. Tourism (we for the guests) (10 barriers/19 votes)	

**The highly voted category in each workshop is marked with Italics*
*** In case of an equal number of votes all barriers having the same score are presented*

Source: Own elaboration.

Table 26 Similarity of groups of barriers identified by the representatives of the coastal communities

Group of barriers*	**First workshop**	**Second workshop**	**Third workshop**	**(Number of appearances) /(total votes)**
Society	27	20	51	(3) / (98)
Environment	20	18	23	(3) / (61)
Infrastructure	26	22	17	(3) / (65)
Legal system	23	0	22	(2) / (45)
Economy	22	48	0	(2) / (70)
Education	16	0	22	(2) / (38)
Management	20	40	0	(2) / (60)
Tourism	0	20	19	(2) / (39)

**For each group of barriers a total number of votes per workshop is given; total number of votes is 476.*

Source: Own elaboration.

A simple comparison of the barriers categories generated by the participants (Table 26) shows — despite some small differences — that similar themes are recognized, and similar themes are found important by the majority of the Interactive Management workshops' participants. Three out of eight barrier categories are common for all the workshops; the remaining five appears in at least two out of three meetings. However, when compared with the representatives of the maritime sectors, the representatives of the coastal communities focused on the smaller number of problems and — perhaps not surprisingly — their barriers are more coherent and more similar across workshops (Table 17 and Table 26).

4.2.2 The discourse on barriers to sustainable development within the coastal communities

The representatives of the coastal communities discussed the plethora of barriers related to sustainable development of coastal and marine areas around the Pomeranian province. Among these different problems, issues related to societal choices were assessed most important by two groups, i.e., in the first and the third Interactive Management workshops (Table 26). Societal issues ranked lower for the second group, where issues related to management and economy prevailed. However, some overlap can be observed between the barriers grouped under the themes 'society' and 'economy' in Table 26. As already explained, it is so, because the original grouping performed by the workshops participants depended highly on the pool of barriers generated during the events. These groupings underlined the importance of topics as perceived by the participants[139]. For example, issues related to insufficient public participation were assessed — by the first and the third groups — as societal or attitudinal problems, while they were considered managerial drawback for the participants of the second workshop[140].

The coastal communitites workshops' participants — unlike the Polish maritime sectors — considered themselves somewhat responsible for the insufficient progress towards sustainable development. Further, the 'society' theme covers the variety of problems starting from consumerism and utilitarian approach towards nature, and finishing with problems of litters on the beach and dog wastes in the parks and on the streets. However, two groups of problems can be recognized as common for all three workshops. These are the issues related to (i) consumerism, and (ii) lack of social responsibility towards the natural and human-built environment. In fact, the participants in all three Interactive Management workshops discussed very similar issues within these two specific topics.

Firstly, the issue of consumerism was predominantly discussed in relation to shopping malls, popular supermarkets (such as 'Lidl' or 'Biedronka'), and other types of superstores (large scale retails). The participants complained that cities and towns do not have clear policies

[139] The grouping was performed based on the similarity of barriers but 'similarity' could be defined by the participants themselves. Therefore, various groups could group the same barriers in a different way. Some examples have already been given in the previous sub-section, and they concerned tourism and education. Similar issues can be observed in relation to 'society' and 'economy'.

[140] It is also for this reason that the additional re-grouping is needed to create multistage influence model (see sub-chapter 3.4 for details).

concerning the use of the public space and such large shops are often built in the city centres. This space — in their opinion — should be reserved for different (public) activities and services. A limited number of shops and malls is, indeed, needed in the city centres but it is often the case that two or more malls are functioning within the walking distance; the centre of Wrzeszcz, one of the districts in Gdańsk was the most common example. In addition, the participants noted that — even in the small towns — there are too many supermarkets too close to each other. For all these shops to be profitable, it is necessary to stimulate and constantly increase the household expenses on the good and services that they often do not need. Promotions and commercials are common tools to influence the consumers' behaviours. The participants were convinced that people are not active consumers but the need to buy things is created through '*commercial influencing the people's subconscious*'. Further, large unified retails influence negatively local shops and local entrepreneurship. Local businesses and smaller shops are not able to compete with large international companies, and they slowly disappear. It is especially evident in case of craftsmen (such as shoemakers or dressmakers) that are now difficult to find. The disappearance of these occupations are also related — in the eyes of the workshops' participants — with the rapid changes in lifestyles. Modern life is fast and people prefer to buy new things than to repair the old ones. Such behaviour was, however, also perceived as a result of intentional marketing to *'convert people into consumers'*.

Interestingly, one group discussed the Sunday trade ban and — despite their critical comments on consumerism — they did not support any limitations. The participants believed that there are no links between consumerism and possibilities to do shopping on Sundays. Instead, such regulations were considered as limitations of their personal freedom and as such they should be avoided.

(Plastic) packages and use of cars were another two most often discussed examples of unnecessary and harmful consumerism practices. The workshops' participants were concerned about the number of packages and wrappings used in shops even for the products (such as fruit and vegetables) that could be sold in bulk. They were aware that — to much extent — they are to be blamed for such practices as people expect to buy things in small containers and neatly packed. Shops and food companies simply address these needs. Therefore, it is difficult (if not impossible) to avoid using plastic bottles and other plastic containers. Many of the workshops' attendees commented that the problem of plastic packages is, indeed, new for Poland. They remembered times when people carried their own shopping bags, and glass bottles could be returned after use. The participants were somewhat surprised that similar solutions can be successfully implemented abroad but are not considered feasible and profitable in Poland. They also felt it is the responsible of the central government to make large companies aware of the problem, and to enforce solutions that could allow for combating these negative trends.

The workshops' participants further criticized the increased number of cars in cities and towns. They considered cars to be a great problem both in terms of air pollution and increased

traffic. The cars — in their opinion — take over the public space and displaces pedestrians, especially that there are not enough parking spots in the city centres. The participants also noted that '*once there was just one car per family and nowadays there are three cars for three persons, and that is considered to be an acceptable norm*'. They agreed that nowadays people like their lives to be conformable, and it is difficult for them to give up something for the common good or for the environment.

That last statement does link the discussions about consumerism with the discussions about limited social responsibility or even lack of it. Under this theme, the Interactive Management workshops' participants pointed out to issues related to conformity, laziness and lack of willingness to take responsibility for own actions. They complained that people tend to do environmnteally-friendly things because '*(…) they are forced to and fear the consequences, and not because they feel this was the right thing to do'*. In general, they pointed out to small every day habits such as cleaning up after own dogs, throwing trash into the trash-bins or saving the water. Small things were deemed important and having a great influence on the natural environment. And indeed, they believed that pro-societal behaviour and responsibility for co-citizens and for the environment should be taught already at early age. When people are growing up to be individualists and are not taught to value cooperation (as it is now in Poland after transition), they will not be able to be socially responsible in their future lives. The participants were uncertain what should be done to increase social responsibility. They partially blamed the school (for not teaching enough about the ecosystems and peoples' influence over it[141]), partially the parents and extended families (who have now preferences for so-called stress-free childhood and do not teach good manners), and partially the society at large that do not value good manners, collaboration and social relations. The Interactive Management participants did notice[142] that we are observing the rapid change (or degradation) of (social) culture but they were uncertain if this tendency can be stopped or changed.

Interestingly, the issue of public transportation was one of the most vividly discussed problems that was linked with consumerism, conformity and laziness of the modern society. In addition to above joint themes or barrier categories, discussions about public transportation was obviously related to infrastructural problems[143], and to other themes such as tourism, pollution of the natural environment, investments or (regional) policies. Hence,

[141] Here, the participants discussed issues related to both general knowledge on ecology and more local/regional approach related to marine and coastal areas. At the general level, they were commenting, for instance, the waste policies and 'clean up the world' initiatives, while lack of knowledge on Baltic fish was given as an example of limited understanding of the closest environment. The participants were convinced that the majority of children coming from the coastal areas will not be able to name three different fish species. Their knowledge – most likely – will be limited to cod and herrings. Most children, and grownups as well, would not know garfish or other less popular species.

[142] Such topics were especially important for the participants in the third Interactive Management workshop but, nevertheless, such discussions can be traced in all three workshops.

[143] The majority of public transportation-related problems, indeed, were grouped under the infrastructure barrier category. However, perception of public transportation was not limited to infrastructure.

the public transportation was discussed from various angles and perspectives. The discussions were long and detailed, what suggests that the issue was perceived by the participants as close to them, an up-to-date problem, and a big part of the day-to-day sustainable choices. The length of these discussions is less reflected in the voting results, and consequently in the influence maps, i.e., only three barriers directly related to public transportation were selected for the structuring phase (see Figures 11-13). These barriers include '*Insufficient public transport*' (the first workshop), '*Problems to travel, even within larger cities, by public transport*' (the second workshop) and '*Lack of or insufficient public transportation in the region*' (the third workshop). Nevertheless, some drawbacks of public transportations were included in other barriers present in the influence maps, such as '*Lack of social responsibility of local citizens towards coastal cities; this lack of responsibility is especially evident in simple daily activities that everyone undertakes'* (the first workshop) or '*Lack of cooperation between different authorities in the region*' (the second workshop). I would, therefore, argue that public transportation can be considered the third overarching theme together with previously discussed consumerism and social responsibility.

There is yet another barrier category that was common for the all three Interactive Management workshops, i.e., environment (Table 26). However, the barriers and issues discussed under this theme in all three workshops varied a lot[144]. Therefore, issues related to natural ecosystems cannot be — in my opinion — perceived as the fourth overarching theme, especially if the results of the voting and time dedicated to certain issues are considered the selection criteria. Indeed, the participants of the first and second workshops did not spend much time discussing the environmental issues and they did not consider them important in terms of votes (Table 26). The third coastal community workshop was a bit different in this respect, i.e., the category '*Environment (we for the future)'* was the second highly voted barrier category[145].

What are the other lessons that can be taken from the coastal communities' workshops concerning perception of the sea and the coast, and marine and coastal sustainability? The most important finding is that coastal communities[146] are, indeed, more of terrestrial than of marine or coastal character. The workshops' participants did not discuss marine issues and land-sea interactions in much detail. In fact, they found other issues more important; these issues could be relevant in other contexts and outside the coastal regions. Such sea-blindness

[144] It is also why re-grouping is needed for the multistage influence model (see sub-chapter 3.4 for more details).
[145] It received 23 votes but the next three categories were close with 22 votes each (Table 25) suggesting a weak preference for this category over the other ones. The highly voted category in this workshop, i.e., '*Social awareness (we, you, they)*' received 29 votes.
[146] It is, however, important to consider the recruitment criteria (see sub-chapter 3.2 for details). In short, the person could participate in the coastal community Interactive Management workshop, if she or he could not be classified as a representative of any of the maritime sector, i.e., (i) was not knowledgeable about marine and coastal social and environmental systems, (ii) her or his educational background and professional life was not directly related with the sea or the coast, (iii) was not a member or an active supporter of marine-related non-governmental organizations, sciences centres, aquaria or similar organizations, and (iv) did not subscribe marine-related journals or magazines and did not visit the science museums or aquaria more than once the year.

is reflected in a relatively small number of marine or maritime barriers both in the whole barrier pool and also among the highly voted barriers.

Here, I define a particular barrier as marine not only if a word 'marine' or 'coastal' was present in its name, but — more importantly — when discussions in relation to this barrier included 'sea', 'coast' or 'land-sea interactions'. For example, the barrier '*Limited budgets of the coastal cities that could be used to support their development'* talks about coastal cities but the discussions were mainly about available funds for various kinds of investments, such as revitalizations of old buildings, which would be equally needed in other parts of Poland. In other words, nothing was specific to the coast or to the marine character of the cities and towns around the Gulf of Gdańsk (that could generate specific issues).

In the first Interactive Management workshop, only 12 barriers (23%) were of marine character, and they received less than 12% of votes; no marine barrier was selected for the structuring phase and was included in the final influence map. In the second workshop, the participants listed 14 marine-related barriers what constituted 28% of all barriers in the pool; these barriers received almost 18% of all votes. Out of these 14 barriers, one was included in the influence map. This is the barrier '*Lack of ideas and strategies to develop marine tourism around the Gulf of Gdańsk; in addition, access to existing infrastructure is very limited'*. This is also the second highly voted barrier in the second Interactive management workshop. It received 10 votes, i.e., one third of all votes casted on marine barriers. In the third workshop, 18 barriers (29%) can be assigned marine character; these barriers received 18% of all votes, and two of them were included in the top voted barriers, i.e., '*Lack of appreciation towards natural and cultural resources in the Gulf of Gdańsk region*' and '*Lack of education on local and regional ecosystems*'.

The majority or marine and coastal barriers discussed issues related to tourism and its seasonality, i.e., 23 out of 44 marine barriers refer to this theme[147]. Other most common themes include (i) the state of marine environment (pollution and chemical weapons; the latter was vividly discussed during two out of three workshops), (ii) limited availability of marine food, and (iii) lack of or limited marine and water culture and education. Interestingly, one of the barriers put forward by the participants during the third Interactive Management workshop reads: '*Local citizens do not feel that they are living by the seaside, i.e., limited personal connections with the sea*'. This barrier — in my opinion — perfectly reflects the overall results of the coastal community workshops. Sea-blindness is, indeed, evident among the coastal communities around the Guld of Gdańsk[148], what can be a significant challenge

[147] This is perhaps not surprising as cultural ecosystem services (and tourism and leisure opportunities) are most easily captured and apprecatied by the public (Mizgajski et al. 2014; Kowalska et al. 2017). From the nature conservation perspective, these results are rather optimistic as it seems that the coastal communities are becoming aware of the negative impacts of the over-development of the tourism sector. Previous studies (e.g., Kistowski 2005) suggest no such awareness.

[148] The sea-blindness is also relevant for coastal municipalities. Marine ecosystem services are not widely identified in the strategic documents of Polish coastal cities. In consequence, land-sea interactions are not properly valued and managed (Piwowarczyk et al. 2013).

(or threat) for the ambition of sustainable seas and coasts. The challenge of low marine awareness can be even greater if it is combined with limited awareness (or relative unimportance) of environmental pillar of the sustainable development. Next sub-chapter of this thesis discusses the importance and recognition put by the coastal communities on the environmental goals of the sustainable development.

4.2.3 Environmental pillar of sustainable development: how important it is for the coastal communities

The representatives of the coastal communities around the Gulf of Gdańsk identified many barriers to sustainable development. In many cases, these barriers were not focused on (life in) marine and coastal areas; rather they reflected more general issues important for the workshops' participants. In the next step of my analysis[149], I look at the pool of barriers identified during the workshops from the perspective of strong sustainability. In other words, I aim to identify how preventing the degradation of (marine and coastal) ecosystems and protection of these ecosystems is valued compared to social and economic goals.

In order to assess the attitudes towards the environmental pillar of sustainable development, all the barriers generated during the three Interactive Management workshops were re-grouped according to the literature-based groups of barriers to sustainable development (Table 14). The results of this re-grouping are presented in Table 27.

Table 27 Barriers for achieving good conservation status of marine and coastal areas of the Pomeranian province: the perception of coastal communities

Group of barriers*	**First workshop**	**Second workshop**	**Third workshop**
Semantic	0 / 0 votes	1 / 5 votes	0 / 0 votes
Attitudinal	4 / 15 votes	2 / 19 votes	6 / 25 votes
Political	1 / 0 votes	3 / 8 votes	0 / 0 votes
Managerial	1 / 3 votes	2 / 6 votes	1 / 0 votes
Systemic	1 / 6 votes	0 / 0 votes	2 / 11 votes
Macro-systemic	7 / 24 votes	1 / 2 votes	2 / 10 votes
System paradigms	0 / 0 votes	0 / 0 votes	0 / 0 votes
Knowledge deficiencies	0 / 0 votes	0 / 0 votes	0 / 0 votes
Information society	1 / 0 votes	0 / 0 votes	1 / 2 votes
Blue education	3 / 9 votes	0 / 0 votes	5 / 8 votes
Environment	6 / 19 votes	3 / 9 votes	7 / 17 votes
Other**	29 / 78 votes	38 / 119 votes	39 / 81 votes

**For each workshop a number of barriers and a number of votes is indicated; total number of barriers is 166 and total number of votes 476.*

*** These are the barriers that address social and economic pillar of sustainable development.*

Source: Own elaboration.

[149] See sub-chapter 3.4 and Table 13 for the overview and detailed explanation of all the analytical steps.

The majority of barriers generated by the representatives of the coastal communities around the Gulf of Gdańsk do not consider the environmental dimension of sustainable development; hence they do not refer to the good state of the natural ecosystems. The majority of the barriers addresses social and economic issues that are probably of primary importance for the society at large as well. The highest number of barriers constraining achieving strong sustainability was generated during the first workshop, i.e., about 34% of all barriers (and about 37% of all votes) referred to the environmental pillar of sustainable development. The third workshop came second with respectively 27% and 36%, while the participants in the second workshop paid little attention to nature conservation. Only 18% of barriers and 24% of votes can be assessed as properly embracing environmental ambitions of sustainable development. Nevertheless, these numbers are relatively small when compared with the Polish maritime sectors, where only two sectors (i.e., 'Tourism and leisure' and 'Transport') generated less than 40% that did not include environmental component (Table 18).

There was no single barrier included in two out of ten literature-based group of barriers (i.e., for 'System paradigms' and 'Knowledge deficiencies'), and only one semantic barrier was generated during all three Interactive Management workshop (Table 27). Attitudinal and macro-systemic barriers were most widely recognised by the representatives of the coastal communities, i.e., these groups included respectively 7% and 6% of all barriers in the pool and 12% and 8% of all votes. Interestingly, the relatively high position of attitudinal and macro-systemic barriers is the reflection of the main two main overall themes discussed in the previous sub-chapter, i.e., problems related to consumerism and lack of social responsibility towards nature and other members of the society. Other — but these two categories — can be assessed as insignificant; none of them exceeded 5% in either number of barriers or their importance (number of votes). Interestingly, problems related to 'Blue education' scored third with 5% of all barriers but only 4 % of votes. Systemic barriers were similarly important (4% of the total votes) but their number was much smaller. The participants in all three workshops generated three systemic barriers and eight related to deficiencies in educating about nature and sustainability.

The above results can suggest that the coastal communities do not consider the state of marine and coastal environments important, especially when compared with other social and economic goals. Links between the health of the natural ecosystems and the well-being are not properly recognized, holistic approach is missing, and 'self' or 'egoistic' perception[150] of nature prevails. In fact, such a lack of awareness was one of the highly votes barrier in 'A place to live' workshop[151]. These results are perhaps not surprising as examples of inadequate environmental concerns are not limited to Poland (e.g., Kłos 2015; Cynk 2017) but are the

[150] There are three types of values related to environmental concerns. They are 'self' (or 'egoistic') values, altruistic, and biosphere values. The egoistic values focus on the use of the environment, altruistic values on the equity and social justice, while biosphere values are all about unity of nature and conservation efforts (Milfont and Schultz 2016).

[151] This barrier reads: '*Lack of general knowledge about marine ecosystems and its influence on the quality of life*'. It received 13 votes (Table 16).

wider international issue (e.g., Miller 2005; Egan et al. 2011; Milfont and Schultz 2016; Buckley et al. 2017). Limited public involvement in conservation is perhaps even more difficult to overcome in case of marine areas where knowledge and understanding on how the ecosystem work is still — despite many efforts — rather low (e.g., Ballantyne 2004; McKinley and Fletcher 2012; Jefferson et al. 2014; Guest et al. 2015; Easman et al. 2018; Stoll-Kleeman 2019). Nations with larger coastlines are also missing marine awareness; in fact, only about 30% of the Polish and British citizens believe that ocean health should be high on political agenda (Potts et al. 2011). This percentage is higher for the Italians, Spaniards and French but it is still below 60%. Cost of living and other social and economic issues are, indeed, considered more important by the majority of European citizens (Potts et al. 2011).

So what are the factors that can support (or hamper) pro-environmental behaviour towards marine and coastal areas? Some interesting conclusions can be made based on my results, although of course the results of this thesis do not allow for the systematic evaluation of the factors influencing sustainable behaviour[152]. Firstly, psychological distance is considered one of the most important factors that can hinder pro-environmental behaviour (e.g., Kortenkamp and Moore 2006; Spence et al. 2011; Milfont and Schultz 2016). The psychological distance from an object (a phenomena or an event) is related to its mental representation(s). Representation of the psychologically close objects consists of concrete and specific details, while psychologically distant objects are abstract and decontextualized (Spence et al. 2011). This general definition can be assessed through various perspectives, or — in other words — it can be broken to four elements or dimensions, i.e.,

(i) the geographical or spatial distance: the environmental change or the environmental threat is not happening here but somewhere out there; 'our' direct vicinity is not subjected to the change (e.g., Schultz et al. 2014; Milfont and Schultz 2016);
(ii) the likelihood distance: the phenomena is not likely to occur, and its probability and negative effects are overestimated (e.g., Kortenkamp and Moore 2006; Milfont and Schultz 2016); this distance is strongly related with scientific uncertainly and public discourses concerning the issue at hand (e.g., Nicolaij and Hendrickx 2003);
(iii) the temporal distance: the event will not occur in the near future, and the effects will be delayed in time[153] (e.g., Kortenkamp and Moore 2006);
(iv) the social distance: the effects will be experienced by other groups of people and other communities, and hence 'we' and 'our community' are safe and not affected by the change; the social distance is also applicable for the differences between personal and societal (community) consequences (e.g., Spence et al. 2011; Schultz et al. 2014).

[152] There is no single classification of factors that influence pro-environmental behaviour. Indeed, at least three groups of factors should be assessed, i.e., personal factors (including socio-demographic factors, knowledge and skills, emotions and values), socio-cultural factors and economic factors (e.g., Kollmus and Agyeman 2002; Stoll-Kleemann 2019). As already mentioned, the settings of my study does not allow to evaluate all of them in the systematic way, and therefore, only selected elements are discussed below.

[153] Temporal distance and likelihood distance are strongly interrelated. Individuals are often unable (or at least experience difficulties) to separate preferences for time (direct vs indirect outcomes) from preferences for certainty (probability of outcomes; e.g., Weber and Chapman 2004; Kortenkamp and Moore 2006).

Various events and phenomena can be subjected to all or selected perspectives only. For example, the actions to combat climate change are hindered by all four psychological distances (Spence at al. 2011), and, therefore, global warming is extremely difficult to tackle.

How do the results of my study reflect the problem of psychological distance(s)? As mentioned above, the specific settings of the study do not allow for the systematic review of all four dimensions of psychological distance. However, it is clear that sea (or marine areas) is not perceived close and important in everyday lives of the study participants. The same is true for the ambitions of sustainable development. The participants — in their discussions — did not embrace the strong sustainability ambitions; it seems that the environmental pillar of sustainable development was — to much extent — neglected, and social and economic goals were deemed more important. Comparison between the discourse of the maritime sectors and social communities also suggests that the representatives of marine sectors were, indeed, much more familiar with the sustainability issues and relevant challenges. For example, the maritime sectors discussed how the three pillars should interact, or if sustainability is (or is not) about the conservation of the natural environment. Despite the outcomes of these discussions and the consensus achieved, it suggests that the marine professionals have more knowledge about, and are more experienced with the sea and its sustainable development. Hence, their psychological distance is smaller than the one that characterizes the representatives of the coastal communities. In fact, the general public seemed to focus on quality and cost of lifes, and considered these as proxies for sustainable development. Similarly, marine areas were relatively unimportant in a way that the participants did not see that they directly impacted their lives; as already discussed most marine barriers related to tourism and its consequences on local communities.

Perceiving the sea through the lens of tourism points out to another set of factors that hinders pro-environmental behaviour, i.e., the social discourse. Social discourse can be defined as a set of attributes and values that people attach to an object or to a phenomenon (Fisher et al. 2011; Selge et al. 2011; Milfont and Schutz 2016). In short, these values can vary from benefit-driven to moral-driven (e.g., Montgomery 2002) representing various justifications for undertaking actions or changing behaviours to support pro-environmental actions (e.g., Appleton 2014). There is no one classification of values or attributes. Milfont and Schultz (2016) proposes three types of values: self or egoistic (focused on use), altruistic (focused on equity and social justice) and biosphere (focused on nature). Montgomery (2002) proposes six types, i.e., utilitarian, ecological-scientific, aesthetic, symbolic, humanistic and moralistic. If the motivations include a moral component, the behavioural change is more likely to occur[154] (e.g., Schwartz, 1977; Schwartz and Howard, 1982). And indeed, this moral

[154] According to the Norm Activation Model (NAM; Schwartz, 1977; Schwartz & Howard, 1982). Examples of practical application of NAM to environmental settings include evaluation of support for the forest conservation initiative (Liebe et al. 2010) or evaluation of conservation benefits in remote marine areas (Börger and Hattam 2017). Moral motivations, however, interplay with other factors (such as emotions, other enticing behaviours and social norms or pressures, including religion), and can be overridden by them (Bandura 2016). NAM is not the only social-psychological model that can explain why people act more environmentally friendly. Other

component was not evident in the general public's discussions about the environment during the three Interactive Management workshops. The dominant social discourse focused on (sustainable) use of ecosystems, and what should be done to safeguard the future use of resources, hence demonstrated the 'self' values system. Less frequent opinions could be described as altruistic values as they discussed the current social justice but, indeed, they more referred to man-made environment and uneven distribution of 'use' values than environment itself. Biosphere values were practically non-existent. There were no discussions about the intrinsic value of the environment and its right to exist. Only 16 out of 166 barriers directly discussed the good state of natural ecosystems, and how this state changes; nine out of these 16 barriers were of marine of coastal character. However, even these barriers mainly considered how the community is influenced by the changes in the natural ecosystems. Pollution or shrinking natural habitats were considered an important problem but more for 'the people' than 'for the environment' itself. This can be partially explained by the settings of the Interactive Management workshops, i.e., by the focus on barriers to sustainable development. However, I believe it does not completely explain almost total absence of intrinsic values of nature and its own rights to exist. Education[155] about the natural world (and sustainable development) can be another explaining factors for an absence of intrinsic values.

People around the world, indeed, know little how the sea functions, how it interacts with the coast, and how their well-being is influenced by the ocean's health. They are also not well-aware how their daily choices influence the state of the seas and the oceans (e.g., Carvalho et al. 2012; McKinley and Fletcher 2012; Perry et al. 2014; Guest et al. 2015; Potts et al. 2016; McCauley et al. 2019; Stoll-Kleemann 2019; McKinley et al. 2020b). Based on the Interactive workshops results, the same conclusion can be applied to the coastal communities around the Gulf of Gdańsk. The participants linked only superficially their well-being with the sea, and sustainable development of the coastal areas was considered — to much extent — in isolation from marine areas. And these both notions are at the core of ocean literacy (Fletcher and Potts 2007). Indeed, the discussions about marine-related barriers were less vivid when compared with other topics, and involved less participants. In other words, only a limited number of participants wanted to comment or discuss marine-related barrier. Despite relatively scare data, it was rather clear that the participants did not know much about the problems at hand (e.g., pollution or sunk chemical weapons). Their opinions (or knowledge) was often based on the sensational news from newspapers or internet[156]. For example, many

theories include the theory of planned behaviour (Ajzen 1991), model of altruistic/moral behaviour (Kahneman et al. 1993), the value-belief-norm model (Stern 2000) or the theory of selective moral disengagement (Bandura 2007).

[155] In the context of this study, the 'Blue education' barrier category (Table 14) can be considered as addressing this issue. This category is relatively insignificant both in case of coastal communities and maritime sectors (see Table 18 and 27). Proper education for sustainable development and for nature- and ocean-literacy is considered much more important in the literature (e.g., Dupont and Fauville 2017; Caiado et al. 2018).

[156] Lack of or limited scientific knowledge was evident not only in relation to marine issues. For example, the workshop participants knew little about GMOs and the barrier 'Common use of substances that are poisonous for the natural ecosystems, e.g., GMO and Roundup' was voted as one of the most important barriers in the third Interactive Management workshop.

participants claimed that eating flounders from the Baltic sea is dangerous as their meat is polluted because of the chemical weapons sunk in the Baltic Sea. Similar opinions, but not related to chemical weapons, were also expressed for other fish species[157]. In these cases, industrial and municipal wastes were to blame. Pollution coming from ships was another topic that was quite often discussed — it was clear that the workshop participants were not aware of the current legal solutions and monitoring practices that proves that the quality of the Baltic sea water is improving, and oil spills from ships are relatively well-monitored.

Knowledge and awareness (or ocean literacy) is considered a pre-condition for pro-environmental behaviour (e.g., Fletcher and Potts 2007) but it is often not enough (e.g., Kollmuss and Agyeman 2002; Stoll-Kleemann 2019). Therefore, educating on marine issues should not only consider providing information, but it should also focus on personal direct experiences (Alessa et al. 2013; Friedrich et al. 2014), emotional feelings[158] (e.g., Antonetti and Maklan 2014; Han et al. 2016), and creation of place attachment (e.g., Sakurai et al. 2016; Buonincontri et al. 2017) that further increases personal responsibility (or environmental action competence[159]) for the natural ecosystems that could contribute to creation of marine citizens (e.g., Carvalho et al. 2012; McKinley and Fletcher 2012, Fraijo-Sing et al. 2014).

4.2.4 The multistage influence model for barriers to achieve sustainable development of marine and coastal areas: the perspective of local communities

4.2.4.1 Higher rank categories and groups of barriers: on overview

The representatives of the coastal communities all together generated 166 barriers hindering sustainability during three Interactive Management workshops. In this sub-chapter, I present the results of the re-grouping of all these barriers into new groups, and further into higher rank categories. This re-grouping is needed to build the multistage influence model that is based on the influence maps developed during the workshops. The details of the re-grouping procedure are described in sub-chapter 3.4 and the results are presented in Table 28.

[157] Such lack of consumers' awareness was widely discussed during the 'Food supply' workshop. Two barriers related to this topic were included in this Interactive Management's influence map, i.e., 'Lack of knowledge on marine ecosystems resulting in no or limited marine awareness among users and consumers' and 'Consumer awareness is not based on scientific knowledge' (Figure 4).

[158] Emotional feelings can be both positive (feeling of pride) and negative (feeling of guilt).

[159] Environmental action competence is defined as an ability to critically assess information of current environmental problem, be able to identify solutions at personal levels and actually implement them in daily life (Losada-Otero and García-Mira 2003).

Table 28 Higher rank categories for barriers to achieve sustainable development of marine and coastal areas: the coastal communities' perspective

Higher rank category	**Group of barriers***	**No of barriers / number of votes****	**Short description and examples of barriers*****
Economics	Economic paradigm (4)	11 / 42	Barriers related to drawbacks arising from neoliberal economy, failures of the free market and social inequalities arising from these processes (e.g., *A utilitarian approach to nature: nature is considered to be human's property and, therefore, humans can exploit it without any limitations*)
	Products (1)	15 / 31	Barriers related to availability of certain products, their prices and ways of productions (e.g., *There are less and less agriculture and orchard lands close to big cities; it makes difficult to buy fresh food directly from the producers*)
	Funding (3)	7 / 23	Problems with financing various initiatives also resulting from too high fiscal charges put on companies (e.g., *Too high operating costs (including high taxes) for public and private companies*)
Attitudes	Attitudes and beliefs (4)	22 / 57	Barriers linked to the prevailing societal attitudes, including every day habits that impact the natural ecosystems (e.g., *Lack of social responsibility of local citizens towards coastal cities; this lack of responsibility is especially evident in simple daily activities that everyone undertakes*)
	Awareness (0)	2 / 5	Barriers addressing issues related insufficient awareness concerning sustainable development and the environment (e.g., *Insufficient social awareness of what sustainable development is; this insufficient awareness is further linked with inadequate care for the natural ecosystems*)

Sectoral issues	Infrastructure (3)	13 / 42	Barriers linked to insufficient infrastructure of different types, including poor public transportation and infrastructure for tourism and recreation (e.g., *Insufficient public transport*)
	Tourism and seasonality (0)	11 / 14	Barriers related to the tourism sector, resulting from high seasonality and lack of development strategy (e.g., *Mass tourism*)
Governance	Legislation (4)	14 / 49	Barriers originating from deficiencies in legal system, including poor enforcement of existing regulations (e.g., *Unclear regulations, which are hard to understand and to interpret*)
	Management (2)	5 / 23	Barriers related bureaucracy and poorly designed national and local administration systems (e.g., *Lack of true free market; no social control over taxation, overregulated money flows and too much governmental control over the economy*)
Public engagement	Participation (1)	4 / 9	Barriers related to inefficient public consultations and limited participation (e.g., *Lack of efficient public consultations: decision-makers are not interested to listen to citizens' opinions and recognise their needs; these needs and opinions are not, therefore, included in the decisions undertaken*)
	Communication (1)	12 / 24	Barriers related to insufficient promotion of the region, reliable information about the region in the press and educational campaigns (e.g., *Insufficient promotion of the Pomeranian region*)
	Cooperation (2)	2 / 17	Barriers arising from lack of cooperation between the regional authorities (e.g., *Coastal municipalities and communes do not cooperate to support sustainable development around the Gulf of Gdańsk*)
Human impact on the environment	Protection and conservation (0)	4 / 4	Barriers related to improper environmental management and conservation decisions (e.g., *Rivers following into the Baltic Sea are not properly supervised and maintained*)
	Pollution (2)	7 / 32	Barriers describing various forms of polluting marine and coastal ecosystems (e.g., *Municipal and industrial pollutions*)

	Environmental concern (1)	6 / 11	Barriers arising from human activities and their negative influence on the quality of the environment and living marine resources (e.g., *Common use of substances that are poisonous for the natural ecosystems, e.g., GMO and Roundup*)
Policies and strategies	Policies and strategies (2)	9 / 24	Barriers related to lack of the well-established ideas on how to develop the country and the region and related maritime sectors (e.g., *Lack of ideas and strategies to develop marine tourism around the Gulf of Gdańsk; in addition, access to existing infrastructure is very limited*)
	Planning (0)	8 / 10	Barriers arising from lack of well-though planning on the land, including planning within city borders (e.g., *Lack of well-though spatial policy at the municipal level*)
Knowledge	Knowledge and education (4)	9 / 39	Barriers related to lack of or insufficient marine knowledge and drawbacks connected with the educational system in Poland (e.g., *Lack of education on local and regional ecosystems*)
Holistic system	Short-term (2)	5 / 20	Barriers related to making decisions based on short time horizon (e.g., *Lack of comprehensible and long-term planning*)

* The number of barriers appearing in the influence maps is given in brackets.

** Total number of barriers is 166 and total number of votes is 476.

*** Examples of barriers are in Italics after the description of the group is provided.

Source: Own elaboration.

The representatives of the local communities, similarly to the representatives of the maritime sectors, identified the variety of barriers to the sustainable sea and coast. The higher rank categories of both groups look — at the first glance — similar; for example, barriers related to 'Economics' were most common for both groups (see Table 19 for maritime sectors and Table 28 for the coastal citizens). There are, however, some differences between both groups. The same higher rank categories do not always include the same groups of barriers. For example, the higher rank category 'Economics' (in case of maritime sectors) is divided into three groups of barriers, i.e., 'Economic paradigm', 'Markets' and 'Funding'. The same higher rank category for the coastal communities also consists of three groups, i.e., 'Economic paradigm', 'Product' and 'Funding'. The first group (i.e., 'Economic paradigm') is defined similarly[160] for the two types of stakeholders included in my study, although the representatives of the coastal communities underlined more precisely the social inequalities as a consequence of the failures of the markets; these inequalities mainly related to differences in salaries. The second groups of barriers (i.e., 'Markets and 'Products') differ; they focus on different things, i.e., international markets, demand-supply interplay, and support for the Polish branding versus availability (and pricing) of certain products, and ways of production. Finally, in the case of the third group 'Funding', the representatives of maritime sectors were more often pointing to problems related to financing socially desired initiatives (including these related to environmental conservation) while the focus of the coastal communities was more on development and taxation. Similar differences can be found for all of higher rank categories. Despite these differences, the higher rank categories, however, show enough similarity to allow for (direct) comparisons of these categories, and further for comparisosns of the two multistage influence models.

What is perhaps more interesting, is the absence (or underrepresentation) of certain barriers in the discourse of the representatives of the coastal communities. The most striking difference is the lack of 'Competing uses' higher rank category[161] in the analysis of the opinions of the local citizens. This category relates to conflicting uses, interests and values of various uses and users in the marine and coastal space. In fact, the word 'conflict' was not explicitly used even once in all 166 barriers; that does not mean, however, that conflicting values or conflicting choices did not appear during the discussions held between the coastal communities. Some forms of conflicts, indeed, appeared in the discussions but they lacked direct 'spatial' or 'user' attribution and, therefore, they better fit other (higher-rank) categories[162]. In other words, the discussions around certain barriers stressed other elements more clearly than the conflict itself.

[160] 'Barriers related to drawbacks arising from neoliberal economy and failures of the free market' for the maritime sectors and 'Barriers related to drawbacks arising from neoliberal economy, failures of the free market and social inequalities arising from these processes' for the coastal communities.

[161] 10 higher rank categories were identified for the maritime sectors and 9 for the coastal communities (Table 19 and 28). All 9 categories are similar in terms of the content (and the same in case of the names); the 'Competing uses' category is the only difference at the level of higher rank categories.

[162] '*No policy to protect marine resources: private interests prevail over the public interests, and social responsibility of business does not work in practice*' is an example of a conflict-related barrier. However, the major

My research does not provide data that could directly explain this lack of conflict recognition. However, two findings from the Interactive Management workshops are — in my opinion — useful to shed some light on this issue. Firstly, the representatives of the coastal communities can be characterized by the relative sea-blindness and relative disconnection from the sea they live close to. Even though the Interactive Management workshops were focused around sustainable development of the sea and the coast, these notions often disappeared in the discussions of the workshops' participants. That can lead to the conclusion (supported by my data) that the coastal communities on average are not aware of the managerial processes ongoing on the Polish sea. Since they are not aware of these processes, they are probably also not familiar with the conflicts that most often manifest themselves, when legal binding decisions are undertaken. Secondly, current marine-related tensions most likely do not influence the way in which an average coastal citizen can use the sea and the coast. Using sea and coast for tourism and recreation was most common benefit of living by the seaside. People in Poland use the sea mainly for beach recreation and swimming (Ahtiainen et al. 2013), and these two activities are very unlikely to be affected by the ongoing managerial activities. Even if some tensions between nature conservation and tourism and leisure sectors exist (Węsławski et al. 2010; Węsławski et al. 2011), they are not apparent and they do not influence the general public.

The second major difference is the underrepresentation of the 'Knowledge' higher rank category. In case of the maritime sectors, this category was divided into three groups, i.e., 'General and ecological knowledge', 'Science and scientific data' and 'Education', and it included all together 52 barriers (Table 19). It was the third most numerous higher rank category. Barriers related to knowledge were relatively unimportant to achieve sustainable development of marine and coastal areas in the eyes of the coastal citizens. 'Knowledge' as a higher rank category included only nine barriers (Table 28), what made it almost the least numerous category; only one higher rank category — 'Holistic system' — contained less barriers (i.e., five). As a consequence, the category was not broken into smaller groups. Half of the barriers related to insufficient marine and ecological education (five out of nine) and not even a single barrier mentioned science or scientific data. Where does this absence come from? Does is perhaps come from the belief that we have all science we need, but there is no will to actually use it? Or rather is the opposite true? There is so little trust in science and expertise that scientific advice is not needed to solve social problem. Or perhaps do people overestimate own self-knowledge and self-understanding that they do not perceive science as indispensable for decision-making processes? My study does not offer much insights into these questions. Based on the limited discussions on scientific facts[163] during the three Interactive Management workshops, I suggest that overvaluing own knowledge and

stress was put on the protection of the marine resources and, therefore, the consensus was that this barrier better fit 'Human impact on the environment' category. Nevertheless, even such barriers were scarce, and there would not be enough of them to create the conflict category.

[163] These discussions were held around issues such as chemical weapons in the Baltic Sea, GMOs or pollution of Baltic Sea fish.

experience can be one of the most important explanatory factors that should be further studied. Even given the scarce material concerning this issue, it was, indeed, quite clear that individuals involved in these discussions were strongly convinced in their (false) opinions. These opinions were considered science-based but were also strongly connected with the participants' value system(s)[164], what ultimately lower their ability to verify and correct opinions they held (Dunning 2012). Overestimation of own knowledge cannot obviously be the only reason for omitting science in the sustainability deliberations. Insufficient (or lack) of trust in science and public institutions[165], lack of understanding how science work (e.g., Saltelli and Funtowicz 2017; Head and Banerjee 2020), lack of proper scientific education (e.g., Noy and O'Brien 2019) or the paradigm of the ability of free market to regulate all human activities (Mirowski 2011) are often listed as sources of public opposition towards science, and important obstacles for better use of science in decision-making. And indeed, they can explain 'if' and 'why' experts and science are not perceived important to address the problem of sustainability.

Finally, the third noticeable difference refers to lack of the barrier group 'Vision' within the 'Policies and strategies' higher rank category. The vision-related group of barriers was considered quite important by the representatives of the maritime sectors; six out of ten barriers from this group were voted to be most important and included in the influence maps. On the contrary, the word 'vision' does not appear even in a single barrier generated by the representatives of the coastal communities, although of course that does not mean that the elements of long-term thinking did not appear in the other barriers, e.g., in the form of (developmental) strategies.

In the strategic management literature, vision "*(…) represents a desired state that an organization aspires to achieve in the future."* (Henry 2008, p. 11). It represents the core values and the core purposes of an organization and does not change rapidly over time (Collis and Porras 2002). One of the possible explanations — although perhaps too simplistic — is that the notion of sustainable development included in the trigger questions was commonly accepted by participants as "their vision". The concept of sustainable development is relatively well recognized in Poland and considered important and feasible to achieve (e.g., Dacko and Płonka 2017; Poczta-Wajda and Sapa 2017; Jaźwińska 2018). At the same time, sustainable development is not something that is well-understood and useful at every day individual level (e.g., Łuszczyk 2011; Dacko and Płonka 2017; Płonka and Dacko 2019), and this problem persists over time. This limited knowledge about sustainability could perhaps explain both the general acceptance of sustainable development on the sea and the coast but no need to define (or re-define) what it really means. Unlike the representatives of the coastal communities, the participants from the maritime sectors seemed to be much more aware of the complexity of

[164] Not all participants were involved in these discussions and some voices of opposition could be heard. These voices were, however, weaker than voices of support.

[165] Some authors point out that some processes within the scientific community contribute to such attitudes. They include for example hyper-specialization of science, hesitance in addressing uncertainty or overusing science as a form of authority (see Ravetz 2011 or Saltelli and Funtowicz 2017).

the sustainable development and the interplay between society, environment and economy. In general, the representatives of the maritime sectors were aware of the attempts to promote the importance of the environmental pillar of sustainability, and — to much extent — they opposed such vision. They were also able to put forward examples from professional life on how the lack of shared vision (not necessarily related to sustainable development) can have negative influence on their respective sectors and businesses.

To sum up, the representatives of the coastal communities identified similar groups of problems as participants coming from the maritime sectors. However, their understanding of marine and coastal areas and sustainability seem more superficial and less in-depth. It is true that the number of Interactive Management workshops (three for coastal communities and seven for maritime sectors) could have impacted the range of issues discussed. However, I would argue that the complete omission of certain themes (i.e., conflicts, science and vision) cannot be simple explained by the number of workshops. Otherwise, these themes would at least get mentioned a few times.

4.2.4.2 The multistage influence model for the coastal communities

The previous sub-chapter presents and characterizes the higher rank categories that are the result of the re-grouping of all barriers identified by the coastal citizens. Here, these new barrier categories are linked with the influence maps (Figures 11-13) to reveal patterns across all Interactive Management workshops, i.e., to create a multistage influence model.

The detailed steps leading from the higher rank categories into the influence model are clearly described in sub-chapters 3.4 and 4.1.5.2, and, therefore, they will not be repeated here. All together there are 34 barriers in the three influence maps, i.e., 11 barriers are included in the first workshop's influence map, 12 barriers are relevant for the second workshops and 11 for the third one. The participants in all three Interactive Management workshops during the voting process selected 12 barriers for the structuring phase. However, in the first and third workshops, only 11 barriers remained in the final influence maps. One barrier in each workshop was assessed as having no links with the other selected barriers[166]; in other words, it neither aggravated or was aggravated by any of the remaining barriers in the structuring set. Therefore, these two barriers do not appear in further analysis.

[166] In case of the first workshop, this unrelated barrier reads: '*Churches do not pay taxes*'. It case of the third workshop, it reads: '*Attractions of the rural areas in the region are much less advertised than these in the big cities; this results in big differences in their accessibility*'.

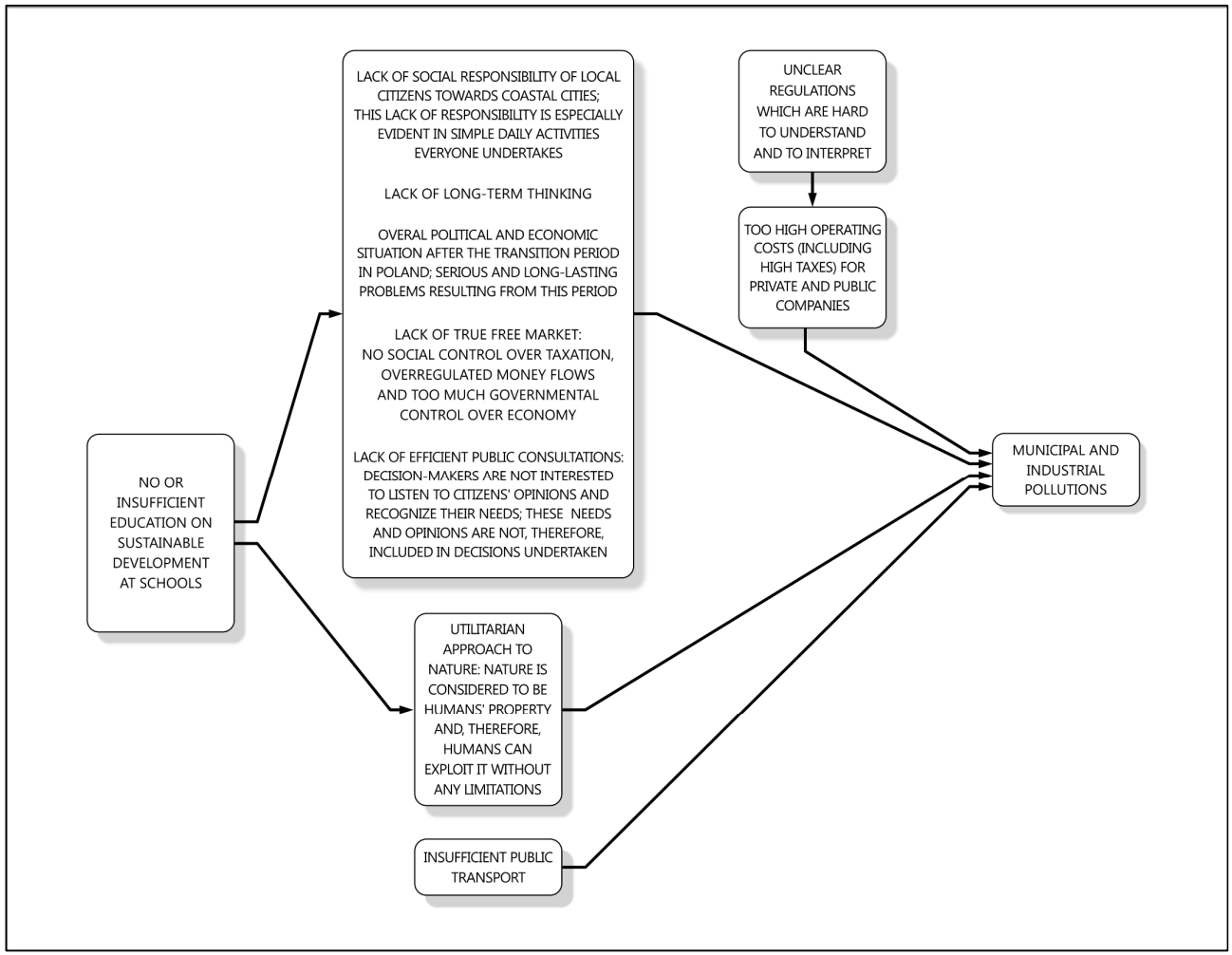

Figure 11 The influence map for the first workshop for coastal community
Source: Prepared by Stanisław Węsławski based on the author's data.

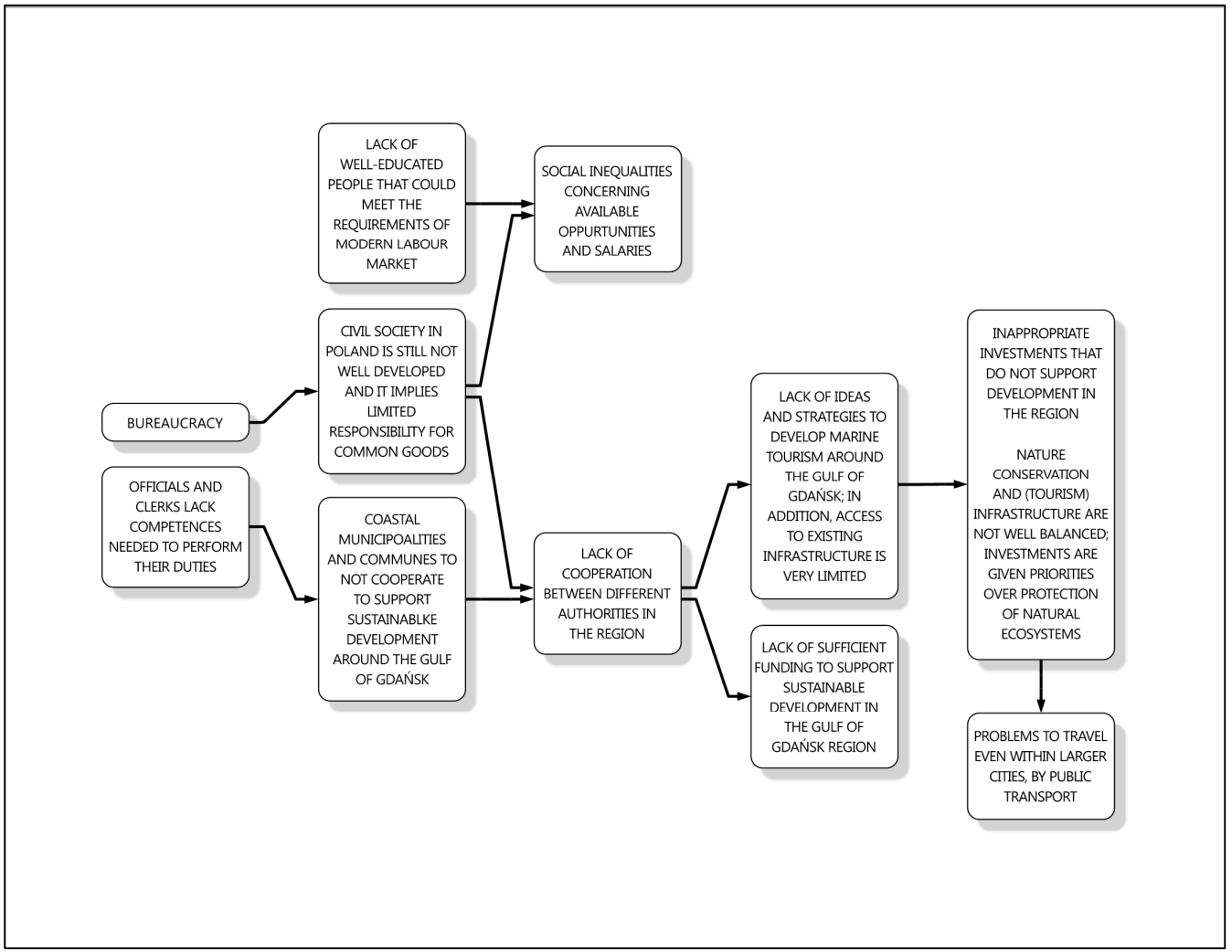

Figure 12 The influence map for the second workshop for coastal community
Source: Prepared by Stanisław Węsławski based on the author's data.

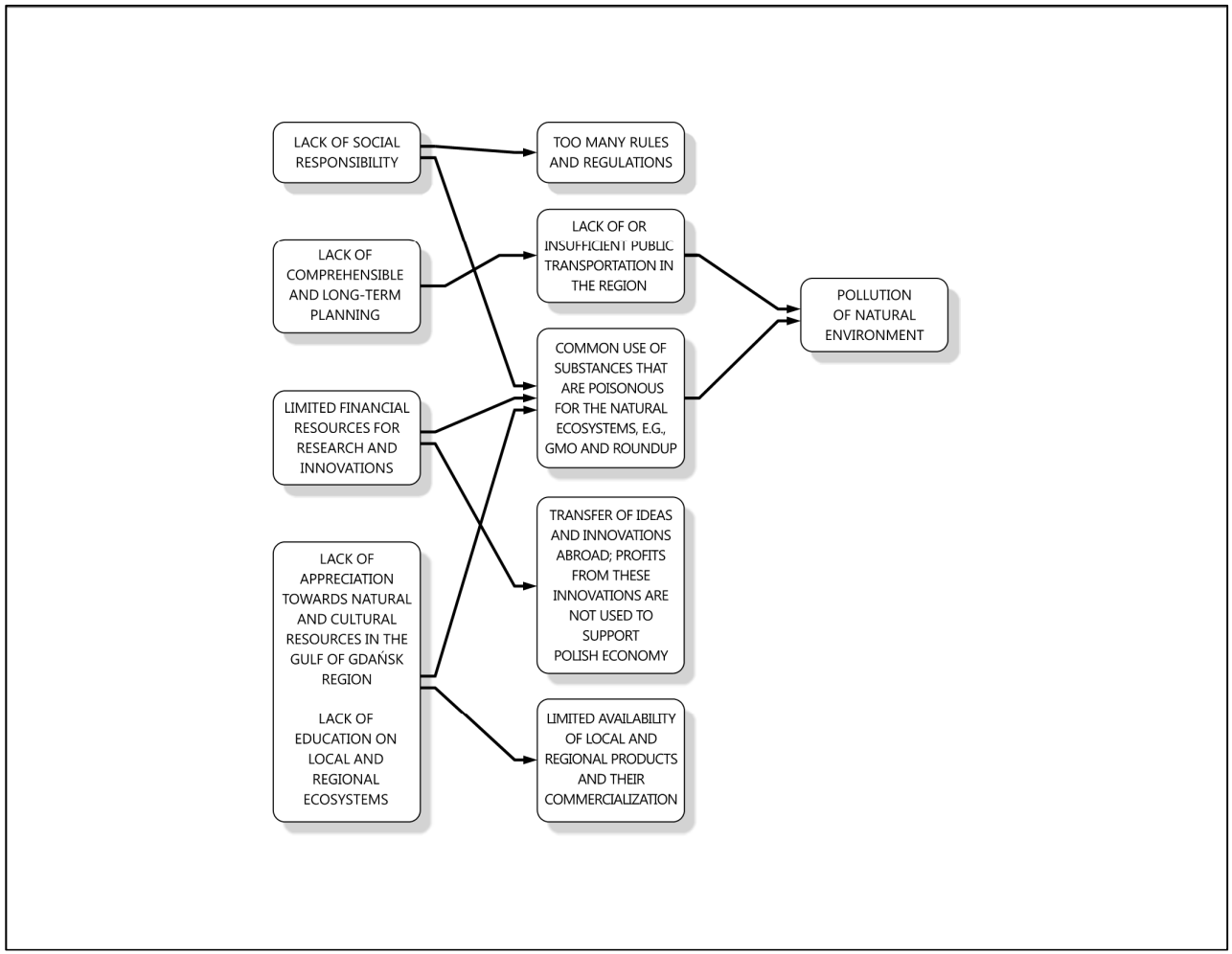

Figure 13 The influence map for the third workshop for coastal community
Source: Prepared by Stanisław Węsławski based on the author's data.

The multistage influence model is created based on the aggravation paths of the 34 barriers included in the three influence maps (Figures 11-13). For each of the barriers included in the influence maps, the set of assessment scores is calculated. These individual barrier's assessment scores are then added for all the barriers in each higher rank category, and divided by the number of barriers in each of them. The results (i.e., the average degree of influence) is used to create the multistage influence model (Broome 1995; Broome and Fullbright 1995). The average degree of influence for the higher rank categories arising from the three Interactive Management workshops for the coastal communities are presented in Table 29.

The description of the assessment scores and method of calculation with specific examples were presented in the sub-chapter 3.4 (Table 15) and in sub-chapter 4.1.5.2 (including Table 20). Therefore, these details are not provided here again.

Table 29 The structural analysis of the higher rank categories arising from the coastal community workshops

Name of category [1]	**Total items [2]**	**Position score [3]**	**Average position score [4=3/2]**	**Antecedent score [5]**	**Succedent score [6]**	**Net antecedent /succedent score [7=6-5]**	**Average net antecedent /succedent score [8=7/2]**	**Degree of influence [9=3+7]**	**Average degree of influence [10=9/2]**
Knowledge	4	14	3.5	0	18	18	4.5	32	8.00
Attitudes	4	13	3.25	2	14	12	3	25	6.25
Public engagement	3	11	3.67	6	12	6	2	17	5.67
Governance	5	14	2.8	3	12	9	1.8	23	4.60
Holistic system	2	5	2.5	1	3	2	1	7	3.50
Economics	8	13	1.63	19	6	-13	-1.63	0	0.00
Sectoral issues	3	5	1.67	9	2	-7	-2.33	-2	-0.67
Policies and strategies	2	5	2.5	11	4	-7	-3.5	-2	-1.00
Human impact on the environment	3	4	1.33	21	1	-20	-6.67	-16	-5.33

Source: Own elaboration.

Based on the average degrees of influence for all higher rank categories (Table 29), the multistage influence model was generated (Figure 14). It shows the aggravation paths of the nine higher rank categories. The model is read from left to right, i.e., the categories situated more on the left in the model are more influential than the categories situated more on the right. In other words, (social) interventions will be more efficient and their effects more durable if they address barriers (or group of barriers) with the higher average influence score.

The influence map representing the barriers of the coastal communities from the Pomeranian province (Figure 14) has nine categories of barriers grouped into six stages, where 'stage 1' is characterized by the highest influence and 'stage 6' by the lowest. This means that (i) barriers related to 'Knowledge' (stage 1) hinder sustainable development of the marine and coastal areas with the greatest level of influence, and (ii) they significantly negatively influence (aggravate) the remaining categories in the multistage influence model. Four higher rank categories (i.e., 'Economics', 'Sectoral issues', 'Policies and strategies', and 'Human impact on the environment'; stage 6) are characterized by the lowest degree of influence ranging from 0 to -5.33. The negative average influence score suggests that these higher rank categories exercise no influence on other groups of barriers and are — to much extent — the result(s) or the manifestation(s) of the problem rather than the core cause.

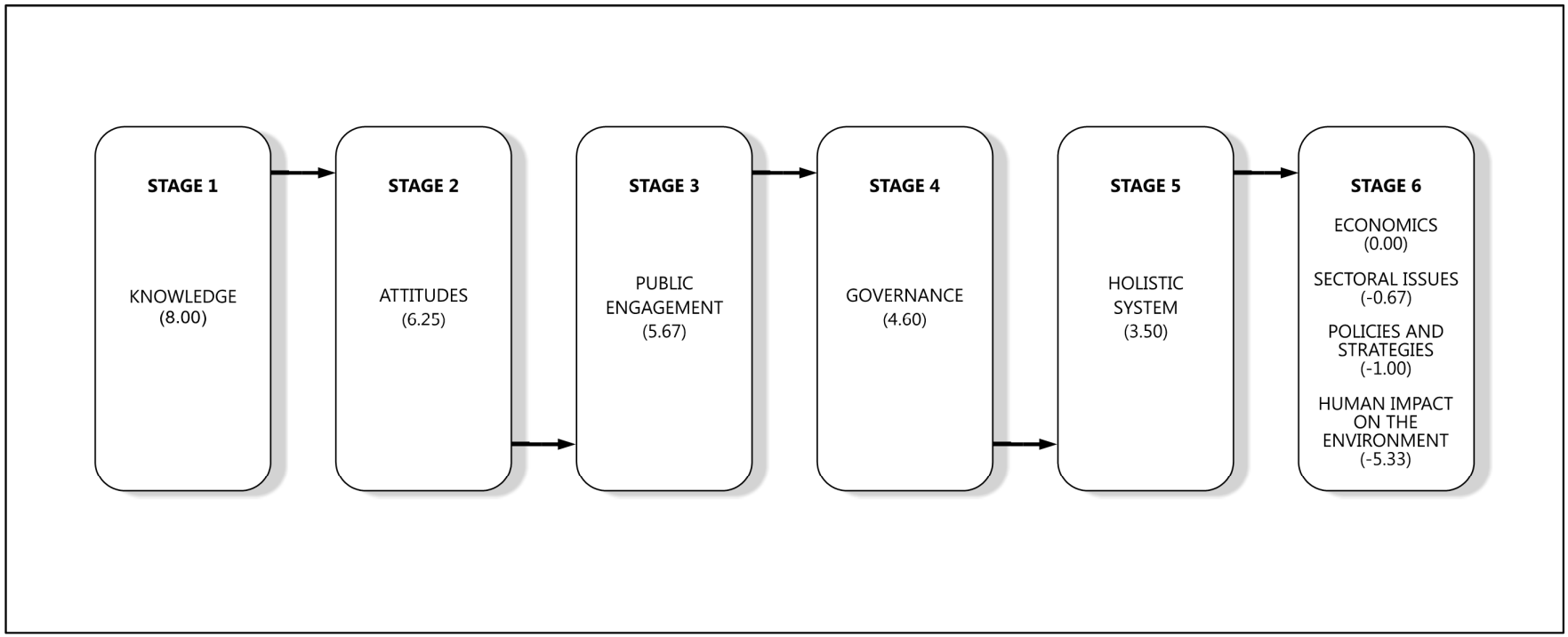

Figure 14 The multistage influence model for the coastal community around the Pomeranian province
Source: Prepared by Stanisław Węsławski based on the author's data.

4.2.4.3 The implications of the multistage influence model of the coastal communities

The multistage influence model presents the ideal path for social interventions pointing to the areas that offer most effective, multiplying and durable effects; these areas are situated in the left on the model (Figure 14). However, as explained in detail in sub-chapter 4.1.5.2, the model does not deliver an exact formula for addressing the sustainability issues; rather, it contributes to: (i) planning and assessing possible interventions, and (ii) better understanding of the planned actions' benefits and drawbacks. Moreover, the model and data behind the model provide in-depth information about the participants' thoughts and opinions about marine sustainability and allow to identify the preferred content of the potential interventions.

In their multistage influence model, the representatives of the coastal communities agreed that the issues related to lack of or insufficient knowledge are most important factors hindering the path to more sustainable seas and coasts. Knowledge was also considered important component in shaping desired social attitudes. This outcome is somewhat surprising as barriers related to knowledge were relatively underrepresented during the workshops' discussions and — when compared with barriers generated by the maritime sectors — they omitted some important elements such as scientific data. Nevertheless, the participants agreed that increasing knowledge on sustainable development and natural ecosystems would be useful in addressing sustainability challenge (and all other groups of barriers). The representatives of the coastal communities were more willing to take part of the blame on themselves. They pointed that that the society does not know enough about their region, ecology, sustainable development and the sea — but they were also critical towards the decision-makers (and lower level officials such as local clerks) and educational system.

These results are not perhaps surprising as little knowledge on marine issues is, indeed, evident in many European and non-European countries (e.g., Gleich et al. 2014; Fauville 2019), including these that are more dependent on the sea and its resources. What is perhaps more interesting but also more disturbing, is a persistent problem related to education on sustainable development. Even early studies on sustainable development curricula[167] (e.g., Grodzińska-Jurczak et al. 2010; Hłobił 2010; Musialik et al. 2013) suggest that they offer relatively good foundations for effective education on sustainability. Most recent studies (e.g., Babiarz and Garbuzik 2017; Mróz et al. 2020) proves that education for sustainable development is rather common in the Polish schools, and its elements are used in many school subject varying from the most apparent such as science/natural science to humanities (including the classes of literature; Mróz et al. 2020). However, despite the fact the sustainable development seems to be commonly taught in Polish schools, the effects of this education seems to be unsatisfactory and disconnected with the natural environment (e.g., Babiarz and Garbuzik 2017; Cynk 2017; Płonka and Dacko 2019). These findings are also

[167] Earlier studies (e.g., Kuzior 2005) are more critical about the ability of the Polish schools to promote and implement education on sustainable development.

confirmed by research undertaken in this study. Similar results were described in previous assessments (e.g., Grodzińska-Jurczak 2006; Kobierska 2007) suggesting a deeper problem related to education on sustainable development[168]. In case of marine and coastal areas, the problem being faced is perhaps even more challenging, i.e., it is necessary to combine education for sustainability with marine education (or education for ocean literacy) both proving to be complex issues in themselves.

The second interesting finding is a relative low position of the higher rank category 'Economics' in the multistage influence model. In fact, this category was assessed as having no influence on other groups of barriers, i.e., it is perceived as being the result rather than a cause of other processes that hinder sustainability. 'Economics' is, indeed, the category with the highest number of barriers and the highest number of votes (Table 28), and was pretty vividly discussed during the Interactive Management workshops. Problems related to neoliberal economics and drawbacks of the free market are often reported as issues seriously affecting progress towards sustainability (e.g., Singer 2010). However, it seems that the representatives of the coastal communities seem to consider economics as less influential, and in consequence less harmful. Why it is so? Firstly, in my opinion, the participants of this study demonstrated a relatively high support towards the current model of (national) economy. Obviously, they did criticize some of its aspects or elements (pointing out to excessive consumerism or social inequalities) but — on the other hand — they also complained about overregulation concerning taxes or labour costs (which are usually higher in countries known as welfare states). This is perhaps why they did not recognize economic forces as major (or at least important) drivers behind limited progress towards sustainability. I would, moreover, argue that they defined sustainability through 'economy' and 'society' (or through economic and social well-being) leaving the protection of natural ecosystems somehow outside their main concern. And, indeed, individuals with strong support for free market and believing economy is the best measure of progress demonstrate less ecological awareness and undertake less pro-environmental actions[169] (e.g., Kilbourne et al. 2002; Gifford and Nilsson 2014).

Secondly, the 'Economics' category consists of three sub-groups, i.e., 'Economic paradigm' (which is the closest to macro-systemic barriers to sustainability as defined in the literature; see Table 14), 'Products' and 'Funding'. Out of eight barriers from this higher rank category included in the influence maps, four refers to the first sub-group ('Economic paradigm'), while another four are divided between the two latter group. Such a barrier selection shows a relative balance between barriers that could possibly be influential (related to 'Economic paradigm') and other that can be considered a result of individual or political choice.

[168] Indeed, such problems are widely discussed at global (e.g., Scoullos 2010; Filho et al. 2016) but also local Polish level (e.g., Borys 2010; Gajuś-Lankamer and Wójcik 2011; Klimska 2014).

[169] Interestingly, individuals with more conservative political orientations are believed express less concerns about the state of the natural environment (e.g., Schultz and Stone 1994; Mobley et al. 2009). However, my study does not provide any insights on this issue as political orientation hardly appeared during the discussions during the Interactive Management workshops.

However, even barriers describing consumerism or utilitarian approach to nature seemed to consider individual choice[170] than the predefined paradigm with the set of values[171] that cannot be questioned or contested. This is perhaps not surprising as despite long-term criticism of neoliberalism and numerous of suggested alternatives (e.g., McKay 2013; Söderbaum 2017), none of this alternatives has managed to become enough well-articulated to gain at least some level of wider recognition or dominance (McKay 2013). In addition, in the common discourse neoliberalism is still often equalled with liberty and true freedom, and other approaches are considered as "*anti-liberal, a travesty of true freedom*" (Castree 2010; p. 9).

So how do barriers to sustainability identified by the coastal communities look in the wider picture? Similar studies on marine sustainability are scare but the most obvious comparison can (and should) be made with the representatives of the Polish maritime sectors (Table 30).

Table 30 Comparison of the multistage influence models generated for the maritime sectors and coastal communities

Stage	**Maritime sectors**	**Coastal communities**
1	Attitudes (6.29)	Knowledge (8.00)
2	Knowledge (4.08) Public engagement (4.00)	Attitudes (6.25)
3	Human impact on the environment (3.20) Policies and strategies (3.18)	Public engagement (5.67)
4	Competing uses (2.00) Economics (1.69)	Governance (4.60) Holistic system (3.50)
	Governance (0.36)	
6	Holistic system (-0.25) Sectoral issues (-1.00)	Economics (0.00) Sectoral issues (-0.67) Policies and strategies (-1.00) Human impact on the environment (-5.33)

Source: Own elaboration

[170] Here 'individual' could also mean 'city' or 'agency'/'organization' levels.

[171] Neoliberalism is more than just policy or economic doctrine; it is a form of underlying philosophy or worldview (Castree 2010; Castree 2011). For example, Harvey (2007; p. 24) states that neoliberalism "*took the political ideals of individual liberty and freedom as sacrosanct*." Neoliberalizations of nature can (and often do) negatively influence the nature conservation and its effectiveness (e.g., Robertson 2007; Klooster 2010). It does mean that no positive effects can be observed (e.g., Castree 2010).

In both multistage influence models, the most negative influence is exerted by three higher rank categories, i.e., by barriers related to 'Attitudes', 'Knowledge' and 'Public engagement'. The only difference between these two models — concerning three most influential categories — is their relative importance. In case of the coastal communities, lack of knowledge emerges to be most significant issue that shapes attitudes and public engagement. The representatives of the maritime sectors considered the relationship to be inverse, i.e., the inadequate attitudes precede the problem of insufficient knowledge. This different does not, however, seem to be important.

Firstly, the influence models are based on the barrier generated by these two groups of stakeholders. So the differences between these barriers (even if they are named the same) might explain the difference is relative influence of the higher rank categories. Secondly, and perhaps even more importantly, there is no single or easy answer to proper relations between these two categories. Various models of ecological (or pro-environmental) behaviour suggested various directions or interdependencies between these barriers categories (Kollmuss and Agyeman 2002; Martin et al. 2017; Goldman et al. 2020). For example, early models suggested that environmental education is the foundation of environmental attitudes that — in turn — are needed for the pro-environmental behaviours (Kollmuss and Agyeman 2002). More elaborated models suggested that attitudes — together with personal responsibility and locus of control — shape individual personality. Personality is as important as general knowledge, and as knowledge 'how-to-act' to change one's behaviour towards more environment-friendly (Hines et al. 1987). More recent models (e.g., Kollmuss and Agyeman 2002; Stoll-Kleemann 2019) consider this interrelation as equal, reciprocal and interacting with many other factors located in both internal and external environment of a given individual. From this perspective, difference between 'knowledge' and 'attitudes' seems to be, indeed, contextual or — in case of my study — barriers dependant.

The representatives of both groups — maritime sectors and coastal citizens — underlined the issues related to cooperation, including public consultations, and information exchange between various parties. The representatives of both groups directed much of their criticism towards environmental and coastal managers and decision-makers of various levels; and, indeed, coastal municipalities were described as difficult partners to cooperate with. In other words, the participants were sure that they were ready to 'get involved' but the other party (decision-makers) were not prepared for such a cooperation. It was also noted during the discussions that officials are not only not ready to 'get involved' with citizens but they are also not willing to cooperate with other, i.e., between various cities or agencies. Such attitudes were — in the eyes of our participants — problematic. They claimed that when 'they' and 'their voices' are disregarded, the feeling of agency and control is diminished as well as trust towards those who take decision. And these factors are, indeed, important when support for pro-environmental policies is actively being sought for (e.g., Riley et al. 2018; Crandall et al. 2019). For example, trust and locus of control increases willingness to comply with (pro-environmental) solutions and limits the need for control mechanisms (Wan et al. 2017). Public

consultations and open deliberations promotes diversity and consensus (Drews and van den Borgh 2015), and increases trust between various stakeholders' groups (Kelly et al. 2019). Unfortunately, low trust and low participation management is not rare in Poland (e.g., Kretek-Kamińska and Zajda 2018; Piwowarczyk et al. 2019b), what was noticed and discussed by both groups involved in this study.

The most influential higher rank categories were, indeed, similar in both multistage influence models. The later stages of the models show, however, some interesting differences (Table 30). The two most striking ones relate to the influence of the decision-makers (higher rank categories 'Governance' and 'Policies and strategies') and pollution and conservation issues (higher rank category 'Human impact in the environment').

In the first case, the representatives of the maritime sectors considered 'Policies and strategies' to exert relatively more influence than the governance itself (average degree of influence 3.18 and 0.36 respectively). On the contrary, the representatives of the coastal communities perceived the opposite relations, i.e., barriers related to 'Governance' were assessed as impacting sustainability in a more meaningful way than 'Policies and strategies' (the average degree of influence 4.60 versus -1.00). So in the eyes of the general public, the lack of (or insufficient) policies and strategies was not considered an important factor to hinder sustainable development on the sea and the coast. However, looking more closely at the barriers behind the higher rank categories provides convincing explanations. The policy- and/or strategy-related barriers provided by maritime professionals address the state level and its neglect of (the vision for) the maritime economy. Therefore, such barriers were quite often considered as root causes, placed on the left of the influence map[172], and, hence, recognized as relatively influential. The representatives of the coastal communities — in general — considered policy related barriers less important; this higher rank category ('Policies and Strategies') is the third least numerous category with only two barriers finally included in the influence maps. In addition, these two barriers were selected by the participants of the second Interactive Management workshop[173]; no policy-related barriers were selected for the structuring phase during the first and the third workshops. This also confirms that strategic thinking was not very popular between the representatives of the coastal communities; yet this also a skill lacking between managers and decision-makers (e.g., Watson and McCracken 2002). Strategic thinking is a skill that needs to be taught but its

[172] For example, see the influence map for the Interactive Management for 'Transport' (Figure 8), where the barrier '*Lack of interest in maritime economy at central/state level*' is influencing all but one barriers in the whole set selected by this stakeholder group. There are other barriers in the 'Policy and strategy' higher category that exert relatively high influence, e.g., the barrier '*Lack of coherent vision for the development in the coastal areas*' (Figure 6) put forward by the stakeholders representing 'Tourism and leisure' workshop. Of course, the 'Policy and Strategy' category include less influential barriers, e.g., '*Lack of marine spatial plan*' in the 'Nature Conservation' workshop (Figure 7) but the overall score for this category is still relatively high.

[173] These barriers are '*Lack of ideas and strategies to develop marine tourism around the Gulf of Gdańsk; in addition, access to existing infrastructure is very limited*' and '*Inappropriate investments that do not support development in the region*'; see Figure 12 for their position of the influence map.

proper teaching is challenging and is often not achieved within the regular curricula (e.g., Sloan 2006).

Similar reasoning explains the differences in influence between higher rank category 'Governance' for maritime sectors and coastal communities. The coastal citizens discussed governance from the very general point of view (such as fiscal policies or legal culture in general), while the maritime professionals focused on more detailed legislation and managerial instruments. This can explain their position on the influence maps: more to the left or more to the right; hence exerting more or less influence.

The differences in the influence between the higher rank category 'Human impact on the environment' for maritime sector (3.20) and coastal communities (-5.33) relate to the barriers that were selected for the structuring phase, and hence were included in the influence maps. These selected barriers generated by the coastal citizens refer to the effects that human activities have on the environment[174]. Therefore, they are situated on the right on the influence maps (see Figure 11 and 13) suggesting that they are, in fact, the results of other unsustainable practices. All these barriers have a negative degree of influence. Although this group of stakeholders, did generate barriers related to protection and conservation efforts (Table 28), these barriers did not receive enough votes to appear in the influence maps. Although — in general — the representatives of the maritime sectors demonstrated a similar approach towards environment, i.e., the selected the barriers focus of the effects of human activities, there are two elements that contribute to the final score of this particular category. Firstly, two barriers — in the eyes of the workshops' participants — exert a high level of influence. One of them (*Lack of control over the implementation and achievement of conservation measures and sustainable development principles; planning vs reality*) belongs to the 'Protection and conservation' group of barriers, and, indeed, was assessed one of the main drivers (Figure 7) affecting a path towards sustainability. There is one more barrier that scored relatively high, i.e., '*Anglers and recreational fishers are not obliged to report their catch; as a result, it is not possible to estimate the influence of recreational fishing on fish stocks'* (Figure 4), and these two barriers contribute greatly into the total average score of the whole category. In addition, the aggravations paths related to pollution or negative environment impacts seem to be longer or have more stages in case of the coastal citizens (see for example Figure 7 vs. Figure 11). In other words, the representatives of the maritime sectors considered environmental pollution as less directly related into other barriers they generated than the representatives of the coastal communities.

To sum up, the multistage influence models points out to some important similarities and differences between the way of conceptualizing barriers to marine and coastal sustainability between these two groups of actors. Despite some limitations in data comparability, I think

[174] Perhaps it is worth mentioning that none of the barriers included in the influence maps addresses marine ecosystem directly. Therese barriers include '*Municipal and industrial pollutions*', '*Pollution of the natural environment*', and '*Common use of substances that are poisonous for the natural ecosystems, e.g., GMO and Roundup*'.

that one of the most important message that both groups send is the need for much better communication and greater inclusion and openness in decision-making processes (public engagement[175]). Democratization in marine and coastal management could possibly increase the internal incentives for sustainability; however, in order to pursue this change, I believe, there is a need for capacity building both between those who 'are responsible for' and 'are subject of' decision-making. And sufficient level of knowledge and proper attitudes are, indeed, important elements of capacity building initiatives.

Barriers generated by the representatives of the coastal communities can be further compared in two wider contexts. Firstly, they can be compared with the barriers to sustainability identified for the whole Poland. Secondly, the barriers to sustainability can be assessed from the perspectives of marine citizenship[176].

Barriers to sustainability at the country level are presented in Table 24. At the first glance, the major groups of barriers seem similar for both studies, i.e., for the literature compilation (Table 24) and my own research presented in the multistage influence model (Figure 14). However, a more insightful consideration allows for identifying some differences, which have already become evident previously in my analysis. Two of these differences seem to be most striking and they are briefly discussed below.

Firstly, the literature review of the barriers to sustainable development in Poland suggests the importance of barriers related to the policies and strategies of various levels; this is, indeed, the most numerous barrier category. On the contrary, policies and strategies did not seem important for the representatives of the coastal communities. The higher rank category 'Policies and strategies' was neither assessed important nor influential, and is included in the stage six of the multistage influence model (Figure 14). Indeed, that was also one of the important difference between the models created by the coastal communities and the maritime sectors.

I have already suggested that lack of or insufficient strategic thinking skills might partially explain this absence. However, this explanation does not seem sufficient. The results of this study, unfortunately, do not offer a deeper insight into why policies and strategies seem to be underrated by the general public. I can further speculate that perhaps the representatives of the coastal communities consider policies and strategies to be soft instruments that have limited possibility to be implemented. Perhaps, the participants in my study have stronger preferences for 'command-and-control' mechanisms that directly result from legal acts; or

[175] I would argue, based on the intensity of discussions during the Interactive Management workshops, that the representatives of the maritime sectors paid more attention to 'participation' and 'collaboration' and the coastal citizens found 'collaboration' and 'communication' more important. This argument is, however, less evident when only multistage influence models are considered.

[176] In the case of the maritime sectors, additional comparison was made, i.e., with international and world-wide assessments. However, I believe that the study of coastal community and the results obtained seem to be too local to allow for such high level comparisons.

perhaps there is still a strong socialism heritage that shapes social attitudes and trust[177]. These assumptions can be partially confirmed by the relatively high position of the higher rank category 'Governance' that — among other — embrace the barriers related to legislation. This could be a manifestation of the 'personally responsible citizen'[178]; such a citizen is inclined to follow the law but neither challenges the social norms nor tries to change them (Westheimer and Kahne 2004; Levison et al. 2020). In Poland social activism and participation in social organizations is still relatively small[179] (Radziszewski 2015; Jażdżewska 2017), and it was relatively stable over the last years (Adamiak 2014). Somewhat paradoxically, the representatives of the coastal communities call for more participation and involvement in decision-making, and (two-ways) communication practices. We might be observing a shift towards more active citizenship but, indeed, it is difficult to assess — based on my data — if reducing and overcoming barriers to participation listed by my respondents would enhance their actual involvement in local initiatives and decision-making. These barriers were predominantly placed with the individuals and entities responsible for consultations and decision-making, while in Poland internal and economic factors are also important (e.g., Radziszewski 2015).

Secondly, and in connection with the previous findings, the coastal citizens considered barriers related to communication and cooperation as relatively important and influential (higher rank category 'Public involvement'). Yet, barriers related to participation are not thoroughly discussed when addressing sustainability challenges at the state level (Table 24). This is somewhat surprising as stakeholder participation is considered important driver for effective environmental and marine management (e.g., Chopyak and Levesque 2002; Stoll-Kleemann and Welp 2006; Morf et al. 2019). Moreover, ability and willingness to participate is listed as an important characteristic of sustainable coastal community (or of environmental/marine citizenship; e.g., Beatley et al. 2002; Berkowitz 2005; McKinley and Fletcher 2012). High level of public participation in marine management can enhance responsibility towards marine ecosystems, i.e., create shared ecological values that can inspire more pro-environmental behaviour and willingness to be actively involved in (co-)-governance (e.g., Smith 2005; McKinley and Fletcher 2012). This — in turn — can build societal responsibility and trust, and can lead towards 'participatory' or 'justice-oriented' (coastal) citizens (Levison et al. 2020), what seems to be the foundation of the long-term sustainable management of seas and oceans (e.g., McKinley and Fletcher 2010). The questions 'when to participate', 'how much participation' or 'how to learn to meaningfully

[177] Similar observation was made in relation to the public participation in marire-related proceedings (see Piwowarczyk and Wróbel (2016) for more details).

[178] In general, three kinds of citizenships are can be distinguished (Westheimer and Kahne 2004; Levison et al. 2020): (i) 'personally responsible citizen' (defined above), (ii) 'participatory citizen': a person that is an active member of the community but tends to act as an individual, and (iii) 'justice-oriented citizen': a person that is motivated by a social justice and tries to bring about the social change.

[179] What could also supper the assumption of the socialism heritage.

participate' are, indeed, important ones (e.g., Morf at al. 2019) but they cannot be considered an excuse to avoid or limit participation until the best solutions are found and tested.

From this perspective, it is also important to change thinking about participation. It is necessary to move from the expert based planning towards planning that would favour knowledge exchange and knowledge co-creation. Some signs of this reorientation are visible in the processes of marine spatial planning in Poland (Piwowarczyk et al. 2019b); however, I would argue that greater openness for public involvement refers to institutional and organized (economic) stakeholders only. Intangible cultural values and feelings of place attachment are still largely ignored[180]. My research partially explains such an absence or such insufficient efforts to stimulate co-governance. Indeed, it seems that the coastal residents are not fully prepared to become active marine citizens. The results of the Interactive Management workshops suggest a great disconnection between everyday life and marine issues, and low awareness of marine-related issues. This is perhaps the most important challenge that needs to be overcome in the near future if the ambition of sustainable communities should come true. There are already ocean literacy initiatives in Poland (e.g., Niedoszytko et al. 2019) that attempt to address this issue so there is a hope that the first step towards marine citizenship has already been made. The voices of the citizens themselves — calling for more participation and observing insufficient ecological awareness, raise hopes that this relatively new trend in education might be successful.

4.2.4.4 Marine citizenship: a long way forward

The concept of marine citizenship focuses on rights and responsibilities of an individual person towards the sea; in its core, there is the need to ensure the good environmental status of marine environment and its sustainability over the long time frame (McKinely 2010; McKinley and Fletcher 2012). In other words, the ambition of marine citizenship is a sustainable community living in sustainable-managed ecosystems. There is a number of factors or elements that support (or hinder) the shift towards sustainable community (Table 7). Has this shift already started on the Baltic coast of the Pomeranian province? My results

[180] These two features are often suggested to be most important for the coastal communities (e.g., Gee et al. 2012; Gee 2019). These issues were not particularly important for the representatives of the coastal communities, who participated in my study. However, some elements of intangible values and place attachment were put forward by the Interactive Management Workshops' participants. For example, the participants discussed the disappearance of the coastal dunes (i.e., the landscape they enjoy), mass tourism, lack of appreciation of natural and cultural resources, or too extensive constructions in the coastal zone. These issues were, however, overshadowed by economic and social problems. Nevertheless, these discussions suggest that there is at least some level of connection between the people and 'their' coast and 'their' sea; this connection is perhaps situated outside the conceptualization of sustainable development. I would argue that this connection is actually developing as previous studies (e.g., Kistowski 2005) demonstrated much lower recognition of negative impacts on the marine and coastal areas around the Gulf of Gdańsk. I believe that such progress in awareness (even if relatively small and perhaps unsatisfactory to many) brings opportunities for the recent ocean literacy initiatives, especially if it is combined with the increased awareness of links between the people's well-being and the surrounding landscapes (Degórski 2014; Degórska and Degórski 2019). Indeed, issues related to place attachement in the Interactive Managemet workshops can be assessed as linked with the coastal landscapes and their degradation.

paint a rather grim picture. Although the outcomes of my study does not allow to evaluate all components of the marine citizenship in detail, I think it is fair to conclude that the Gulf of Gdańsk community does not fully reach the ambition of any of the criteria (Table 31).

Table 31 Assessment of the Pomeranian province coastal community in the lens of the marine citizenship criteria

Component of the marine citizenship	**Assessment of the component for the coastal community of the Pomeranian province**
Awareness	Limited/none awareness of the marine issues and own dependence on the coastal and marine ecosystem: the trigger question for the Interactive Management workshop underlined the relation with marine environment but the barriers generated were greatly disconnected from the sea and from the coast; only 23% of all barriers had a marine character and only 36% of all barriers directly consider environmental aspects of sustainability; discourse on marine issues showed many misconceptions about marine environment; barriers related to awareness did not score high among the Interactive Management workshops' participants, although they are the part of the second highly influential higher rank category;
Knowledge	Limited knowledge on marine-related issues; many discussions were based on sensational news reported in the mass media rather than on scientific knowledge; limited scientific knowledge was evident not only in relation marine issues but also in the wider environmental (or biological) contexts; the participants did not consider scientific knowledge and scientific data as important elements to achieve sustainability of the coast and the sea; there was also little evidence during the workshops that the participants (or more importantly members of their extended families) are involved in any formal or informal marine or environmental education; in fact, the absence of such initiatives were widely criticized; The study has not directly approach the issue of civic literacy; however, two observations arising from my study might be important for this issue; firstly, the participants were not aware of the conflicts of uses and conflicts on interests related to marine areas, hence — most likely — they have not been involved in any public consultations or managerial initiatives related to marine areas[181]; secondly, they considered the issues of public engagement quite important; however, they were discussed — in relation to the sea — in in a limited extend; I would, therefore, conclude that readiness and capacities to involve — at least in marine affairs — is still rather limited; The study has not approached cognitive skills, including various types of thinking; there are some indications that strategic thinking was not common among the workshops' participants but this is rather a speculation than a sound evaluation;

[181] This is in line with observation arising from other research I have undertaken, i.e., individual citizens participate relatively seldom in managerial activities. However, their involvement can become quite active if the issue of public hearing or public consultations is something that is emotionally close to them.

Concern	The participants of the Interactive Management workshops did not express high level of concern towards marine environment; moreover, their concerns towards terrestrial natural ecosystems were also limited; the highest levels of concerned were expressed towards man-made environment, although some links with the nature were apparent; these limited levels of concern were further reinforced with limited perceived locus of control and self-efficacy; the combination of these factors suggests that the concern criterion in not close to achieving;
Behaviour	The representatives of the coastal communities were more of a terrestrial than marine (or even coastal) character; the majority of behavioural issues discussed could not be directly or indirectly linked with the marine environment; I would, therefore, argue that there was no apparent willingness for behavioural change for the benefit of the marine ecosystems; it can probably be explained by limited knowledge on the sea and land-sea interactions; some limited will to undertake pro-environmental behaviour could be linked with transportation choices and shopping habits; however, much of the responsibility was delegated elsewhere, especially to decision-makers; it was also mentioned a few times that pro-environmental choices are often expensive and available funds was considered at least part of the problem (together with awareness);
Participation	Marine issues were — to a large extent — of secondary importance during the Interactive Management workshops; the representatives of the coastal communities declare interests in 'being heard' and 'contribute to decision-making'; however such statements refer to general management; there is a willingness for increased participation and cooperation but there is no direct evidence that marine management is considered important; this conclusion can be reinforced by the above mentioned lack of awareness of marine related conflicts and almost no participation of individual citizens during real-life public consultations;
Personal connections	Most, if not all participants, were using the coast and the sea for their leisure activities; none of them had marine-related job what was one of the conditions during the recruitment procedure; the indirect dependence on marine resources and place attachment is difficult to objectively assess; however, I would argue that it is not high given the low number of marine-related issues discussed, especially in the light of the trigger question[182];
Socio-demographics	The socio-demographics of the participants was not assessed during the workshops; however, it was clear that the majority of the participants was not critical towards the free market and the growth paradigm; childhood (marine and coastal) experiences were in general not discussed during the workshops, but the participants were convinced that contacts with the natural environment should be an important element of formal and informal education;

[182] The trigger question reads: '*What are the barriers to the sustainable development of coastal areas of the Pomeranian province and marine areas off its coast?'.*

Socio-economics	The socio-economics of the participants was not assessed during the workshops; however, some elements of the discussions during the workshops suggest that the participants did not assess the overall economic situation of the Polish households as satisfactory in relation to consumer choices; it was mostly evident when discussing the possibility to purchase ecological and/or high quality food and in relation in inequalities on the labour market;

*See Table 7 in sub-chapter 1.5 for the detailed description of each component

Source: Own elaboration.

The descriptive evaluation of all marine citizenship criteria and the criteria for the sustainable coastal communities (which are almost completely convergent) shows that the communities along the Pomeranian province are far from endorsing marine citizenship. Indeed, none of the eight criteria has been fully fulfilled. Data arising from the Interactive Management workshops provides good evidence for some of the criteria (e.g., knowledge or awareness) and worse for another (e.g., socio-economics or socio-demographics). It is clear, however, that the general public is not aware of marine ecosystems, and does not link their well-being with its quality.

McKinley (2010) lists four possible models of marine citizenship based on two evaluation criteria, i.e., the frequency of marine citizenship components among the residents and organized efforts (or managerial strategies) to enhance public engagement with the sea. These models include: (i) unsuccessful marine citizenship (with low frequency of components and limited efforts to stimulate public engagement), (ii) frustrated marine citizenship (high frequency and low efforts), (iii) limited marine citizenship (low frequency and high efforts), and (iv) successful marine citizenship (with high frequency and high efforts; McKinley 2010).

My research has not directly investigated top-down and bottom-up initiatives to enhance various components of individual marine citizenship but I think that it is fair to conclude that the coastal community of the Pomeranian province can be assessed as unsuccessful marine citizenship. As demonstrated above, the representatives of the coastal communities are, indeed, rather far from reaching the ambition of being sustainable; the workshops participants were not aware of any meaningful efforts to increase their or their extended families' knowledge of the sea they are living by. That, of course, does not mean that such efforts are not existent. There are good examples that marine education works in practice (Niedoszytko et al. 2019) but the fact that my respondents were not familiar with them can suggest that their scope and extent is limited. It may further suggest that it only reaches selected audiences leaving many coastal residents outside its influence. On the other hand, the concept of ocean literacy is becoming increasingly popular, also in Poland[183], raising hopes that we are currently observing the shift from unsuccessful marine citizenship towards limited marine citizenship. Further research would be, however, needed to evaluate if the shift has, indeed, started, and if such bottom-up initiatives cam (without long-term state support[184]) alone complete the change. It would also be interesting to know if such ocean literacy activities are available for the students outside the coastal regions. In order to protect the Baltic Sea and the Gulf of Gdańsk, marine awareness (and consequently marine education) is needed not only on the coast but also in inside Poland.

[183] See, for example, the ocean literacy web-site (http://oceanliteracy.pl/) coordinated by Akwarium Gdyńskie or initiatives undertaken by the Institute of Oceanology PAS (https://www.iopan.pl/pop-pl.html).

[184] According to McKinley (2010) underlines that such a route of changes through increasing enabling factors for marine citizenship requires stable and long-lasting financial support. Such support allows for providing accessible education opportunities for all citizens.

4.2.4.5 Differences and similarities between the opinions of the coastal communities and maritime sectors: the summary

The representatives of the maritime sectors were individuals whose professional life was linked with the marine environment; these links could be weaker or stronger, direct or indirect but the recruitment criteria required some level of marine related knowledge. On the contrary, the participants of the coastal communities' workshops did not earn their living through maritime economy; their major link with the sea was the place, where they were living. This of course does not exclude marine related knowledge and marine awareness but these characteristics would not — in the case of coastal citizens — arise from professional interests. So how are these two groups different in relation to their opinions on sustainable development? Or perhaps are there more similarities than differences between these two stakeholder groups?

I would argue that — despite some significant similarities — the differences between these two stakeholder groups are more important. The most striking similarities between maritime professionals and the coastal residents are their multistage influence models, or rather the three most influential higher rank categories, i.e., 'Knowledge', 'Awareness', and 'Public engagement'. According to both groups, barriers related to these categories should be addressed first to support transition towards the ambitions of sustainable development of marine and coastal areas of the Pomeranian province. However, a deeper evaluation of these higher rank categories can already lead to the acknowledgement of the differences between these stakeholder groups.

Overall, the representatives of the maritime sectors have much deeper knowledge both on the issues related to sustainable development and to marine areas. In the context of this study, they also approached the problem of knowledge for sustainability in a deeper and more comprehensive way. For example, the knowledge category of the coastal communities includes all together nine barriers (Table 28); this is the second least numerous higher rank category and, therefore, it was not divided into smaller groups. On the contrary, the maritime professionals generated 52 knowledge-related barriers that were clustered into three groups, i.e., (i) general and ecological knowledge, (ii) science and scientific data, and (iii) education (Table 19). These three groups could be further broken into sub-groups[185]. The division for the first group is, indeed, rather obvious and includes barriers related to the general knowledge and ecological (including marine) knowledge. More detailed issues discussed within science and scientific data includes issues related to technical knowledge, data availability, access to data and use of science for policy- and decision-making. Education can be further broken down into three sub-topics, i.e., education system, vocational and maritime education, and marine ecological education. Some differences could be, indeed, explained by

[185] These sub-groups emerged during the re-classification of the whole pool of barriers generated during Interactive Management workshops separately for the coastal communities and the maritime sectors. These smaller sub-groups were further merged into larger groups; this process allowed to identify higher rank categories used for multistage influence models (Table 19 and 28 and Figure 9 and 14 respectively).

the number of workshop organized for both groups. However, this justification seems to be too simplistic and it does not explain the absence of some important elements within the barriers categories[186]. Indeed, similar observations can be made for most of the groups of barriers put forward by these two stakeholder groups. I would also argue that the representatives of the maritime sectors were able to discuss similar issues (e.g., problems related to participation or environmental policy-making) in much greater details and — often — place it in the wider contexts. It is true, however, that the coastal residents did discuss some issues quite vividly and perhaps even more thoroughly than participants coming from marine sectors. In majority, these issues did not relate directly to sustainable development and to the marine environment. These observations lead to yet another difference between the two groups involved in my study.

The discussions and barriers in the Interactive Management workshops for maritime sectors were — to a large extent — marine or coastal. Even barriers of more general character (e.g., related to issues of common responsibility or technology) often included some elements or practical examples that linked them with the sustainable development of the marine and coastal areas. Of course, there were some barriers that were disconnected with the marine environment or with indeed distant links but — in general — the connections between the participants and the sea was rather evident. It is partially explainable by the recruitment procedure, i.e., the majority of participants in the maritime sectors' workshops were economically dependent on marine resources. However, this is only a part of a broader picture. Indeed, the representatives of the marine-related businesses were also more knowledgeable on sustainable development, its three pillars and interplays between these pillars. The coastal citizens, on the contrary, were much less familiar with the sea and their understanding of the sustainable development was also worse. In contrast to maritime professionals, in many aspects of their discussions, they more often focused on personal experiences and connections, often overlooking the bigger picture and more general relations. Indeed, the psychological distance between the marine environment and sustainability seems to be important difference between these two groups of stakeholders. However, a relatively large focus of own (or smaller social groups') experiences make the coastal communities more willing to take a greater part of responsibility (or blame) on themselves. It is true that most groups felt that their agency to bring forward sustainability is rather limited and it is a role of the decision-makers of various levels to act and created conditions, in which sustainable development should become a reality and not ambition. It is also true that both groups were inclined to blame individuals and businesses outside their social environment considering 'themselves' as relatively more environmentally-friendly. Finally, for both groups social and economic issues were very important, although this importance was more evident in case of the coastal communities. This is so because maritime sectors' dependence on the state of marine recourses and their perception of this

[186] There were seven Interactive Management workshops organized for the maritime sectors and three for the coastal communities. However, in case of the knowledge-related barrier, the average number of barriers per workshop equals 7.4 for the maritime professionals and 3.0 for the coastal residents.

dependence varied a lot. Indeed, there were sectors that were much more environmentally aware than the coastal communities and those that demonstrated similar or even lower focus on the environmental pillar of sustainable development[187]. However, the coastal residents were more often putting forward some examples how they can change their everyday behaviour for the sake of sustainability or the environment. These suggestions were simple things, such as carrying own bag for shopping or paying more attention to waste generation or recycling, but — in my opinion — this kind of social awareness and self-declared willingness to change is promising. Yet, the representatives of the coastal communities did still call for or expected the assistance of decision-makers of politicians to stimulate or incentivize them to do so.

Finally, these two stakeholders' groups can be compared by their attitudes towards the ambition of strong sustainability. In general, the concept of strong sustainability is outside the discourse of both the maritime professionals[188] and the coastal residents. Perhaps, the most interesting difference between these two groups is the level of awareness of 'strong' and 'weak' sustainability approaches. The representatives of the maritime sectors did involve themselves quite vividly in the discussions if the protection of the environment should come first and override social and economic goals. Many times, they directly pointed out to the three dimensions of the sustainable development and the need for their balance. That was not the case during the coastal communities' workshops. The preferences for weak sustainability was expressed indirectly through the discussions of barriers focused on the environmental aspects of sustainability and their relative share in the pool of all barriers. Interestingly, the two maritime sectors that were most supportive for the strong sustainability were 'nature conservation' and 'a place to live' workshops. The latter one, if any, can be considered as most similar or most comparable with the workshops run with the representatives of the coastal residents. 'A place to live' workshop focused on the possible place attachment or sense of place and these elements were at the core of the coastal communities' events. However, in the workshop organized for maritime professional, there was a direct element of business or income connections, which — of course — was missing when the citizens were approached. What could be then a source of this stronger support for strong sustainability in the 'a place to live' workshop when compared with the costal communities' workshops? I would suggest the most feasible explanation arising from my research would be the level of awareness and knowledge on both sustainability and marine environment among the participants from the first group. I would also speculate that 'a place to live' workshop was perhaps the least homogenous group out of seven maritime sectors[189], and because of that they were even more willing to go beyond the comfort zones of their

[187] For example, 'transport' or' tourism and leisure' are the sectors that demonstrated lower consideration for that state of the marine and coastal environment (compare Table 18 and Table 27).
[188] The attitudes of the marine sectors are discussed in sub-chapter 4.1.4.
[189] Indeed, all maritime sectors workshops included primary, secondary stakeholders and influencers, but the primary stakeholders in this particular workshop can be assessed as more heterogeneous as primary stakeholders in other workshops (perhaps with the exception of the 'human health' group).

respective business (or social) environment. This could be a promising condition for initiatives stimulating more trans-disciplinary and emphatic-thinking, which are important components of the marine (or environmental) citizenship. However, more systematic research should be performed to evaluate conditions that would be needed to stimulate such inter-sectoral exchange and knowledge co-creation in the Polish context. Other research show (e.g., Piwowarczyk et al. 2019a) that such knowledge and experience exchange is difficult to occur during managerial proceedings and informal relations need to be established at earlier stages.

5 Policy recommendations

Despite many years of efforts to promote sustainable development, the Polish coastal and marine areas are still far being sustainable. Following the recommendations of community-based social marketing (e.g., McKenzie-Mohr et al. 2012) and public perception research (e.g., Jefferson et al. 2015), this study investigated the perceived barriers to achieve sustainability in two distinctive stakeholders' groups: maritime sectors and coastal communities. As demonstrated in the previous chapters, these two groups are characterized by various levels of environmental and marine awareness and of knowledge on natural ecosystems. They differently conceptualize sustainable development and acknowledge differences between strong and weak sustainability.

To my knowledge, my study is the first on the Polish coast (and also probably in Poland) that systematically mapped barriers to sustainability by giving the voice to the marine actors themselves. By doing so, it also illustrates (and documents) the level(s) of knowledge on marine ecosystems and sustainability ambitions among these marine actors. Although it is exploratory in its nature, it provides — in my opinion — some important insights (or recommendations) into possible actions that could foster sustainable behaviour towards the sea and the coast. Indeed, based on this study, I can conclude that there is a dire need for actions that would increase marine awareness and shape pro-environmental attitudes among marine actors. These policy recommendations on how to advance behavioural change are presented below.

Incorporation of education for sustainability into formal education (school curricula): current and previous school curricula offer many possibilities to include elements of education for sustainability into school various subjects (e.g., Grodzińska-Jurczak et al. 2010; Mróz et al. 2020). However, the results of such education seems to be unsatisfactory. There is still relatively poor understanding of what sustainable development is, and — more importantly — we are still not living in a sustainable world, also at the local levels. I would, therefore, argue that education for sustainability should be more formally incorporated into school curricula, perhaps even as a separate subject. There should be clearly defined objectives for sustainability education and the set of skills and abilities (and even personal characteristics) that students should acquire. Such education should be transdisciplinary in its nature but — based on my research — I would like to underline two important elements that could be crucial for the long-term environmental citizenship. Firstly, sustainable education should not only teach facts or knowledge. The ability of critical or evidence-based thinking is equally important. The students should be taught how to distinguish between science, pseudo-science and junk science and how to critically evaluate available information. Understanding how science works, what scientific methods are and how they are used in practice would allow the students to better understand the complexity of the modern world. This might — in a longer run — contribute to limiting the number of (and support for) misconceptions, misinterpretations or even conspiracy theories. Some of such misinterpretations (for example, these related for example to climate change) are extremely

important in the context of sustainability or in the context of healthy seas and oceans. Secondly, I think it is important to increase the economic literacy among the students. This recommendation should not be understood as a call for teaching entrepreneurship or financial skills. Rather, it should focus on explaining the tenets of various economic theories. Global capitalism and commodification of nature are included among important barriers for sustainable development world-wide. My research showed a high level of support towards ideas of neoliberal economy; yet this support is often combined with limited knowledge on the tenets of this approach. I, therefore, suggest that not only ideas of mainstream economics should be taught but also alternative approaches, including heterodox economics. And, indeed, ecological economics should be mentioned in the sustainable development context. Further research would be needed to guide the process. My research does not allow to suggest if education for sustainability should become a separate school subject or if it would be better to include it in other subjects' curricula (blocks of knowledge or groups of topics). Indeed, various objectives and various tools should be used for students in primary, secondary schools or at the universities. It would also be advisable to involve formal and informal educators in interactive processes to define and evaluate objectives and results for sustainability education. There are examples (e.g., Dlouhá and Pospíšilová 2018) that such participatory approaches can, indeed, enhance the common vision for sustainability literacy and enhance its quality.

Incorporation of marine education into formal and informal curricula: my research shows that there is a low level of knowledge on coastal and marine issues among the coastal residents; one can expect that such knowledge will be even smaller in the more inland parts of Poland. Sustainable seas and oceans are important part of the global sustainability and, therefore, I would argue that it is important that everybody should have some level of ocean literacy. Indeed, further research would be needed to bring forward some more concrete proposals for marine education at schools. Marine education should be perhaps more elaborated in the coastal areas and simpler outside them. For practical reasons, it should probably be linked with one or more subjects that are currently being taught at schools. It is Nevertheless, marine education should not simply focus on delivering knowledge on marine and coastal ecosystems and their links with human well-being. It would be equally important to develop the sense of place and personal attachment to this (or, in fact, any other) natural environment, which — as many research show (e.g., Chawla 1998; Chawla and Cushing 2007; Rosa et al. 2018) — is crucial for actual pro-environmental behaviour. Such personal connections are best to be developed through the regular childhood experiences with nature (e.g., Ewert et al. 2005; Jensen and Olsen 2019) both at individual and groups levels (Chawla and Cushing 2007). I would, therefore, recommend that marine education should be especially targeted at younger children[190] and at outdoor environmental education. The latter

[190] Some authors (e.g., Braun and Diekers 2016) suggest that the best age for developing connections to nature is between seven and nine years. Apart from the ideal age, other authors point out to other cultural factors (or conditions) that may be equally important to develop educational activities for children; see Siraj-Blatchford (2016) or Siraj-Blatchford and Pramling-Samuelsson (2016).

seems especially important as more and more children live in urban and suburban environments. For students from outside the coastal areas, long-term field trips could be an option for actual involvement and experiencing the sea; the practice of 'green schools' is rather well-established in the Polish schools so the promotion of the 'blue schools' seems to be a feasible and effective option. Apart from the formal school education, currently we can observe many bottom-up efforts to promote ocean literacy. (Marine) universities and research institutes involve their scientists in a variety of science talks, fairs and festivals[191]. However, the reach of these informal activities might be a problem; one can expect that only a limited number of students can participate and only most active or environmentally-concerned teachers would actually dedicate their time for such activities outside the basic curricula. Such activities and direct interactions with science and scientists are, indeed, important but in order to ensure their long-term effectiveness and durability, there is a need for national program(s) focused on such interactions that would safeguard reasonable level of funding allowing for the activities to be held at a larger scale.

Incorporation of educational component into the Polish maritime policy: education is, indeed, a powerful tool to enhance knowledge and awareness about marine and coastal ecosystems. However, without financial investments and secured long-term funding, marine education cannot be successful. It is, therefore, recommended that marine education, at least the informal one, should clearly be spelled out in the Polish maritime policy. The educational component should not be limited into educating the general public, and especially children, but it should also include actions towards the (maritime) businesses and other stakeholders. My research suggests that these maritime groups have a relatively sound knowledge on marine/maritime space. However, the ambition of strong sustainability does not gain a wide support within these groups. Educational efforts should, therefore, promote the strong sustainability approaches and good practices of corporate social responsibility in marine and coastal areas. Cooperation with maritime stakeholders should not be limited to 'lecturing' or 'providing knowledge' but it should be an interactive process of social leaning, knowledge co-creation and joint ownership of new solutions. Researchers representing both social and natural sciences should play an important in this process, which ideally should run into definition of 'new' social marine issues.

Use of social marketing tools to promote behavioural change towards more sustainable seas and oceans: increased knowledge and awareness are usually not enough to change humans' behaviour. Therefore, I would postulate that education efforts are combined with public perception research and community-based social marketing initiatives; both approaches proved to be quite useful in fostering more pro-environmental or sustainable behaviour (e.g., McKenzie-Mohr et al. 2012; Hastings and Domegan 2018). One out of four principles of social marketing — collective orientation[192] — underlines the role of social

[191] See examples of such activities at http://oceanliteracy.pl/ or at https://www.iopan.pl/pop-pl.html.

[192] The other three principles include client orientation (recognition of values, beliefs, priorities and needs), creative orientation (innovative ways to involve and with people) and competitive orientation (addressing competition and reducing price; Hastings and Domegan 2018).

context(s) in bringing about the change; these contexts include individual and collective determinants of a behaviour recognized at various scales (Hastings and Domegan 2018). The community scale seems to be more effective for many pro-environmental efforts (McKenzie et al. 2012) what — in case of marine areas — corresponds with the concept of sustainable coastal communities and looking for the solutions that work best in given settings (Beatley et al. 2002). I would, therefore, suggest that such community-based initiatives should be let at the local or at most regional level by municipalities and communes or local champions (such as local organizations or scientific institutions). For the initiatives to be successful, it would be necessary to ensure feedback loops between 'science' and 'practice' in the critical evaluation and monitoring of actions being implemented what can lead to (re-)definition of goals and objectives. I am of course aware of the problem of limited funding and existence of competing needs. For the start, I would suggest that such activities could be funded based on the external project money. There were, indeed, quite a lot funds available for the information/advertising activities (which often prove insufficient to foster a behavioural change; McKenzie et al. 2012) so they could be easily used to for such science-community partnerships. I also believe that many large environmental projects would strongly benefit if they included (community-based) social marketing component instead of simple communication and outreach activities. This would definitely require some lobbying for clear thematic calls or evaluation criteria for the existing and future (scientific) programmes but would allow for fostering the change with the funds that are already in the system.

Assessment of the current capacity of (marine) governmental bodies to organize and successfully implement stakeholder dialogue, and stimulate co-governance: various dimensions of public participation and effective two-way communications channels were deemed extremely important both by the representatives of the maritime sectors and coastal communities. However, the commitment of various agencies and decision-makers to stimulate cooperation, knowledge exchange and authority sharing was assessed as unsatisfactory. It is, therefore, important to identify the reasons for such poor achievements, and map enablers that could stimulate the shift towards more transformational participation.[193] It is necessary not only to investigate the organizational structures, available funds and staff, responsibilities and skills of the employees in the administrative agencies related to marine and coastal areas but also — and perhaps even more importantly — the overarching participation paradigm present in various organizations. The views on 'what' participation is (or is not) and on 'what its objectives are' will influence the way the public consultations are planned and implemented. Such an assessment should not be limited to those individuals and departments that are directly responsible for public consultations but also to their superiors, including the organizational top management; the views of the

[193] Instrumental (or pragmatic) participation aims to increase the efficiency and effectiveness of the decision-making processes. The stakeholders are an important part these processes but their preferences do not need to be included in the final solutions (NCR 2008; Stirling 2008). Transformational (or normative) participation focuses on public reasoning and knowledge co-creation (NCR 2008; Stirling 2008) and aims to stimulate societal change and empowerment of the weakest groups of a given community or society (Jansen et al. 1998).

managerial team are, indeed, important to shape the actions of these who are to implement them (e.g., Henry 2008). Finally, I would postulate that the capacity assessment should also include more general skills (such as strategic and digital thinking, problem-solving attitudes, social intelligence or new-media literacy[194]) that are significant for managing complex marine and coastal environments and promote their sustainability in the long time horizon.

Stronger incorporation of the coastal citizens into marine and coastal decision-making: participation is an important component of marine citizenship that can increase the feelings of ownership and the locus of control. Moving towards more transformational participation (as recommended above) cannot be limited to organized or economic stakeholders. Individuals and organizations responsible for the sustainable development of the sea and coast should strive to increase the role of the citizens in coastal management. While, indeed, such extended consultations are more challenging and time consuming, I would argue that they constitute an important step towards more sustainable world. Wider participation would not only allow to better understand interests of the local communities but would also be a social learning exercise that could increase knowledge and understanding of the sea. This recommendation should not be understood as a call for one uniform method or for a one-fit-all solution. Rather, the public involvement should consist of a variety of tools and methods; various degrees of participation should be applicable for various actors, and various actors can be involved at various managerial stages. What is crucial, is that these decisions should not be taken solely by the individuals responsible for consultations but in agreement (or at least in consultation) with the social actors.

Greater inclusion of social scientists' expertise into decision-making processes about the sea space and land-sea-interactions: many issues mentioned by the marine professionals concerned decision-making processes on the Polish sea, and particularly in the Gulf of Gdańsk. Natural science has been a part of these processes for quite some time already, providing data and their interpretations. These very same data (and their various interpretations) are often considered to be a part of the problem as 'science' is oftentimes perceived as illegitimate authority[195]. A greater involvement of the social sciences' researchers could potentially close at least two important gaps. Firstly, it could contribute to closing data gaps concerning social, cultural but also economic needs. Little is known on shared communities and intangible values; since they are not recognized, they are not included in practical decision-making on the sea (e.g., McKinley et al. 2019). There is a variety of methods that can be used to identify these values and, indeed, make them space explicit[196]; however, these methods require social expertise to be implemented, and they often use qualitative approaches, which require time and are often considered less viable for planning purposes than quantitative methods. Greater inclusion of (qualitative) social science into decision-

[194] Such more 'general skills' are considered more and more important in the marine planning and management. For the full overview of skills and competencies of modern marine managers and professionals see Calado et al. (2019) and Ansong et al. (2019).
[195] See Piwowarczyk and Wróbel (2016) and Piwowarczyk et al. (2019b) for examples concerning the Polish sea.
[196] For the overview of these methods, see for example McKinley et al. (2019).

making should, therefore, be complemented with additional training for planners and governing agencies on these particular research methods. Secondly, social scientists could contribute to shaping social dialogue between various groups of stakeholders; they could provide expertise and tools to investigate — for example — causes of reluctance or opposition towards marine spatial planning or conservation efforts and could assist in planning strategies and actions to overcome such problems[197]. Indeed, maritime policy and maritime spatial planning are social proceedings and their effectiveness is ultimately dependant on social support, which needs to be built and maintained.

Promotion of transdisciplinary research concerning sustainable development of marine areas: marine areas are places, where various narratives meet[198]; these narratives comes from various stakeholders but also from various scientific disciplines, i.e., natural sciences, life sciences or social sciences. Similarly, sustainability debate presents similar variety of approaches and perspectives, where the free pillars of sustainable development are perhaps mostly recognized. These various narratives are often separated in the academic research (e.g., Bradt at al. 2013; Huutoniemi 2014) but such a separation does not exist in real life, where narratives co-exist and clash at times, e.g., during the decision-making processes. However, my research suggests that various narratives (or various actors embracing these narratives) are not delivered a proper forum to interact before a tension or a clash becomes evident. In other worlds, knowledge about various aspects of marine realm and marine stakeholders is fragmented and often disconnected with the ambition of sustainability as a whole. Transdisciplinarity is considered the approach that might support overcoming this disconnectedness, and — at the same time — increase the role of stakeholders in problem solving (e.g., Roux et al. 2017). However, truly transdisciplinary approaches are rare[199] and outside the mainstream scientific practices (e.g., Jahn et al. 2012; van der Leeuw 2018; Holzer et al. 2019). Part of the problem is the funding: in a largely specialised scientific world, the recognition and funding is not easily available for transdisciplinary projects (Holzer et al. 2019). Ideally, transdisciplinarity should be supported at the level of scientific policies. However, from the practical perspective, I would suggest that transdisciplinary programme(s) for investigating social-marine/ecological interactions in the context of marine management and marine sustainability should be clearly spelled out in the Polish maritime policy. It should also be this policy that guarantee at least some funding for the most important challenges, e.g., through commissioning research or monitoring programmes. The Polish maritime policy should also openly lobby for the dedicated funding for such initiatives that could be included in the long-term scientific policies or funding programmes both at national (e.g., through National Centre for Research and Development) or European/international levels (e.g., the

[197] Similar conclusion is put forward by Zaucha (2018) in the context of sea space management.

[198] Examples of such various narratives can be found, for example, in Jerzak et al. (2019).

[199] Project that aims for transdisciplinarity often use methods and approaches specific for a given scientific discipline and not designed especially for the interdisciplinary processes. Moreover, although they stimulate knowledge exchange, there are little efforts to include stakeholders in this exchange and empower them (Brandt et al. 2013).

Interreg programmes). I believe that maritime administration (both at central and regional level) could also stimulate the cooperation between scientists (representing various disciplines), decision-makers and stakeholders what — in the long run — could stimulate bottom-up transdisciplinary efforts. Such a cooperation could also be a social learning exercise for all involved parties that would additionally contribute to data management that could better address the needs of sustainable marine management.

Conclusions

The research undertaken in this thesis was an answer to a call for more public perception research concerning relations between the humans and the sea. The major aim of this thesis — as specified in the 'Introduction' — was to investigate how the representatives of two groups — (i) maritime sectors and (ii) coastal communities — conceptualize marine sustainability, and how they perceive barriers into more sustainable marine and coastal ecosystems.

The first specific research question of this thesis was to investigate how the representatives of maritime sectors perceive barriers to marine sustainability. The participants of all seven Interactive Management workshops generated a variety of barriers addressing all three pillars of sustainable development. Although the groups' preferences for most important or more influential barriers varied, the systematic analysis of the whole set of barriers uncovered that three groups of barriers were believed to most significantly hinder the progress towards sustainable seas and coast. These were the barriers related to attitudes, knowledge, and public involvement in decision-making. Among these three, the attitudes were recognized as the group of barriers that were most promising for social interventions. Changes in attitudes towards marine ecosystems can stimulate behavioural changes within other areas of human activities.

Emphasising the importance of attitudinal (and behavioural) change, the respective maritime sectors perceived themselves as relatively environmentally friendly, and supporting the sustainability ambitions within the available market boundaries, i.e., effort- and profit-wise. They located major constraints to and major responsibilities for achieving sustainable development outside their respective sectors, i.e., within other economic sectors, customers (or society at large), but most often within the regional and national governments. This suggests relatively low internalization of the sustainability concept, and preferences for a strong involvement of government(s); the government(s) that the representatives of the maritime actors, paradoxically, most often criticized for the mismanagement of their own sectors.

There are, however, some positive elements in the grim picture described above. For example, during the 'food supply' workshop, there were some fishers' voices asking for the reform of this sector; these voices called for more supervision and monitoring. These calls were perhaps economically motivated (i.e., inspired by long-term profitability), but such self-awareness is an important first step for further modifications. Similarly, the representatives of the tourism sector noticed negative impact of mass tourism and lack of coherent spatial regulations. I think these calls for some reform are especially significant as coming from within the interest group itself, and, therefore, worth a more thorough investigation.

The second specific research question addressed the issues of strong and weak sustainability. The ideals of strong sustainability were not widely embraced by the representatives of the maritime sectors. All seven groups shared a similar understanding of sustainable

development pointing to the three pillar model. There was a wide consensus that sustainable development is about balancing different (social, economic, and environmental) needs, and that the environmental pillar of sustainability should not take priority over the remaining two.

The narratives of the two groups, i.e., 'a place to live' and 'nature conservation' demonstrated the highest support for the ambitions of strong sustainability. However, the representatives of the first group believed that strong sustainability is not achievable within the current social setting, and it is more feasible to pursue conservation efforts without challenging the status quo. The representatives of the second group put some arguments for strong sustainability, and they supported assigning higher priority for nature conservation. At the same time, they, however, called for the conservation that would allow co-existence with other uses; hence they drifted apart from the ambitions of strong sustainability they necessitated. Interestingly, the representatives of the 'human health' sector were most willing to challenge the current economic paradigm, but this group focused on social issues, and demonstrated the weakest links with the marine and coastal environment.

Finally, there were little evidence that sectors that depend more on healthy marine ecosystems are more willing to internalize and support the primary role of nature conservation. Indeed, the representatives of the 'food supply' and 'tourism and leisure' groups were not significantly different in their opinions on sustainable development than the participants coming from the 'energy' and 'transport' sectors.

The third specific research question was to explore barriers to sustainability as perceived by the representatives of the coastal communities. The representatives of the general public, similarly to the representatives of the maritime sectors, identified variety of barriers to sustainable development of their region. However, the analysis of these barriers uncovered that the coastal communities show a small awareness of the sea and large disconnections with it in their daily lives. They mentioned the sea and the coast relatively rarely, and most often in relation to tourism and leisure activities; other, more general, issues dominated their discussions. Sadly, similar conclusion can be made about sustainable development. The representatives of the general public knew little about this concept, including the most prominent three pillar model. It was clear that social and economic challenges were most important for the coastal residents, leaving the protection of the environment outside the main discourse of sustainability.

The systematic analysis of the barriers generated by the coastal communities revealed three most important areas where change could (or should) be sought. These were areas related to knowledge, attitudes and public participation. Interestingly, these were the same areas that were recognized as crucial by the maritime sectors. Among these three, barriers related to the lack of knowledge were considered most influential by the representatives of the coastal communities. This suggests that they were — at least partially — aware of their limited familiarity with the functioning of marine ecosystems. A similar point can be made about attitudinal barriers. The representatives of the coastal communities were quite willing to accept part of the blame for unsustainable practices, although they frequently also put it on

the governments and businesses. Indeed, in their opinion businesses should accept much of the blame for their marketing strategies.

To sum up, I suggest that this readiness to take some responsibility, especially when combined with calls for more public participation (barriers related to public involvement scored third), rises hopes that there is a steady progress towards civil society that in the long run is a foundation for (strong) sustainability.

The fourth specific research questions addressed the issue of marine citizenship and its existence among the coastal communities of the Pomeranian province. Such a citizenship is, regrettably, non-existent. The representatives of the coastal communities did not appreciate the relations between a healthy marine environment and their well-being; indeed, their knowledge and awareness of marine issues were rather small. Many barriers discussed during the Interactive Management workshops would be equally important and equally valid outside the coastal regions as they addressed quite general social and economic issues. I can speculate that — to much extent — similar barriers could have been generated in another environmental setting, e.g., in the Mazury or Tatra Mountains regions. My results are, indeed, a call for more ocean literacy initiatives; initiatives that were considered lacking (but important) by the representatives of the coastal communities themselves.

Finally, the fifth specific research question aimed to analyse the differences in opinions put forward by the representatives of the maritime sectors and the coastal communities. Overall, and perhaps unsurprisingly, the representatives of the maritime sectors were much more knowledgeable about the sea and marine-related (managerial) processes. They also knew more about sustainable development and its operationalization models. In contrast, the representatives of the coastal communities showed an unexpectedly small awareness of the sea and a large disconnection with it in their day-to-day actions and habits. The members of the general public were familiar with the concept of sustainable development, but their knowledge proved to be superficial, and the concept itself was not useful in daily choices.

However, the representatives of the coastal communities were more willing to accept more personal responsibility for the unsustainable practices than the participants coming from maritime sectors. Both groups of stakeholders supported sustainable development, and both did not embrace the strong sustainability paradigm. The economic issues were, indeed, prominent in the narratives of both groups, although, in terms of actual impact on achieving the sustainability ambitions, other problems were deemed more important. Problems related to knowledge, attitudes and public participation were believed to most severely hinder progress towards sustainability.

This study was an answer to the call for more social science contribution into shaping relations between humans and the sea. Its results clearly indicate that such contribution is crucial. In the context of sustainable development, this study offers assistance in selecting the research priority areas, where research efforts should be directed.

Firstly, and most importantly, this research suggests the need for more transdisciplinary research in the field of marine sustainability. The tools and approaches coming from the fields of public perception research and social marketing could be especially useful to investigate what are the actual drivers for change in a given community or a given sector. Such research should address the specific issues within the maritime sectors themselves since their resistance to change seems more significant than that of the general public. Secondly, there is a need for more social science expertise in managerial initiatives undertaken on the Polish sea and coast. The current ways of handling public involvement seem unsatisfactory and inefficient, and put at risk the legitimacy (and efficiency) of the decisions to be undertaken. It is necessary to (i) thoroughly explore the reasons for low trust towards public deliberations between various groups of stakeholders, and (ii) provide solutions and tools to stimulate meaningful involvement. Thirdly, and finally, there is a great need to improve current educational efforts concerning both education for sustainability and marine education. Given the rise of ocean literacy initiatives, I would argue it is especially important to focus on marine issues with an attempt to avoid mistakes (and use lessons learnt) made in the (early stages) of education on sustainable development.

LIST OF FIGURES

LIST OF TABLES

REFERENCES

1. Aarson, S.A. (2011) Limited partnership: business, government, civil society, and the public in the Extractive Industries Transparency Initiative (EITI). Public Administration and Development 31, p. 50-63.
2. Adamiak, P. (2014) Zaangażowanie społeczne Polek i Polaków. Wolontariat, filantropia, 1% i wizerunek organizacji pozarządowych. Stowarzyszenie Klon/Jawor, Warszawa.
3. Adams, M. (2004) Negotiating nature: collaboration and conflict between Aboriginal and conservation interests in New South Wales, Australia. Australian Journal of Environmental Education 20, p. 3-11.
4. Adger, N.W., Hodbod, J. Ecological and social resilience. In: (eds.) Atkinson, G., Dietz, S., Neumayer, E., Agarwala, M. Handbook of sustainable development, p. 41-54, Edward Elgar, Cheltenham.
5. Agyeman, J., Evans, B. (2004) "Just sustainability": the emerging discourse of environmental justice in Britain? The Geographical Journal 170, p. 155-164.
6. Ahmad, W., Soskolne, C.L., Ahmed, T. (2012) Strategic thinking on sustainability: challenges and sectoral roles. Environment, Development and Sustainability 14, p. 67-83.
7. Ahnström, J., Höckert, J., Bergea, H.L., Francis, C., Skelton, P., Hallgren, L. (2009) Farmers and nature conservation: What is known about attitudes, context factors and actions affecting conservation? Renewable Agriculture and Food Systems 24, p. 38-47.
8. Ahtiainen, H., Artell, J., Czajkowski, M., Hasler, B., Hasselström, L., Hyytiäinen, K., Meyerhoff, J., Smart, J.C.R., Söderqvist, T., Zimmer, K., Khaleeva, J., Rastrigina, O., Tuhkanen, H. (2013) Public preferences regarding use and condition of the Baltic Sea — an international comparison informing marine policy. Marine Policy 42, p. 20-30.
9. Ahvenniemi, H., Huovila, A., Pinto-Seppä, I., Airaksinen, M. (2017) What are the differences between sustainable and smart cities? Cities 60, p. 234-245.
10. Ainger, C., Fenner, R. (2014) Sustainable infrastructure: principles into practice. ICE Publishing, London.
11. Ajzen, I. (1991) The theory of planned behavior. Organizational Behavior and Human Decision Processes 50, p. 179-211.
12. Albareda, L., Lozano, J.M., Tencati, A., Midttun, A., Perrini, F. (2008) The changing role of governments in corporate social responsibility: drivers and responses. Business ethics: A European Review 17, p. 347-363.
13. Alessa, L., Bennett, S.M., Kliskey, A.D. (2003) Effects of knowledge, personal attribution and perception of ecosystem health on depreciative behaviors in the intertidal zone of Pacific Rim National Park and Reserve. Journal of Environmental Management 68, p. 207-218.
14. Alexander, G.C. (2002) Interactive Management: an emancipatory methodology. Systemic Practice and Action Research 15, p. 111-122.
15. Alford, J., Head, B.W. (2017) Wicked and less wicked problems: a typology and a contingency framework. Policy and Society 36, p. 397-413.
16. Altwegg, D., Roth, I., Scheller, A. (2004) Monitoring sustainable development (MONET): final report – methods and results. Swiss Federal Statistical Office, Neuchâel.
17. Álvares-García, J., Maldonado-Erazo, C.P. Del Río-Rama, M.C. (2019) Green consumerism: study of academic publications in scientific journals indexed in the Web of Science and Scopus. In: (eds.) Singh-Malyan, R., Duhan, P. Green consumerism: perspectives, sustainability and behavior, p. 41-66, Apple Academic Press, Oakville, ON.
18. Andrulewicz, E., Otremba, S., Kamińska, K. (2010) Ongoing technical activities and conservation measures in maritime spatial planning within Polish Marine Areas. Polish Journal Environmental Studies 19, p. 553-563.
19. Ang, F., Van Passel, S. (2012) Beyond the environmentalist's paradox and the debate on weak versus strong sustainability. BioScience 62, p. 251-259.

20. Ansong, J., Calado, H., Gilliland, P.M. (2019) A multifaceted approach to building capacity for marine/maritime spatial planning based on European experience. Marine Policy, 103422.
21. Antonetti, P., Maklan, S. (2014) Feelings that make a difference: how guilt and pride convince consumers of the effectiveness of sustainable consumption choices. Journal of Business Ethics 124, p. 117-134.
22. Appleton, J. (2014) Including participants' values in the sustainable development process. In: (ed.) Appleton, J. Values in sustainable development, p. 18-26, Routledge, Oxon.
23. Aragon-Correa, J.A., Martin-Tapia, I., de la Torre-Ruiz, J. (2015) Sustainability issues and hospitality and tourism firms' strategies. International Journal of Contemporary Hospitality Management 27, p. 498-522.
24. Arias-Maldonado, M. (2013) Rethinking sustainability in the Anthropocene. Environmental Politics 22, p. 428-446.
25. Arias-Maldonado, M. (2020) Sustainability in the Anthropocene: between extinction and populism. Sustainability 12, 2538.
26. Arkema, K.K., Abramson, S.C., Dewsbury, D.M. (2006) Marine ecosystem-based management: from characterization to implementation. Frontiers in Ecology and the Environment 4, p. 525-532.
27. Arts, J., Faith-Ell, C. (2012) New governance approaches for sustainable project delivery. Procedia-Social and Behavioral Sciences 48, p. 3239-3250.
28. Atkinson, G., Dietz, S., Neumayer, E. (2007) Introduction. In: (eds.) Atkinson, G., Dietz, S., Neumayer, E. Handbook of sustainable development, p. 1-23, Edward Elgar, Cheltenham.
29. Avni, N., Teschner, N. (2019) Urban waterfronts: contemporary streams of planning concepts. Journal of Planning Literature 34, 408-420.
30. Axelsson, R., Angelstam, P., Elbakidze, M., Stryamets, N., Johansson, K-E. (2011) Sustainable development and sustainability: landscape approach as a practical interpretation of principles and implementation concepts. Journal of Landscape Ecology 4, p. 5-30.
31. Babiarz, M., Garbuzik, P. (2017) Edukacja ekologiczna jako priorytet w nauczaniu dzieci i młodzieży. Edukacja-Technika-Informatyka 4/22, p. 160-165.
32. Babiuch, W.M., Farhar, B.C. (1994) Stakeholder analysis methodologies resource book. National Renewable Energy Laboratory, Golden, CO.
33. Baker, S. (2006) Sustainable development. Routledge, Oxon.
34. Baker, S., Eckerberg, K. (2008) Conclusions: combining old and new governance in pursuit of sustainable development. In: (eds.) Baker, S., Eckerberg, K. In pursuit of sustainable development: new governance practices at the sub-national level in Europe, p. 208-228, Routledge/ECPR Studies in European Political Science, Oxon.
35. Baldwin, C., Marshall, G., Ross, H., Cavaye, J., Stephenson, J., Carter, L., Freeman, C., Curtis, A., Syme, G. (2019) Hybrid neoliberalism: implications for sustainable development. Society & Natural Resources 32, p. 566-587.
36. Balint, P.J., Stewart, R.E., Desai, A., Walters, L.C. (2011) Wicked environmental problems: managing uncertainty and conflict. Island Press, Washington, D.C.
37. Ballantyne, R. (2004) Young students' conceptions of the marine environment and their role in the development of aquaria exhibits. GeoJournal 60, p. 159-163.
38. Bandura, A. (2007) Impeding ecological sustainability through selective moral disengagement. International Journal of Innovation and Sustainable Development 2, p. 8-35.
39. Bandura, A. (2016) Moral disengagement: how people do harm and live with themselves. Worth Publishers, New York, NY.
40. Banas, P. (2010) International ideal and local practice – access to environmental information and local government in Poland. Environmental Policy and Governance 20, p. 44-56.
41. Barbier, E.B. (1987) The concept of sustainable economic development. Environmental Conservation 14, p. 101-110.
42. Barr, S. (2003) Strategies for sustainability: citizens and responsible sustainable behavior. Area 35, p. 227-240.

43. Barr, S. (2008) Environment and society: sustainability, policy and the citizen. Ashgate, Aldershot.
44. Barreto, G.C., Di Domenico, M., Medeiros, R.P. (2020) Human dimensions of marine protected areas and small-scale fisheries management: a review of the interpretations. Marine Policy 119, 104040.
45. Basiago, A.D. (1999) Economic, social, and environmental sustainability in development theory and urban planning practice. Environmentalist 19, p. 45-161.
46. Bassey, M. (1999) Case study research in educational setting. Open University Press, Buckingham.
47. Bathmaker, A-M. (2010) Introduction. In: (eds.) Bathmaker, A-M., Harnett P. Exploring leaning, identity and power through life history and narrative, p. 1-10, Routledge, New York, NY.
48. Bauer N., Megyesi B., Halbac-Cotoara-Zamfir R., Halbac-Cotoara-Zamfir C. (2020) Attitudes and environmental citizenship. In: (eds.) Hadjichambis, A.C., Reis, P., Paraskeva-Hadjichambi, D., Činčera, J., Boeve-de Pauw, J., Gericke, N., Knippels, M-C. Conceptualizing environmental citizenship for 21st century education, p. 97-111, Springer, Cham.
49. Baum, T. (1999) Seasonality in tourism: understanding the challenges. Tourism Economics 5, p. 5-8.
50. Baum, T., Hagen, L. (1999) Responses to seasonality: the experiences of peripheral destinations. International Journal of Tourism Research 1, p. 299-312.
51. Baum, T., Lundtorp, S. (2001) Seasonality in tourism: an introduction. In: (eds.) Baum, T., Lundtorp, S. Seasonality in tourism, p. 1-4, Pergamon, Oxford.
52. Baumgartner, R.J., Korhonen, J. (2010) Strategic thinking for sustainable development. Sustainable development 18, p. 71-75.
53. Bawden D., Robinson, L. (2008) The dark side of information: overload, anxiety and other paradoxes and pathologies. Journal of Information Science, 35, p. 180-191.
54. Beatly, T. (1998) The vision of sustainable communities. In: (ed.) Burby, R.J. Cooperating with nature: confronting natural hazards with land-use planning for sustainable communities, p. 233-262, Joseph Henry Press, Washington D.C.
55. Beatly, T. (2009) Planning for coastal resilience: best practices for calamitous times. Island Press, Washington D.C.
56. Beatly, T., Brower, D.J., Schwab, A.K. (2002) An introduction to coastal zone management. Island Press, Washington D.C.
57. Bebbington, J., Unerman, J. (2018) Achieving the United Nations Sustainable Development Goals: an enabling role for accounting research. Accounting, Auditing & Accountability Journal 31, p. 2-24.
58. Becker, J. (2010) Use of backcasting to integrate indicators with principles of sustainability. International Journal of Sustainable Development & World Ecology 17, 189-197.
59. Bednarek, A.T., Wyborn, C., Cvitanovic, C., Meyer, R., Colvin, M.R., Addison, P.F.E., Close, S.L., Curran, K., Farooque, M., Goldman, E., Hart, D., Mannix, H., McGreavy, B., Parris, A., Posner, S., Robinson, C., Ryan, M., Leith, P. (2018) Boundary spanning at the science–policy interface: the practitioners' perspectives. Sustainability Science 13, p. 1175-1183.
60. Beeharry, Y.D., Bekaroo, G., Bokhoree, C., Phillips, M.R., Jory, N. (2017) Sustaining anti-littering behavior within coastal and marine environments: through the macro-micro level lenses. Marine Pollution Bulletin 119, p. 87-99.
61. Belin, B.E., Kittredge, D.B., Stevens, T.H., Dennis, D.C., Schweik, C.M., Morzuch, B.J. (2015) Assessing private forest owner attitudes toward ecosystem-based management. Journal of Forestry 103, p. 28-35.
62. Bell, M. (1998) An invitation to environmental sociology. Pine Forge Books, Thousand Oaks, CA.
63. Bellamy, J.A. (2006) Community-based research. In: (eds.) Guimarães Pereira, Ã., Guedes Vaz, S., Tognetti, S. Interfaces between science and society, p. 254-260, Greenleaf Publishing Ltd, Sheffield.
64. Bennett, N.J. (2018) Navigating a just and inclusive path towards sustainable oceans. Marine Policy 97, p. 139-146.
65. Bennet, N.J. (2019) Marine social science for the peopled sea. Coastal Management 47, p. 244-252.

66. Bennett, M.J., Roth, R., Klain, S.C., Chan, K., Christie, P., Clark, D.A., Cullman, G., Curran, D., Durbini, T.J., Epstein, G., Greenberg, A., Nelson, M.P., Sandlos, J., Stedman, R., Teel, T.L., Thomas, R., Veríssimo, D., Wyborn, C. (2017) Conservation social science: Understanding and integrating human dimensions to improve conservation. Biological Conservation 205, p. 93-108.
67. Benson, M.H., Craig, R.H. (2014) The end of sustainability. Society & Natural Resources: An International Journal 27, p. 777-782.
68. Berkedal, C.V. (2000) Spirituality and sustainability. In: (eds.) Schmandt, J., Ward, C.H. Sustainable development: the challenge of transition, p. 101-112 , Cambridge University Press, New York.
69. Berkes, F. (2003) Alternatives to conventional management: lessons from small-scale fisheries, Environments 31, p. 5-20.
70. Berkowitz, A.R., Ford, M.E., Brewer, C.A. (2005) A framework for integrating ecological literacy, civics literacy, and environmental citizenship in environmental education. In: (eds.) Johnson, E.A., Mappin, M.J. Environmental education and advocacy: perspectives of ecology and education, p. 227-266, Cambridge University Press, Cambridge.
71. Bestvina, B. (2012) Recognizing and overcoming the critical cultural barriers to progress in the sustainability movement: from a human perspective. Thesis submitted to the Oregon State University in partial fulfilment of the requirements for the degree of Master of Arts, Cornvallis, OR.
72. Bhattacherjee, A. (2012) Social science research: principles, methods, and practices. USF Tampa Bay Open Access Textbooks Collection. Book 3, Tampa, FL.
73. Biely, K., Maes, D., Van Passel, S. (2018) The idea of weak sustainability is illegitimate. Environment, Development and Sustainability 20, p. 223-232.
74. Bielecka, M., Różyński, G. (2014) Management conflicts in the Vistula Lagoon area. Ocean & Coastal Management 101, Part A, p. 24-34.
75. Binney, W., Hall, J., Shaw, M. (2003) A further development in social marketing. Application of the MOA framework and behavioral implications. Marketing Theory 3, p. 387-403.
76. Binney, W., Hall, J., Oppenheim, P. (2006) The nature and influence of motivation within the MOA framework: implications for social marketing. International Journal of Nonprofit and Voluntary Sector Marketing 11, p. 289-301.
77. Blewitt, J. (2015) Understanding sustainable development. Routledge, Oxon.
78. Blicharska, M., Orlikowska, E.H., Roberge J-M., Grodzińska-Jurczak, M. (2016) Contribution of social science to large scale biodiversity conservation: a review of research about the Natura 2000 network. Biological Conservation 199, p. 110-122.
79. Blühdorn, I. (2016) Sustainability - post-sustainability - unsustainability. In: (eds.) Gabrielson, T., Hall, C., Meyer, J.M., Schlosberg, D. The Oxford Handbook of Environmental Political Theory, p. 259-273, Oxford University Press, Oxford.
80. Bodin, Ö., Ramirez-Sanchez, S., Ernstson, H., Prell, C. (2011) A social relation approach to natural resource governance. In: (eds.) Bodin, Ö., Prell, C. Social networks and natural resource management, p.3-28, Cambridge University Press, Cambridge.
81. Bonsdorff, E., Blomqvista, E.M., Mattila, J., Norkko, A. (1997) Coastal eutrophication: causes, consequences and perspectives in the Archipelago areas of the northern Baltic Sea. Estuarine, Coastal and Shelf Science 44, p. 63-72.
82. Borys, T. (2010) Dekada edukacji dla zrównoważonego rozwoju – polskie wyzwania. Problemy Ekorozwoju 5, p. 59-70.
83. Bougherara, D., Grolleau, G., Mzoughi, N. (2007) Is more information always better? An analysis applied to information-based policies for environmental protection. International Journal of Sustainable Development 10, p. 197-213.
84. Bowen, K.J., Cradock-Henry, N., Koch, F., Patterson, J., Häyä, T., Vogt, J., Barbi, F. (2017) Implementing the "Sustainable Development Goals": towards addressing three key governance challenges—collective action, trade-offs, and accountability. Current Opinions in Environmental Sustainability 26-27, p. 90-96.

85. Bowie, S.N. (1988) The moral obligations of multinational corporations. In: (ed.) Luper-Foy, S. Problems of International Justice, p. 97-113, Westview Press, Boulder, CO.
86. Boyes, S.J., Elliot, M. (2014) Marine legislation – the ultimate 'horrendogram': international law, European directives & national implementation. Marine Pollution Bulletin 86, p. 39-47.
87. Börger, T., Hattam, C. (2017) Motivations matter: behavioural determinants of preferences for remote and unfamiliar environmental goods. Ecological Economics 131, p. 64-74.
88. Brander, L.M., Crossman, N.D. (2017) Economic quantification. In: (eds.) Burkhard, B., Maes, J. Mapping ecosystem services, p. 113-123, Pensoft Publishers, Sofia.
89. Brand, U. (2012) Green economy - the next oxymoron? No lessons learned from failures of implementing sustainable development. GAIA - Ecological Perspectives for Science and Society 21, p. 28-32.
90. Brandt, P., Ernst, A., Gralla, F., Luederitz, C., Lang, D.J., Newig, J., Reinert, F., Abson, D.J., von Wehrden, H. (2013) A review of transdisciplinary research in sustainability science. Ecological Economics 92, p. 1-15.
91. Braun, T., Dierkes, P. (2016) Connecting students to nature – how intensity of nature experience and student age influence the success of outdoor education programs. Environmental Education Research 23, p. 937-949.
92. Brendzel-Skowera, K. (2009) Bariery w realizacji koncepcji zrównoważonego rozwoju w Polsce. Nierówności Społeczne a Wzrost Gospodarczy 14, p. 102-109.
93. Breslow, S.J., Sojka, B., Barnea, R., Basurto, X., Carothers, C., Charnley, S., Coulthard, S., Dolšak, N. Donatuto, J., García-Quijano, C., Hicks, C.C., Levine, A., Mascia, M.B., Norman, K., Poe, M., Satterfield, T., St. Martin, K. Levin, P.S. (2016) Conceptualizing and operationalizing human wellbeing for ecosystem assessment and management. Environmental Science & Policy 66, p. 250-259.
94. Brochocka, A. (2013) Zasady zrównoważonego rozwoju w świetle polityki ekologicznej państwa. Roczniki Ekonomiczne Kujawsko-Pomorskiej Szkoły Wyższej w Bydgoszczy 6, p. 29-45.
95. Broome, B.J. (1995) Collective design of the future: structural analysis of tribal vision statements. American Indian Quarterly 19, p. 205-228.
96. Broome, B.J. (2004) Reaching across the dividing line: building a collective vision for peace in Cyprus. Journal of Peace Research 41, p. 191-209.
97. Broome, B.J. (2006) Facilitating group communication protracted conflict situations: promoting citizen peace-building efforts in Cyprus. In: (ed.) Frey, L.R. Facilitating group communication in context: innovations and applications with natural groups. Volume one: Facilitating group creation, conflict and conversation, p. 125-154, Hampton Press, Inc., Cresskill, NJ.
98. Broome, B.J., Fullbright, L. (1995) A multistage influence model of barriers to group problem solving: a participant-generated agenda for small group research. Small Group Research 26, p. 25-55.
99. Bryson, M. (2004) What to do when stakeholders matter. Stakeholders identification and analysis techniques. Public Management Review 6, p. 21-53.
100. Bryman, A. (2012) Social research methods. Oxford University Press, New York.
101. Buckingham-Hatfield, S. (2000) Gender and Environment. Routledge, London.
102. Buckley, R. (2012) Sustainable tourism: research and reality. Annals of Tourism Research 39, p. 528-546.
103. Buckley, P.J., Pinnegar, J.K., Painting, S.J., Terry, G., Chilvers, J., Lorenzoni, I., Gelcich, S., Duarte, C.M. (2017) Ten thousand voices on marine climate change in Europe: different perceptions among demographic groups and nationalities. Frontiers in Marine Science 4, 206.
104. Buhl, A., Schmidt-Keilich, M., Muster, V., Blazejewski, S., Schrader, U., Harrach, C., Schäfer, M. Süßbauer, E. (2019) Design thinking for sustainability: why and how design thinking can foster sustainability-oriented innovation development. Journal of Cleaner Production 231, p. 1248-1257.

105. Bukowski, Z. (2005) Pojęcie zrównoważonego rozwoju w prawie polskim. In: (ed.) Papuziński, A. Zrównoważony rozwój: od utopii do praw człowieka, p. 104-118, Oficyna Wydawnicza Branta, Bydgoszcz.
106. Buonincontri, P. Marasco, A., Ramkinssoon H. (2017) Visitors' experience, place attachment and sustainable behaviour at cultural heritage sites: a conceptual framework. Sustainability 9, 1112.
107. Butler, R.W. (2001) Seasonality in tourism: issues and implication. In: (eds.) Baum, T., Lundtorp, S. Seasonality in tourism, p. 5-21, Pergamon, Oxford.
108. Buttel, F.H. (2000) Ecological modernization as social theory. Geoforum 31, p. 57-65.
109. Caiado, R.G.G., Filho, W.L., Quelhas, O.L.G., de Mattos Nascimento, D.L., Ávila, L.V. (2018) A literature-based review on potentials and constraints in the implementation of the sustainable development goals. Journal of Cleaner Production 198, p. 1276-1288.
110. Calado, H., Fonseca, C., Ansong, J.O., Frias, M., Vergilio, M. (2019) Education and training for maritime spatial planners. In: (eds.) Zaucha, J., Gee, K. Maritime spatial planning, past, present, future, p. 441-468. Palgrave Macmillian, Cham.
111. Cannas, R. (2012) An overview of tourism seasonality: key concepts and policies. AlmaTourism Journal of Tourism, Culture and Territorial Development 3, p. 40-58.
112. Carroll, J.E. (2016) The environment is a moral and spiritual issue. In: (eds.) Dhiman, S., Marques, J. Spirituality and sustainability: new horizons and exemplary approaches, p. 49-72, Springer, Switzerland.
113. Carter, N. (2001) The politics of the environment: ideas, activisms, policy. Cambridge University Press, Cambridge.
114. Carter, N. (2007) The politics of the environment: ideas, activisms, policy. Cambridge University Press, Cambridge.
115. Carvalho, S.C., Alves, F., Azeiteiro, U.M., Meira-Cartea, P.A. (2012) Sociocultural and educational factors in the sustainability of coastal zones. The Prestige oil spill in Galicia, ten years later. Management of Environmental Quality: An International Journal 23, p. 362-382.
116. Castree, N. (2010) Neoliberalism and the biophysical environment: a synthesis and evaluation of the research. Environment and Society: Advances in Research 1, p. 5-45.
117. Castree, N. (2011) Neoliberalism and the biophysical environment 3: putting theory into practice. Geography Compass 5, p. 35-49.
118. Celiński, A., Frątczak, P., Herbst, J., Kołakowska, Z., Matuszewski, J., Owczarek, D., Piechociński, T., Stempień, M., Wielkopolan, B., Wojciechowska, M., Wygnański, J.J. (2011) Final report on the study of the effectiveness of mechanisms for public consultation (summary). The Unit for Social Innovation and Research "Stocznia and Millward Brown SMG/KRC", Warszawa.
119. Cent, J., Mertens, C., Niedziałkowski, K. (2013) Roles and impacts of non-governmental organizations in Natura 2000 implementation in Hungary and Poland. Environmental Conservation 40, p. 119-128.
120. Charnley, S., Carothers, C., Satterfield, T., Levine, A., Poe, M.R., Norman, K., Donatuto, J., Breslow, S.J., Mascia, M.B., Levine, P.S., Basurto, X., Hicks, C.C., García-Quijan, C., St. Martin, K. (2017) Evaluating the best available *social* science for natural resource management decision-making. Environmental Science and Policy 73, p. 80-88.
121. Chawla, L. (1998) Significant life experiences revisited: a review of research on sources of environmental sensitivity. The Journal of Environmental Education 29, p. 11-21.
122. Chawla, L., Cushing, D.F. (2007). Education for strategic environmental behavior. Environmental Education Research 13, p. 437-452.
123. Chevalier, J.M., Buckles, D.J. (2013) Participatory action research. Theory and methods for engaged inquiry. Routledge, New York, NY.
124. Chin, A., Jacobsson, T. (2016) TheGoals.org: mobile global education on the Sustainable Development Goals. Journal of Cleaner Production 123, p. 227-229.
125. Chopyak, J., Levesque, P. (2002) Public participation in science and technology decision making: trends for the future. Technology in Society 24, p. 155-166.

126. Christen, M., Schmidt, S. (2011) A formal framework for conceptions of sustainability - a theoretical contribution to the discourse in sustainable development. Sustainable Development 20, p. 400-410.
127. Christie, I., Warburton, D. (2001) From here to sustainability: politics in a real world. Earthscan, London.
128. Cieślak, A. (2006) Narodowa strategia ZZOP: zarys polskiego punktu widzenia. In: (ed.) Furmańczyk, K. Zintegrowane zarządzanie obszarami przybrzeżnymi w Polsce – stan obecny i perspektywy część 2: Brzeg morski zrównoważony, p. 349-358. Uniwersytet Szczeciński, Instytut Nauk o Morzu, Szczecin.
129. Cieślak, A., Matczak, M., Zaucha, J. (2017) Maritime spatial planning in Poland. A dialogue at various geographical scale. Nordregio News 2017/3, p. 8-9.
130. Clarkson, M. (1995), A stakeholder framework for analyzing and evaluating corporate social performance. Academy of Management Review 20, p. 92-117.
131. Cock, M., Hopwood, B. (1996) Global warning: socialism and the environment. Militant Labour, London.
132. Coke, J.G., Moore, C.M. (1981) Coping with a budgetary crisis: helping a city council decide where expenditure cuts should be made. In: (eds.) Burks, S.W., Wolf, J.F. Building city council leadership skills: a casebook of models and methods, p. 72-85, National League of Cities.
133. Collins, J., Porras, J.I. (2002) Built to last successful habits of visionary companies. A Collins Business Book.
134. Corbett, J., Corbett, M. (2000) Designing sustainable communities: learning from village homes. Island Press, Washington D.C.
135. Corbetta, P. (2003) Social research: theories, methods and techniques. SAGE Publications, Ltd., London.
136. Cormier, R., Elliott, M. (2017) SMART marine goals, targets and management – is SDG 14 operational or aspirational, is "Life Below Water" sinking or swimming? Marine Pollution Bulletin 123, p. 28-33.
137. Costi, A. (1998) Environmental justice and sustainable development in Central and Eastern Europe. European Environment 8, p. 107-112.
138. Cragg, W. (2002) Business ethics and stakeholder theory. Business Ethics Quarterly 12, p. 113-142.
139. Crandall, C.A., Monroe, M., Dutka-Gianelli, J., Lorenzen, K. (2019) Meaningful actions give satisfaction: stakeholder perspectives on participation in the management of marine recreational fishery. Ocean & Coastal Management 179, 104872.
140. Creswell, J.W. (2009) Research design: qualitative, quantitative, and mixed methods approaches. SAGE Publications, Inc., Thousand Oaks, CA.
141. Creswell, J.W. (2013) Qualitative inquiry & research design: choosing among five approaches. SAGE Publications, Inc., Thousand Oaks, CA.
142. Crompton, T. (2010) Common cause: the case of working with our cultural values. WWF-UK, p. 100.
143. Cvitanovic, C., Hobday, A.J., van Kerkhoff, L., Wilson, S.K., Dobbs, K., Marshall, N.A. (2015) Improving knowledge exchange among scientists and decision-makers to facilitate the adaptive governance of marine resources: a review of knowledge and research needs. Ocean & Coastal Management 112, p. 25-35.
144. Cvitanovic, C., McDonald, J., Hobday, A.J. (2016) From science to action: principles for undertaking environmental research that enables knowledge exchange and evidence-based decision-making. Journal of Environmental Management 183, p. 864-874.
145. Cykalewicz, T., Specyfika planowania przestrzennego obszarów nadmorskich. In: (ed.) Furmańczyk, K. Brzeg morski zrównoważony. Zintegrowane zarządzanie obszarami przybrzeżnymi w Polsce – stan obecny i perspektywy, część 2, p. 75-85, Uniwersytet Szczeciński, Instytut Nauk o Morzu, Szczecin.

146. Cynk, K.W. (2017) Level of environmental intelligence among university students from selected countries of Central and Eastern Europe. Civil Engineering and Environmental Systems 34, p. 104-126.
147. Czarniawska, B. (2004) Narratives in social science research. SAGE Publications, Inc., Thousand Oaks, CA.
148. Czochański, J.T., (1993), Rekreacyjne wykorzystanie obszarów chronionych jako element degradacji krajobrazu – na przykładzie Tatrzańskiego Parku Narodowego. In: (ed.) Pietrzak, M. Ekologia krajobrazu w badaniach terytorialnych systemów rekreacyjnych, p. 27-30, AWF w Poznaniu, Poznań.
149. D'Anna, G., Fernández, T.V., Pipitone, C., Garofalo, G., Badalamenti, F. (2016) Governance analysis in the Egadi Islands Marine Protected Area: a Mediterranean case study. Marine Policy 71, p. 301-309.
150. Dacko, M., Płonka A. (2017) Idea rozwoju zrównoważonego w opiniach i postawach rolników. Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu XIX, p. 38-43.
151. Daily, G.C. (1997) Valuing and safeguarding Earth's life-support system. In: (ed.) Daily, G.C. Nature's services: societal dependence on natural ecosystems, p. 365-374, Island Press, Washington, D.C.
152. Daniels, S.E., Walker, G.B. (2001) Walking through environmental conflict: the collaborative learning approach. PRAEGER, Westport, CT.
153. Dattalo, P. (2008) Determining sample size: balancing power, precision and practicality. Oxford University Press, New York.
154. Davies, G.R. (2013) Appraising weak and strong sustainability: searching for a middle ground. Consilience: The journal of Sustainable Development 10, p. 111-124.
155. Daw, T., Grey, T. (2005) Fisheries science and sustainability in international policy: a study of failure in the European Union's Common Fisheries Policy. Marine Policy 29, p. 189-197.
156. de Paiva Duarte, F. (2015) Barriers to sustainability: an exploratory study on perspectives from Brazilian organizations. Sustainable Development 23, p. 425-434.
157. Degórska, B., Degórski, M. (2017) Green infrastructure as a very important quality factor in urban areas - warsaw case study. Europa XXI 32, p. 51-70.
158. Degórska, B., Degórski, M. (2019) Całościowe ujęcie krajobrazu, wybrane podejścia i problem badawcze. Przegląd Geograficzny 91, p. 325-347.
159. Degórski, M. (2010) Socio-economic responses to the environment and ecosystem services in regional development. Geographia Polonica 83, p. 83-95.
160. Degórski, M. (2014) Relationships between human-environment-space of place – the evolution of research paradigms in geography and the challenge of modernity. Geographia Polonica 87, p. 409-421.
161. Degórski, M. (2015) Challenges to landscape planning and protection in Poland. In: (eds.) Luc, M., Somorowska, U., Szmańda, J.B. Landscape analysis and planning: geographical perspective, p. 187-200, Springer International Publishing Switzerland, Cham.
162. Degórski, M. (2016) Identyfikacja problemów w polityce krajobrazowej Polski w kontekście ochrony krajobrazu i zagospodarowania przestrzennego kraju. Biuletyn Polska Akademia Nauk. Komitet Przestrzennego Zagospodarowania Kraju 261, p. 9-33.
163. Dentoni, D., Bitzer, V. (2015) The role(s) of universities in dealing with global wicked problems through multi-stakeholder initiatives. Journal of Cleaner Production 106, p. 68-78.
164. Denzin, N.K., Lincoln, Y.S. (2005) The discipline and practice of qualitative research. In: (eds.) Denzin, N.K., Lincoln, Y.S. The SAGE handbook of qualitative research, p. 1-32, SAGE Publications, Inc., Thousand Oaks, CA.
165. Dessein, J., Soini, K., Fairclough, G., Horlings, L. (eds.) (2015) Culture in, for and as sustainable development. Conclusions from the COST Action IS1007 Investigating Cultural Sustainability. University of Jyväskylä.

166. Dick, L.V., Walsch, J.C., Sutherland, W.J. (2014) Organising evidence for environmental management decisions: a '4S' hierarchy. Trends in Ecology & Evolution 11, p. 607-613.
167. Dietz, S., Neumayer, E. (2007) Weak and strong sustainability in the SEEA: concepts and measurement. Ecological Economics 61, p. 617-626.
168. Djordjevic, A., Cotton, D.R.E. (2011) Communicating the sustainability message in higher education institutions. International Journal of Sustainability in Higher Education 12, p. 381-394.
169. Dlouhá, J., Barton, A., Huisingh, D., Adomssent, M. (2013) Learning for sustainable development in regional networks. Journal of Cleaner Production 49, p. 1-4.
170. Dlouhá, J., Pospíšilová, M. (2018) Education for Sustainable Development Goals in public debate: the importance of participatory research in reflecting and supporting the consultation process in developing a vision for Czech education. Journal of Cleaner Production 172, p. 4314-4327.
171. Dobson, A. (2003) Citizenship and the environment. Oxford University Press, Oxford.
172. Dobson, A. (2007) Environmental citizenship: towards sustainable development. Sustainable Development 15, p. 276-285.
173. Dobson, A., Bell, D. (2006) Environmental citizenship. MIT Press, Cambridge, MA.
174. Dobson, A., Valencia-Sáiz, Á. (2005). Introduction. Environmental Politics 14, p. 157-162.
175. Domegan, C., McHugh, P., Devaney, M., Duane, S., Hogan, M., Broome, B.J., Layton, R.A., Joyce, J., Mazzonetto, M., Piwowarczyk, J. (2016) Systems-thinking social marketing: conceptual extensions and empirical investigations. Journal of Marketing Management 32, p. 1123-1144.
176. Doppelt, B. (2003) Overcoming the seven sustainability blunders. System Thinker 14, p. 2-6.
177. Drews, S., van den Bergh, J.C.J.M. (2015) What explains public support for climate policies? A review of empirical and experimental studies. Climate Policy 16, p. 855-876.
178. DS (2012) Strategia Rozwoju Województwa Pomorskiego 2020. Sejmik Województwa Pomorskiego, Gdańsk, p. 70.
179. Duhalde, M., Levrel, H., Guyader, O. (2017) Is the choice of conservation measures influenced by the targeted natural habitats? The case of French coastal NATURA 2000 sites. Ocean & Coastal Management 142, p. 15-27.
180. Dunning, D. (2012) Self-insight: roadblocks and detours on the path to knowing thyself. Psychology Press, London.
181. Dupont, S., Fauville, G. (2017) Ocean literacy as a key toward sustainable development and ocean governance. In: (eds.) Nunes, P., Svensson, L.E., Markandya, A. Handbook on the economics and management of sustainable oceans, p. 519-537, Edward Elgar Publishers & UNEP, Cheltenham.
182. Dutkowski, M. (1995) Konflikty w gospodarowaniu dobrami środowiskowymi. Wydawnictwo Uniwersytetu Gdańskiego, seria Rozprawy i Monografie nr 215, Gdańsk.
183. Dutkowski, M. (2004) Charakterystyka rynków strategicznych dla rozwoju turystyki w województwie pomorskim. In: (ed.) Wanagos, M. Uwarunkownia I kierunki rozwoju turystyki w województwie pomorskim, p. 149-182, Urząd Marszałkowski Województwa Pomorskiego, Gdańsk.
184. Dutkowski, M. Kulawczuk, P. (2009) Główne wyzwania dla bardziej racjonalnego gospodarowania polską przestrzenią morską w przyszłości. In: (eds.) Zaucha, J., Matczak, M., Przedrzymirska, J. Przyszłe wykorzystanie plskiej przestrzeni morskiej dla celów gospodarczych I ekologicznych, p. 315-319, Instytut Morski w Gdańsku, Gdańsk.
185. Duxburry, N., Gillette, E. (2007) Culture as a key dimension of sustainability: exploring concepts, themes and models. Working Paper No. 1. Creative City Network of Canada, Centre of Expertise for Culture and Communities.
186. Dwyer, C.P., Hogan M.J., Harney, O.M., O'Reilly J. (2014) Using interactive management to facilitate a student-centred conceptualisation of critical thinking: a case study. Educational Technology Research and Development 62, p. 687-709.
187. Easman, E.S., Abernethy, K.E., Godley, B.J. (2018) Assessing public awareness of marine environmental threats and conservation efforts. Marine Policy 87, p. 234-240.

188. Egan, D., Hjerpe, E.E., Abrams, J. (2011) Why people matter in ecological restoration? In: (eds.) Egan, D., Hjerpe, E.E., Abrams, J. Human dimensions in ecological restorations: integrating science, nature and culture, p. 1-19, Island Press, Washington DC.
189. Ehler, C., Douvere, F. (2009) Marine spatial planning: a step-by-step approach toward ecosystem-based management. In: IOC Manual and Guides No. 53, ICAM Dossier No. 6. UNESCO, Intergovernmnetal Oceanographic Commission and Man and the Biosphere Programme.
190. Eikeset, A.M., Mazzarella, A.B., Davíðsdóttir, B., Klinger, D.H., Levin, S.A., Rovenskaya, E., Stenseth, N.C. (2018) What is blue growth? The semantics of "sustainable development" of marine environments. Marine Policy 87, p. 177-179.
191. Ekins, P. (2003) Identifying critical natural capital: conclusions about critical natural capital. Ecological Economics 44, p. 277-292.
192. Ekins, P. (2014) Strong sustainability and critical natural capital. In: (eds.) Atkinson, G., Dietz, S., Neumayer, E., Agarwala, M. Handbook of sustainable development, p. 55-71, Edward Elgar, Cheltenham.
193. Ekins, P., Folke, C. De Groot, R. (2003) Identifying critical natural capital. Ecological Economics 44, p. 159-163.
194. Elkington, J., Hailes, J., Makower, J. (1990) The green consumer guide. Penguin, London.
195. Elliott, J. (2005) Using narrative in social research: qualitative and quantitative approaches. SAGE Publications Ltd., Padstow.
196. Elliot, J., Heesterbeek, S., Lukensmeyer, C.J., Slocum, N. (2005) A participatory methods toolkit: a practitioner's manual. King Baudouin Foundation and the Flemish Institute for Science and Technology Assessment (viWTA).
197. Engert, S., Rauter, R., Baumgartner, R.J. (2016) Exploring the integration of corporate sustainability into strategic management: a literature review. Journal of Cleaner Production 112, p. 2833-2850.
198. Epple, C., García Rangel, S., Jenkins, M., Guth, M. (2016). Managing ecosystems in the context of climate change mitigation: a review of current knowledge and recommendations to support ecosystem-based mitigation actions that look beyond terrestrial forests. Technical Series No.86, Secretariat of the Convention on Biological Diversity, Montreal, p. 55.
199. Epstein, M.J., Roy, M-J. (2003) Improving sustainability performance: specifying, implementing and measuring key principles. Journal of General Management 29, p. 15-31.
200. Eriksson, M., van Riper, C.J., Leitschih, B., Brymer, A.B., Rawluk, A., Raymond, C.M., Kenter, J.O. (2019) Social learning as link between the individual and the collective: evaluating deliberation on social values. Sustainability Science 14, p. 1323-1332.
201. Ewert, A., Place, G., Sibthorp, J. (2005) Early-life outdoor experiences and an individual's environmental attitudes. Leisure Sciences 27, p. 225-239.
202. Fammler, H., Weber, H.S., Fawzy, T., Kuris, M., Remmelgas, L., Veidemane, K., Brayn, T., Johansen, K.S., Piwowarczyk, J. (2018) The story of eutrophication and agriculture of the Baltic Sea. ResponSEAble, p. 92.
203. Fauville, G. (2019) Ocean literacy in the twenty-first century. In: (eds.) Fauville, G., Payne, D., Marrero, M., Lantz-Andersson, A., Crouch F. Exemplary practices in marine science education, p. 3-12, Springer, Cham.
204. Fauville, G., Strang, C., Canndy, M.A., Ying-Fang, C. (2019) Development of the international ocean literacy survey: measuring knowledge across the world. Environmental Education Research 25, p. 238-263.
205. Fenton, P., Gustaffson, S. (2017) Moving from high-level words to local action — governance for urban sustainability in municipalities. Current Opinions in Environmental Sustainability 16-27, p. 129-133.
206. Ferrer, A.L.C., Thomé, A.M.T. Scavarda, A.J. (2018) Sustainable urban infrastructure: a review. Resources, Conservation and Recycling 128, p. 360-372.

207. Filho, W.L., Castro, P., Bacelar-Nicolau, P., Azul, A.M., Azeiteiro, U.M. (2016) Biodiversity and education for sustainable development (ESD): tendencies and perspectives. In: (ed.) Castro, P., Azeiteiro, U.M., Bacelar-Nicolau, P., Filho, W.L., Azul, A.M. Biodiversity and education for sustainable development, p. 1-10, Springer International Publishing Switzerland.
208. Fischer, A., Langers, F., Bednar-Friedl, B., Geamana, N., Skogen, K. (2011) Mental representations of animal and plant species in their social contexts: results from a survey across Europe. Journal of Environmental Psychology 31, p. 118-128.
209. Fletcher, S., Potts, J. (2007) Ocean citizenship: an emergent geographical concept. Coastal Management 35, p. 511-524.
210. Flint, R.W. (2003) Practice of sustainable community development: a participatory framework for change. Springer.
211. Flyvbjerg, B. (2006) Five misunderstandings about case-study research. Qualitative Inquiry 12, p. 219-245.
212. Fowler, A., Biekart, K. (2017) Multi-stakeholder initiatives for Sustainable Development Goals: the importance of interlocutors. Public Administration and Development 37, p. 81-93.
213. Fraijo-Sing, B., Tapia-Fonllem, Correal-Verdugo, V. Designing environmental education program: modelling pro- environmental competency. In: (ed.) Appleton, J. Values in sustainable development, p. 244-254, Routledge, Oxon.
214. Franke, A., Blenckner, T., Duarte, C.M., Ott, K., Fleming, L.E., Antia, A., Reusch, T.B.H., Bertram, C., Hein, J., Kronfeld-Goharani, U., Dierking, J., Kuhn, A., Sato, C., van Doorn, E., Wall, M., Schartau, M., Karez, R., Crowder, L., Keller, D., Engel, A., Hentschel, U., Prigge, E. (2020) Operationalizing ocean health: toward integrated research on ocean health and recovery to achieve ocean sustainability. One Earth 2, p. 557-565.
215. Fraschetti, S., Pipitone, C., Mazaris, A.D., Rilov, G., Badalamenti, F., Bevilacqua, S., Claudet, J., Carić, H., Dahl, K., D'Anna, G., Daunys, D., Frost, M., Gissi, E., Göke, C., Goriup, P., Guarnieri, G., Holcer, D., Lazar, B., Mackelworth, P., Manzo, S., Martin, G., Palialexis, A., Panayotova, M., Petza, D., Rumes, B., Todorova, V., Katsanevakis, S. (2018) Light and shade in marine conservation across European and contiguous seas. Frontiers in Marine Science, doi: https://doi.org/10.3389/fmars.2018.00420
216. Freeman, R.E. (1984) Strategic management: A stakeholder approach. Pitman, Boston, MA.
217. Freeman, R.E., Harrison, J.S., Wicks, A.C. (2007) Managing for stakeholders: survival, reputation, and success. Yale University Press, New Haven.
218. Freeman, R.E., Harrison J.S., Wicks, A.C., Parmar, B.L., de Colle, S. (2010) Stakeholder theory: the state of the art. Cambridge University Press, Cambridge.
219. Frederick, W.C. (1998). Creatures, corporations, communities, chaos, complexity: a naturological view of the corporate social role. Business & Society 37, p. 358-389.
220. Friedman, A.L., Miles S. (2002) Developing stakeholder theory. Journal of Management Studies 39, p. 1-21.
221. Friedman, A.L., Miles S. (2009) Stakeholders: theory and practice. Oxford University Press, New York.
222. Friedrich, L.A., Jefferson, R., Glegg, G. (2014) Public perception of sharks: gathering support for shark conservation. Marine Policy 47, p. 1-7.
223. Frooman, J. (1999) Stakeholder influence strategies. Academy of Management Review 24, p. 191-205.
224. Gajuś-Lankamer, E., Wójcik, A.M. (2011) Edukator zrównoważonego rozwoju odpowiedzią na potrzebę kształcenia zrównoważonego społeczeństwa. Problemy Ekorozwoju 6, p. 157-164.
225. Gallagher, A. (2010) The coastal sustainability standard: a management system approach to ICZM. Ocean & Coastal Management 53, p. 336-349.
226. Gallagher, A., Johnson, D., Glegg, G., Trier, C. (2004) Constructs of sustainability in coastal management. Marine Policy 28, p. 249-255.

227. Gazzola, P., Del Campo, A.G., Onyango, V. (2019) Going green vs going smart for sustainable development: quo vadis? Journal of Cleaner Production 214, p. 881-892.
228. Gee, K., Kannen, A., Adlam, R., Brooks, C., Chapman, M., Cormier, R., Fischer, C., Fletcher, S., Gubbins, M., Shucksmith, R., Shellock, R. (2017) Identifying culturally significant areas for marine spatial planning. Ocean & Coastal Management 136, p. 139-147.
229. Gee, K. (2019) The ocean perspective. In: (eds.) Zaucha, J., Gee, K. Maritime spatial planning, past, present, future, p. 23-46, Palgrave Macmillian, Cham.
230. Gee, K., Blazauskas, N., Dahl, K., Göke, C., Hassler, B., Kannen, A., Leposa, N., Morf, A., Strand, B., Weigh, B., Zaucha, J. (2019) Can tools contribute to integration in MSP? A comparative review of selected tools and approaches. Ocean & Coastal Management 179, 104834.
231. Geise, M. (2005) Zrównoważony rozwój w praktyce gospodarek przejściowych. In: (ed.) Papuziński, A. Zrównoważony rozwój: od utopii do praw człowieka, p. 158-167, Oficyna Wydawnicza Branta, Bydgoszcz.
232. Giakoumi, S., Grantham, H.S., Kokkoris, G.D., Possingham, H.P. (2011) Designing a network of marine reserves in the Mediterranean Sea with limited socio-economic data. Biological Conservation 144, p. 753-763.
233. Giakoumi, S., Katsanevakis. S., Vassilopoulou. V., Panayotidis. P., Kavadas. S., Issaris, Y., Kokkali, A., Frantzis, A., Panou, A., Mavrommait, G. (2012) Could European marine conservation policy benefit from systematic conservation planning? Aquatic Conservation: Marine and Freshwater Ecosystems 22, p. 762-775.
234. Gibbons, L.V. (2020) Regenerative – the new sustainable? Sustainability 12, 5483.
235. Gibson, R.B., Hassan, S., Holtz, S., Tansey, J., Whitelaw, G. (2005) Sustainability assessment: criteria and processes. Earthscan, London.
236. Giddings, B., Hopwood, B., O'Brien, G. (2002) Environment, economy and society: fitting them together into sustainable development. Sustainable development 10, p. 187-196.
237. Gifford, R., Nilsson, A. (2014) Personal and social factors that influence pro-environmental concern and behaviour: a review. International Journal of Psychology 14, p. 141-157.
238. Gillham, B. (2000) Case study research methods. Continuum, London.
239. Gissi, E., de Vivero, J.L.S. (2016) Exploring marine spatial planning education: challenges in structuring transdisciplinarity. Marine Policy 74, p. 43-57.
240. Glavovic, B.C. (2008) Sustainable coastal communities in the age of coastal storms: reconceptualising coastal planning as "new" naval architecture. Journal of Coastal Conservation 12, p. 125-134.
241. Gleich, S., Buckley, P., Pinnegar, J.K., Chilvers, J., Lorenzoni, I., Terry, G., Guerrero, M., Castilla, J.C., Valdebenito, A., Duarte, C.M. (2014) Public awareness, concerns, and priorities about anthropogenic impacts on marine environments. PNAS 111, p. 15042-15047.
242. Goldbart, J., Hustler, D. (2005) Ethnography. In: (eds.) Somekh, B., Lewin, C. Research methods in the social sciences, p. 16-23, SAGE Publications Ltd., Padstow.
243. Goffi, G., Masiero, L., Pencarelli, T. (2018) Rethinking sustainability in the tour-operating industry: worldwide survey of current attitudes and behaviors. Journal of Cleaner Production 183, p. 172-182.
244. Goldman, D., Hansmann, R., Činčera, J., Radović, V., Telešienė, A., Balžekienė, A., Vávra, J. (2020) Education for environmental citizenship and responsible environmental behaviour. In: (eds.) Hadjichambis, A.C., Reis, P., Paraskeva-Hadjichambi, D., Činčera, J., Boeve-de Pauw, J., Gericke, N., Knippels, M-C. Conceptualizing environmental citizenship for 21st century education, p. 115-138, Springer, Cham.
245. González-Márquez, I., Toledo, V.M. (2020) Sustainability science: a paradigm in crises? Sustainability 12, 2802.
246. Goodland, R., Ledec, G. (1987) Neoclassical economics and principles of sustainable development. Ecological Modelling 1/2, p. 19-46.

247. Gorman, G.E. (2003) Sustainable development and information Literacy: IFLA priorities in Asia and Oceania. IFLA Journal 29, p. 288-294.
248. Grainger, A. (2004) The role of spatial scale and spatial interactions in sustainable development. In: (eds.) Purvis, M., Grainger, A. Exploring sustainable development: geographical perspective, p. 50-84, Earthscan, London.
249. Grimble, R., Wellard, K. (1997) Stakeholder methodologies in natural resource management: a review of concepts, contexts, experiences and opportunities. Agricultural Systems 55, p. 173-193.
250. Grimmel, H., Calado, H., Fonseca, C., Suárez de Vivero, J.L. (2019). Integration of the social dimension into marine spatial planning – theoretical aspects and recommendations. Ocean & Coastal Management 173, p. 139-147.
251. Grodzińska-Jurczak, M., Tomal, P., Tarabuła-Fiertak, M., Nieszporek, K., Read, A.D. (2006) Effects of an educational campaign on public environmental attitudes and public behaviour in Poland. Resources, Conservation and Recycling 46, p. 182-197.
252. Grodzińska-Jurczak, M., Gajuś-Lankamer, E., Wójcik, A., Pietrzyk, A. (2010) Potrzeby i warunki edukacji na rzecz zrównoważonego rozwoju w Polsce. Problemy Ekorozwoju 5, p. 95-106.
253. Grodzińska-Jurczak, M., Cent, J. (2011) Expansion of nature conservation areas: problems with Natura 2000 implementation in Poland? Environmental Management 47, p. 11-27.
254. Gruby, R., Gray, N.J., Campbell, L.M., Acton, L. (2016) Toward a social science research agenda for large marine protected areas. Conservation Letters 9, p. 153-163.
255. Grunwald, A. (2004) Conflicts and conflict-solving as chances to make the concept of sustainable development work. In: (eds.) Wilderer, P.A., Schroeder, E.D., Kopp, H. Global sustainability: the impact of local cultures, a new perspective for science and engineering, economics and politics, p. 107-122, Wiley-vch Veralg GmbH & Co. KGaA, Weinheim.
256. Guest, H., Lotze, H.K., Wallace, D. (2015) Youth and the sea: ocean literacy in Nova Scotia, Canada. Marine Policy 58, p. 98-107.
257. Gulseven, O. (2020) Measuring achievements towards SDG 14, life below water, in the United Arab Emirates. Marine Policy 117, 103972.
258. Hajer, M. (1995) The politics of environmental discourse. Oxford University Press, New York.
259. Hall, J.K., Daneke, G.A., Lenox, M.J. (2010) Sustainable development and entrepreneurship: past contributions and future directions. Journal of Business Venturing 25, p. 439-448.
260. Halpern, B.S. (2020) Building on the deacde of the Ocean Health Index. One Earth 2, p. 30-33.
261. Hammond, M. (2020) Sustainability as a cultural transformation: the role of deliberative democracy. Environmental Politics 29, p. 173-192.
262. Han, H., Hwang, J., Lee, M.J. (2016) The value-belief-emotion-norm model: investigating customers' eco-friendly behavior. Journal of Travel and Tourism Marketing 34, p. 590-607.
263. Harvey, D. (2007) Neoliberalism as creative destruction. Annals of the American Academy of Political and Social Science 610, p. 22-44.
264. Hassler, B., Gee, K., Gilek, M., Luttmann, A., Morf, A., Saunders, F., Stalmokaite, I., Strand, H., Zaucha, J. (2018) Collective action and agency in Baltic Sea marine spatial planning: transnational policy coordination in the promotion of regional coherence. Marine Policy 92, p. 138-147.
265. Hastings, G., Domegan, C. (2014) Social marketing: from tunes to symphonies. Routledge, New York, NY.
266. Hastings, G., Domegan, C. (2018) Social marketing: rebels with a cause. Routledge, Oxon.
267. Hattam, C., Atkins, J.P., Beaumont, N., Börger, T., Böhnke-Henrichs, A., Burdon, D., de Groot, R., Hoefnagel, E., Nunes, P.A.L.D., Piwowarczyk, J., Sastre, S., Austen, M.C. (2014) Marine ecosystem services: linking indicators to their classification. Ecological Indicators 49, p. 61-75.
268. Hawthorne, M., Alabaster, T. (1999). Citizen 2000: development of a model of environmental citizenship. Global Environmental Change 9, p. 25-43.
269. Head, B., Alford, J. (2008) Wicked problems: implications for policy and management. Refereed paper delivered at Australian Political Studies Association Conference, 6-9 July 2008, Brisbane, Australia.

270. Head, B.W., Banerjee, S. (2020) Policy expertise and use of evidence in a populist era. Australian Journal of Political Science 55, p. 110-121.
271. Heal, G. (2000) Nature and the marketplace: capturing the value of ecosystem services. Island Press, Washington, DC.
272. Hector, D.C., Christensen, C.B., Petrie, J. (2014) Sustainability and sustainable development: philosophical distinctions and practical implications. Environmental Values 23, p. 7-28.
273. Hediger, W. (2008) Weak and strong sustainability, environmental conservation and economic growth. Natural Resource Modeling 19, p. 359-394.
274. Heikkurinen, C., Young, W., Morgan E. (2019) Business for sustainable change: Extending eco-efficiency and eco-sufficiency strategies to consumers. Journal of Cleaner Production 218, p. 656-664.
275. Hendry, J. (2001) Missing the target: normative stakeholder theory and the corporate governance debate. Business Ethics Quarterly 11, p. 159-176.
276. Henry, A. (2008) Understanding strategic management. Oxford University Press, Oxford.
277. Hentrich, S., Salomon, M. (2006) Flexible management of fishing rights and a sustainable fisheries industry in Europe. Marine Policy 30, p. 712-720.
278. Hilborn, R. (2005) Are sustainable fisheries achievable? In: (eds.) Norse, E.A., Crowder, L.B. Marine conservation biology: the science of maintaining the sea's biodiversity, p. 247-260, Island Press, Washington, D.C.
279. Hilborn, R. (2007) Moving to sustainability by learning from successful fisheries. AMBIO 36, p. 296-303.
280. Hill, R.C., Bowen, P.A. (1997) Sustainable construction: principles and a framework for attainment. Construction Management and Economics 15, p. 223-239.
281. Hines, J.M., Hungerford, H.R., Tomera, A.N. (1987) Analysis and synthesis of research on responsible pro-environmental behavior: a meta-analysis, The Journal of Environmental Education 18, p. 1-8.
282. Hłobił, A. (2010) Teoria i praktyka edukacji ekologicznej na rzecz zrównoważonego rozwoju. Problemy Ekorozwoju 5, p. 87-94.
283. Hocker, J.L., Wilmont, W.W. (2018) Interpersonal conflict. McGraw-Hill Education, New York, NY.
284. Hogan, C. (2003) Practical facilitation: a toolkit of techniques. Kogan Page Limited, London.
285. Hogan, M., Harney, O., Broome, B. (2014a) Integrating arguments mapping with system thinking tools: advancing applied systems science. In: (eds.) Okada, A., Buckingham Shum, S.J., Sherborne, T. Knowledge cartography: software tools and mapping techniques, p. 401-421, Springer-Verlag, London.
286. Hogan, M.J., Johnston, H., Broome, B., McMoreland, C., Walsh, J., Smale, B., Duggan, J., Andriessen, J., Leyden, K.M., Domegan, C., McHugh, P., Hogan, V., Harney, O., Groarke, J., Noone, C., Groarke, A.M. (2014b) Consulting with citizens in the design of wellbeing measures and policies: lessons from a system science application. Social Indicators Research 123, p. 857-877.
287. Holden, E., Linnerud, K., Banister, D., Schwanitz V.J., Vierling, A. (2018) The imperatives of sustainable development: needs, justice, limits. Routledge, Oxon.
288. Holzer, J.M., Adamescu, C.M., Cazacu, C., Díaz-Delgado, R., Dick, J., Méndez, P.F., Santamaría, L., Orenstein, D.E. (2019) Evaluating transdisciplinary science to open research-implementation spaces in European social-ecological systems. Biological Conservation, 238, 108228.
289. Hopwood, B., Mellor, M., O'Brien, G. (2005) Sustainable development: mapping different approaches. Sustainable development 13, p. 38-52.
290. Horcea-Milcu, A., Abson, D.J., Apetrei, C.I., Duse, I.A., Freeth, R., Rjechers, M., Lam, D.P.M., Dorninger, C., Lang, D.J. (2019) Values in transformational sustainability science: four perspectives for change. Sustainability Science 14, p. 1425-1437.
291. Hubacek, K., Mauerhofer, V. (2008) Future generations: economic, legal and institutional aspects. Future 40, p. 413-423.

292. Hueting, R., Reijnders, L. (1998) Sustainability is an objective concept. Ecological Economics 27, p. 139-147.
293. Hugé, J., Waas, T., Dahdouh-Guebas, F., Koedam, N., Block, T. (2013) A discourse-analytical perspective on sustainability assessment: interpreting sustainable development in practice. Sustainability Science 8, p. 187-198.
294. Huutoniemi, K. (2014) Introduction: sustainability, transdisciplinarity and the complexity of knowing. In: (ed.) Huutoniemi, K., Tapio, P. Transdisciplinary sustainability studies: a heuristic approach, p. 1-20, Routledge, Oxon.
295. Imran, S., Alam, K., Beaumont, N. (2011) Reinterpreting the definition of sustainable development for a more ecocentric reorientation. Sustainable Development 22, p. 134-144.
296. in't Velt, R.J. (2013) Transgovernance: the quest for governance of sustainable development. In: (ed.) Mauleman, L. Transgovernance: advancing sustainability governance, p. 275-310, Springer.
297. Irvine, K.N., O'Brien, L., Ravenscroft, N., Cooper, N., Everard, M., Fazey, I., Reed, M.S., Kenter, J.O. (2016) Ecosystem services and the idea of shared values. Ecosystem Services 21, p. 184-193.
298. IUCN-UNEP-WWF (1980) World conservation strategy: living resource conservation for sustainable development. International Union for Conservation of Nature and Natural Resources, Gland.
299. Ives, C.D., Fischer, J. (2017) The self-sabotage of conservation: reply to Manfredo. Conservation Biology 31, p. 1483-1485.
300. Jahn, T., Bergmann, M., Keil, F. (2012) Transdisciplinarity: between mainstreaming and marginalization. Ecological Economics 79, p. 1-10.
301. Jansen, F.M., Jensen, P.M., Vindig, D., Ellemann-Jensen, H., Steffen, L.C. (1998) "We Are Strong Enough": Participatory Development in Practice. DanChurchAid, Copenhagen.
302. Janssen, H., Göke, K., Lutmann A. (2019) Knowledge integration in Marine Spatial Planning: A practitioners' view on decision support tools with special focus on Marxan. Ocean & Coastal Management 168, p. 130-138.
303. Jarzębska, E.M. (2007a) Zarządzanie środowiskiem w przedsiębiorstwie. In: (ed.) Jeżowski, P. Ekonomiczne problemy ochrony środowiska i rozwoju zrównoważonego w XXI wieku, p. 91-104, Szkoła Główna Handlowa w Warszawie – Oficyna Wydawnicza, Warszawa.
304. Jarzębska, E.M. (2007b) Wybrane inicjatywy w ramach koncepcji społecznie odpowiedzialnego biznesu. In: (ed.) Jeżowski, P. Ekonomiczne problemy ochrony środowiska i rozwoju zrównoważonego w XXI wieku, p. 105-118, Szkoła Główna Handlowa w Warszawie – Oficyna Wydawnicza, Warszawa.
305. Jaśkiewicz, J. (2008) Dylematy zrównoważonego rozwoju w Polsce. Problemy Ekorozwoju 3, p. 33-38.
306. Jażdżewska, M. (2017) Aktywność społeczna Polaków. Zeszyty Naukowe Polskiego Towarzystwa Ekonomicznego w Zielonej Górze 7, p. 146-158.
307. Jaźwińska, D. (2018) Rozwój przyszłych pokoleń i jego zrównoważenie. Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu 516, p. 53-63.
308. Jänicke, M. (2012) Green growth: from a growing eco-industry to economic sustainability. Energy Policy 48, p. 13-21.
309. Jefferson, R.L., Bailey, I., Laffoley, D.d'A., Richards, J.P. Attrill, M.J. (2014) Public perception of the UK marine environment. Marine Policy 43, p. 327-336.
310. Jefferson, R.L., McKinley, E., Capstick, S., Fletcher, S., Griffin, H., Milanese, M. (2015) Understanding audiences: making public perception research matter to marine conservation. Ocean & Coastal Management 115, p. 61-70.
311. Jelin, E. (2000) Towards a global environmental citizenship? Citizenship Studies 4, p. 47-63.
312. Jensen, A.K., Olsen, S.B. (2019) Childhood nature experiences and adulthood environmental preferences. Ecological Economics 156, p. 48-56.
313. Jentoft, S., Chuenpagdee, R. (2009) Fisheries and coastal governance as a wicked problem. Marine Policy 33, p. 553-560.

314. Jerzak, K., Shrayer, M.D., Krośnicka, K.A., Lorens, P., Zaucha, J., Pardus, J. (2019) The essence of marine and coastal space – an interdisciplinary perspective. Europa XXI 36, p. 15-33.
315. Johnson, L., Morris, P. (2010) Towards a framework for critical citizenship education. The Curriculum Journal 21, p. 77-96.
316. Johnson, K.R., Kerr, S.A., Side, J.C. (2016) The Pentland Firth and Orkney Waters and Scotland – Planning Europe's Atlantic Gateway. Marine Policy 71, p. 285-292.
317. Johnston, P., Everard, M., Santillo, D. Robért, K-H. (2007) Reclaiming the definition of sustainability. Environmental Science and Pollution Research - International 14, p. 60-66.
318. Jones P.J.S. (2014) Governing marine protected areas: resilience through diversity. Routledge, Oxon.
319. Jones, P.J.S., Lieberknecht, L.M., Qiu, W. (2016) Marine spatial planning in reality: introduction to case studies and discussion of findings. Marine Policy 71, p. 256-264.
320. Jouffray J-B., Blasiak, R., Norström, A.V., Österblom, H., Nyström, N. (2020) The blue acceleration: the trajectory of human expansion into the ocean. One Earth 2, p. 43-54.
321. Joyce, J., (2012) D1.1 Report on state of the art of marine science research. AquaTT UETP Ltd, Dublin, p. 76.
322. Jupp, V. (2006) The Sage dictionary of social research methods. SAGE Publications, Inc., London.
323. Kahneman, D., Ritov, I., Jacowitz, K.E., Grant P. (1993) Stated willingness to pay for public goods: a psychological perspective. Psychological Science 4, p. 310-315.
324. Kambites, C.J. (2012) "Sustainable development": the "unsustainable" development of a concept in political discourse. Sustainable Development 22, p. 336-348
325. Kardos, M. (2002) The relationship between entrepreneurship, innovation and sustainable development. Research on European Union countries. Procedia Economics and Finance 3, p. 1030-1035.
326. Kastenberg, W.E., Hauser-Kastenberg, G., Norris, D. (2005) A new way of thinking about sustainability, risk and environmental decision-making. In: (eds.) Wilderer, P.A., Schroeder, E.D., Kopp, H. Global sustainability: the impact of local cultures, a new perspective for science and engineering, economics and politics, p. 87-93, Wiley-vch Veralg GmbH & Co. KGaA, Weinheim.
327. Kates, R.W., Parris, T.M. Leiserowitz, A.A. (2005) What is sustainable development? Goals, indicators, values, and practice. Environment: Science and Policy for Sustainable Development 47, p. 8-21.
328. Kay, R., Adler, J. (2005) Coastal planning and management. Taylor & Francis, Oxon.
329. Kelly, R., Fleming, A., Pecl, G.T. (2019). Citizen science and social licence: improving perceptions and connecting marine user groups. Ocean & Coastal Management 178, 104855.
330. Kemp, R., Loorbach, D., Rotmas, J. (2007) Transition management as a model for managing processes of co-evolution towards sustainable development. International Journal of Sustainable Development & World Ecology 14, p. 78-91.
331. Kenter, J.O. (2016) Integrating deliberative choice experiments, systems modelling and participatory mapping to assess shared values of ecosystem services. Ecosystem Services 21, p. 291-307.
332. Kern, K. (2011) Governance for sustainable development in the Baltic Sea Region. Journal of Baltic Studies 42, p. 21-35.
333. Kern, K., Löffelsend, T. (2004). Sustainable development in the Baltic sea region. Governance beyond the nation state. Local Environment 9, p. 451-467.
334. Kidd, S. (2013) Rising to the integration ambitions of marine spatial planning: reflections from the Irish sea. Marine Policy 39, p. 273-282.
335. Kidd, S., Shaw, D. (2014) The social and political realities of marine spatial planning: some land-based reflections. ICES Journal of Marine Science 71, p. 1535-1541.
336. Kilbourne, W.E., Beckmann, S. C., Thelen, E. (2002) The role of the dominant social paradigm in environmental attitudes: a multinational examination. Journal of Business Research 55, p. 193-204.

337. Kim, J., Lyu, S.O., Song, H.J. (2019) Environmental justice and public beach access. City & Community 18, p. 49-70.
338. Kistowski, M. (2003) Regionalny model zrównoważonego rozwoju i ochrony środowiska Polski a strategie rozwoju województw. Uniwersytet Gdański – Bogucki Wydawnictwo Naukowe, Gdańsk – Poznań.
339. Kistowski, M. (2005) Próby typologii sytuacji konfliktowych w relacjach „zagospodarowanie przestrzenne – środowisko przyrodnicze" na obszarze parków krajobrazowych nad Zatoką Gdańską. In: (eds.) Hibszer, A., Partyka, J. Między ochroną przyrody a gospodarką – bliżej ochrony: konflikty człowiek-przyroda na obszarach prawnie chronionych w Polsce, p. 18-31, Polskie Towarzystwo Geograficzne Oddział Katowicki – Ojcowski Park Narodowy, Sosnowiec – Ojców.
340. Kistowski, M. (2008) Problemy lokalizowania inwestycji na terenach cenny przyrodniczo. In: (ed.) Gwiazdowicz, M. Studia Biura Analiz Sejmowych Kancelarii Sejmu nr 10: Ochrona Przyrody, p. 139-163, Wydawnictwo Sejmowe Kancelarii Sejmu, Warszawa.
341. Kistowski, M., Korwel-Lejkowska, B., Witkiewicz, M. (2005) Problemy zagospodarownia i ruchu turystycznego w strefie nadmorskiej na przykładzie Nadmorskiego Parku Krajobrazowego. Wydawnictwo Diecezji Pelplińskiej „Bernardinum", Pelplin.
342. Klimska, A. (2014) Współczesne modele edukacji do zrównoważonego rozwoju. In: (ed.) Welskop, W. Przyszlość edukacji – edukacja przyszłości, p. 9-14, Wydawnictwo Naukowe Wyższej Szkoły Biznesu i Nauk o Zdrowiu w Łodzi, Łódź.
343. Klingebiel, D., Paulo, S. (2015) Orchestration: an instrument for implementing the Sustainable Development Goals. Briefing Paper 14/2015, German Development Institute, Bonn.
344. Klooster, D. (2010) Standardizing sustainable development? The Forest Stewardship Council's plantation. Policy review process as neoliberal environmental governance. Geoforum 41, p. 117-129.
345. Kluvánková-Oravská, T., Chobotová, V., Banaszak, I., Slavikova, L., Trifunovova, S. (2009) From government to governance for biodiversity: the perspective of central and eastern European transition countries. Environmental Policy and Governance 19, p. 186-196.
346. Kłos, L. (2015) Świadomość ekologiczna Polaków - przegląd badań. Zeszyty Naukowe Uniwersytetu Szczecińskiego. Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania 42 T.2 Metody ilościowe w ekonomii, p.35-44.
347. Kobierska, H., Tarabuła-Fiertak, M., Grodzińska-Jurczak, M. (2007) Attitudes to environmental education in Poland. Journal of Biological Education 42, p. 12-18.
348. Kochanowicz, J. (2014) Private suffering, public benefit: market rhetoric in Poland, 1989-1993. East European Politics and Societies 28, p. 103-118.
349. Kochanowicz, J., Marody, M. (2007) Pojęcie kultury ekonomicznej w wyjaśnieniu polskich przemian. In: (eds.) Kochanowicz, J., Mandes, S., Marody, M. Kulturowe aspekty transformacji ekonomicznej, p. 13-42, Instytut Spraw Publicznych, Warszawa.
350. Koe, W-L., Omar, L., Majid, I.A. (2014) Factors associated with propensity for sustainable entrepreneurship. Procedia - Social and Behavioral Sciences 130, p. 65-74.
351. Koh, L.P., Ghazoul, J. (2008) Biofuels, biodiversity, and people: understanding the conflicts and finding opportunities. Biological Conservation 141, p. 2450-2460.
352. Kolarska-Bobińska, L. (2003) The EU accession and strengthening of institutions in East Central Europe. The case of Poland. East European Politics and Societies 17, p. 91-98.
353. Kolb, J.A., Jin, S., Hoon Song, J. (2008) A model of small group facilitator competencies. Performance Improvement Quarterly 21, p. 119-133.
354. Kollmuss, A., Agyeman, J. (2002) Mind the gap: why do people act environmentally and what are the barriers to proenvironmental behavior? Environmental Education Research 8, p. 239-260.
355. Kortenkamp, K.V., Moore, C.F. (2006) Time, uncertainty, and individual differences in decisions to cooperate in resource dilemmas. Personality and Social Psychology Bulletin 32, p. 603-615.

356. Kowalska, A., Affek, A., Solon, J., Degórski, M., Grabińska, B., Kołaczkowska, E., Kruczkowska, B., Regulska, E., Roo-Zielińska, E., Wolski, J., Zawiska, I. (2017) Potential of cultural ecosystem services in postglacial landscape from the beneficiaries' perspective. Ekonomia i Środowisko 1, p. 236-245.
357. Kretek-Kamińska, A., Zajda, K. (2018) Collaboration between local social policy entities and their readiness to implement social innovations. Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu 510, p. 102-110.
358. Kronfeld-Goharani, U. (2015) The discursive constitution of ocean sustainability. Advances in Applied Sociology 5, p. 306-330.
359. Kronfeld-Goharani, U. (2018) Maritime economy: insights on corporate visions and strategies towards sustainability. Ocean & Coastal Management 165, p. 126-140.
360. Kronenberg, J. (2015) Why not to green a city? Institutional barriers to preserving urban ecosystem services. Ecosystem Services 12, p. 218-227.
361. Kronenberg, J. Bergier, T. (2010) Wyzwania zrównoważonego rozwoju w Polsce. Fundacja Sendzimira, Kraków.
362. Kronenberg, J., Bergier, T. (2012) Sustainable development in transition economy: business case studies from Poland. Journal of Cleaner Production 26, p. 18-27.
363. Kronenberg, J., Pietrzyk-Kaszyńska, A., Zbieg, A., Żak, B. (2016) Wasting collaboration potential: a study in urban green space governance in a post-transition country. Environmental Science and Policy 62, p. 69-78.
364. Kruger, C., Caiado, R.G.G., França, S.L.B., Quelhas, O.L.G. (2018) A holistic model integrating value co-creation methodologies towards the sustainable development. Journal of Cleaner Production 191, p. 400-416.
365. Krzymiński, W. (ed.) (2014) Wstępna ocena stanu środowiska wód morskich polskiej strefy Morza Bałtyckiego. Raport do Komisji Europejskiej. Główny Inspektorat Ochrony Środowiska.
366. Kumi, E., Arhinn, A.A., Yeboah, T. (2014) Can post-2015 sustainable development goals survive neoliberalism? A critical examination of the sustainable development–neoliberalism nexus in developing countries. Environment, Development and Sustainability 16, p. 539-554.
367. Kuzior, A. (2005) Zrównoważony rozwój w edukacji ekologicznej. In: (ed.) Papuziński, A. Zrównoważony rozwój: od utopii do praw człowieka, p. 279-293, Oficyna Wydawnicza Branta, Bydgoszcz.
368. Kyriakou, D. (2005) Views on sustainability: elements of a synthesis. In: (eds.) Wilderer, P.A., Schroeder, E.D., Kopp, H. Global sustainability: the impact of local cultures, a new perspective for science and engineering, economics and politics, p. 65-82, Wiley-vch Veralg GmbH & Co. KGaA, Weinheim.
369. Kyriazi, Z., Maes. F., Rabaut, M., Vincx, M., Degraer, S. (2013) The integration of nature conservation into the marine spatial planning process. Marine Policy 38, p. 133-139.
370. Lam, J.C.K., Walker, R.M., Hills, P. (2014) Interdisciplinarity in sustainability studies: a review. Sustainable development 22, p. 158-176.
371. Lamorgese, L., Geneletti, D. (2013) Sustainability principles in strategic environmental assessment: a framework for analysis and examples from Italian urban planning. Environmental Impact Assessment Review 42, p. 116-126.
372. Lancy, D.F. (1993) Qualitative research in education: an introduction to the major traditions. Longman, New York.
373. Layton, R.A. (2015) Formation, growth, and adaptive change in marketing systems. Journal of Macromarketing 35, p. 302-319.
374. Leenhardt, P., Teneva, L., Kininmoth, S., Darling, E., Cooley, S., Claudet, J. (2015) Challenges, insights and perspectives associated with using social-ecological science for marine conservation. Ocean & Coastal Management 115, p. 49-60.
375. Lenferink, S., Tillema, T., Arts, J. (2013) Towards sustainable infrastructure development through integrated contracts: Experiences with inclusiveness in Dutch infrastructure projects. International Journal of Project Management 31, p. 615-627.

376. Levinson, R., Paraskeva-Hadjichambi, D., Bedsted, B., Manov, B., Hadjichambis. A.C. (2020) Political dimensions of environmental citizenship. In: (eds.) Hadjichambis, A.C., Reis, P., Paraskeva-Hadjichambi, D., Činčera, J., Boeve-de Pauw, J., Gericke, N., Knippels, M-C. Conceptualizing environmental citizenship for 21st century education, p. 17-28, Springer, Cham.
377. Lewicka-Strzelecka, A. (2006) Opportunities and limitations of CSR in the postcommunist countries: Polish case. Corporate Governance: The international journal of business in society 6, p. 440-448.
378. Liebe, U., Preisendörfer, P., Meyerhoff, J. (2010) To pay or not to pay: competing theories to explain individuals' willingness to pay for public environmental goods. Environment and Behavior 43, p. 106-130.
379. Lieblich, A., Tuval-Mashiach, R., Zilber, T. (1998) Narrative research: reading, analysis and interpretation. SAGE Publications Inc., Thousand Oaks, CA.
380. Lim, W.M. (2017) Inside the sustainable consumption theoretical toolbox: critical concepts for sustainability, consumption, and marketing. Journal of Business Research 78, p. 69-80.
381. Link, J.S., Browman, H.I. (2017) Operationalizing and implementing ecosystem-based management. ICES Journal of Marine Science 74, p. 379-381.
382. Link, J.S., Thébaud, O., Smith, D.C., Smith, A.D.M., Schmidt, J., Rice, J., Poos, J.J., Lipton, D., Kraan, M., Frusher, S., Doyen, L., Cudennec, A., Criddle, K., Bailly, D. (2017) Keeping humans in the ecosystem. ICES Journal of Marine Science 74, p. 1947-1956.
383. Link, J.S., Dickey-Collas, M., Rudd, M., McLaughlin, R., Macdonald, N.M., Thiele, T., Ferretti, J., Johannesen, E., Rae, M. (2019) Clarifying mandates for marine ecosystem-based management. ICES Journal of Marine Science 76, p. 41-44.
384. Lisicka, H. (2005) Zasada zrównoważonego rozwoju w polityce państwa. In: (ed.) Papuziński, A. Zrównoważony rozwój: od utopii do praw człowieka, p. 246-259, Oficyna Wydawnicza Branta, Bydgoszcz.
385. Lombardi, D.R., Porter, L., Barber, A., Rogers, C.D.F. (2011) Conceptualising sustainability in UK urban regeneration: a discursive formation. Urban Studies 48, p. 273-296.
386. Long, R.D., Charles, A., Stephenson, R.L. (2015) Key principles of marine ecosystem-based management. Marine policy 57, p. 53-60.
387. Losada-Otero, M.D. and García-Mira, R. (2003) Action competence in environmental education. In: (eds.) García-Mira, R., Cameselle, J.S., Martinéz, J.R. Culture, environmental action and sustainability, p. 71-83, Hogrefe & Huber, Cambridge.
388. Lozano, R. (2008) Envisioning sustainability three-dimensionally. Journal of Cleaner Production, 16, p. 1838-1846.
389. Lubchenco, J., Cerny-Chipman, E.B., Reimer, J.N., Levin, S.A. (2016) The right incentives enable ocean sustainability successes and provide hope for the future. Proceedings of the National Academy of Sciences 113, p. 14507-14514.
390. Lune, H., Berg, B.L. (2017) Qualitative research methods for the social sciences. Pearson Education Limited, Harlow.
391. Łuszczyk, M. (2011) Koncepcja zrównoważonego rozwoju jako wyzwanie edukacyjne XXI wieku. Folia Pomeranae Universitatis Technologiae Stetinensis, Oeconomica 287, p. 127-136.
392. MacDonald, A., Clarke, A., Huang, L., Seitanidi, M.M. (2019) Partner strategic capabilities for capturing value from sustainability-focused multi-stakeholder partnerships. Sustainability 11, 557.
393. Mawhinney, M. (2002) Sustainable development: understanding the green debates. Blackwell Science Ltd.
394. Mainardes, E.W., Alves, H., Raposo, M. (2012) A model for stakeholders classification and stakeholder relationships. Management Decisions 50, p.1861-1879.
395. Makarewicz-Marcinkiewicz, A. (2015) Holistyczna koncepcja zrównoważonego rozwoju w strategiach polskich województw do roku 2020. Problemy Ekorozwoju 10, p. 103-113.
396. Málovics, G., Csigéné N.N., Kraus, S. (2008) The role of corporate social responsibility in strong sustainability. The Journal of Socio-Economics 37, p. 907-918.

397. Marien, M. (1994) Infoglut and competing problems: key barriers suggesting a new strategy for sustainability. Futures 26, p. 246-256.
398. Markandya, A., Harou, P., Bellù, L.G., Cistulli, V. (2002) Environmental economics for sustainable growth: a handbook for practitioners. Edward Elgar Publishing Limited, Cheltenham.
399. Martin, V.Y., Weiler, B., Reis, A., Dimmock, K., Scherrer, P. (2017) "Doing the right thing": how social science can help foster pro-environmental behaviour change in marine protected areas. Marine Policy 81, p. 236-246.
400. Martín, J.M.M., Aguilera, J.D.D.J., Moreno, V. M. (2014) Impacts of seasonality on environmental sustainability in the tourism sector based on destination type: an application to Spain's Andalusia Region. Tourism Economics 20, p. 123-142.
401. Matthews, B., Ross, L. (2010) Research methods: a practical guide for the social sciences. Pearson Education Limited, Harlow.
402. Mazor, T., Possingham, H.P., Kark, S. (2013) Collaboration among countries in marine conservation can achieve substantial efficiencies. Diversity and Distribution 19, p. 1380-1393.
403. McBride, B.B., Brewer, C.A., Berkowitz, A.R., Borrie, W.T. (2013) Environmental literacy, ecological literacy, ecoliteracy: What do we mean and how did we get here? Ecosphere 4, p. 1-20.
404. McCauley, V., McHugh, P., Davison, K., Domegan, C. (2019) Collective intelligence for advancing ocean literacy. Environmental Education Research 25, p. 280-291.
405. McKay, J. (2013) After the Washington consensus: rethinking dominant paradigms and questioning 'one size fits all' orthodoxies. In: (ed.) Kingsbury, D. Critical reflections on development, p. 50-68, Palgrave Macmillian, Basingstoke.
406. McKenzie-Mohr, D., Lee, N.R., Wesley Schultz, P., Kotler, P. (2012) Social marketing to protect the environment: what works. SAGE, Thousand Oaks, CA.
407. McKinley E. (2010) A critical evaluation of the application of marine citizenship in sustainable marine management in the UK. PhD dissertation. School of Applied Sciences, Bournemouth University.
408. McKinley, E., Fletcher, S. (2010) Individual responsibility for the oceans? An evaluation of marine citizenship by UK marine practitioners. Ocean & Coastal Management 53, p. 379-384.
409. McKinley, E., Fletcher, S. (2012) Improving marine environmental health through marine citizenship: a call for debate. Marine Policy 36, p. 839-843.
410. McKinley, E., Acott, T. G. (2018) Coastal communities: the missing link in marine policy? Marine Policy 97, p. 220-222.
411. McKinley, E., Acott, T., Stojanovic, T. (2019) Socio-cultural dimension of marine spatial planning. In: (eds.) Zaucha, J., Gee, K. Maritime spatial planning, past, present, future, p. 151-174. Palgrave Macmillian, Cham.
412. McKinley, E., Acott, T., Yates, K.L. (2020a) Marine social science: looking towards a sustainable future. Environmental Science & Policy 108, p. 85-92.
413. McKinley, E., Pages, J.F., Ballinger, R.C., Beaumont, N. (2020b) Forgotten landscapes: public attitudes and perceptions of coastal saltmarshes. Ocean & Coastal Management 187, 105117.
414. McPherson, K., Wright, T., Tyedmers, P. (2018) Challenges and prospects to the integration of ocean education into high school science courses in Nova Scotia. Applied Environmental Education & Communication, doi: 10.1080/1533015X.2018.1533439.
415. Meadows, D., Meadows, D., Randers, J., Behrens, W. (1972) The limits to growth: a report for the Club of Rome's project on the predicament of mankind. Earth Island, London.
416. Mehrizi, M.H.R., Ghasemzadeh, F., Molas-Gallart, J. (2009) Stakeholder mapping as an assessment framework for policy implementation. Evaluation 15, p. 427-444.
417. Mena, S., Palazzo, G. (2015) Input and output legitimacy of multi-stakeholder initiatives. Business Ethics Quarterly 22, p. 527-556.
418. Mauleman, L. (2013) Cultural diversity and sustainability metogovernance. In: (ed.) Mauleman, L. Transgovernance: advancing sustainability governance, p. 37-82, Springer.

419. Meuleman, L., Niestroy, I. (2015) Common but differentiated governance: a metagovernance approach to make the SDGs work. Sustainability 7, p. 12295-12321.
420. Michałek, M.A., Kruk-Dowgiałło, L. (2015) Konsultacje społeczne jako element planowania obszarów NATURA 2000 na przykładzie Zatoki Puckiej. Inżyniera Ekologiczna 42, p. 95-104.
421. MIG (2016) Study of conditions of spatial development of Polish sea areas. Urząd Morski w Szczecinie, Urząd Morski w Słupsku, Urząd Morski w Gdyni, Gdynia.
422. Milbrath, L.W. (1995) Psychological, cultural, and informational barriers to sustainability. Journal of Social Issues 51, p. 101-120.
423. Milfont, T.M., Schultz, P.W. (2016) Culture and the natural environment. Current Opinion in Psychology 8, p. 194-199.
424. Miller, W.L., Crabtree, B.F. (1992) Primary care research: a multimethod typology and qualitative roadmap. In: (eds.) Crabtree, B.F., Miller, W.L. Doing qualitative research, p. 3-28, SAGE Publications, Inc., Newbury Park, CA.
425. Miller, J.R. (2005) Biodiversity conservation and the extinction of experience. Trends in Ecology & Evolution, 20, p. 430-434.
426. Miller, G., Rathouse, K., Scarles, C., Holmes, K., Tribe, J. (2010) Public understanding of sustainable tourism. Annals of Tourism Research 37, p. 627-645.
427. Mirowski, P. (2011) Science-mart: privatizing American science. Harvard University Press, Cambridge, MA.
428. Mitchell, R.K., Agle, B.R., Wood, D.J. (1997) Toward a theory of stakeholder identification and salience: defining the principle of who and what really counts. The Academy of Management Review 22, p. 853-886.
429. Mizgajski, A., Stępniewska, M. (2012) Ecosystem services assessment for Poland: challenges and possible solution. Ekonomia i Środowisko 2, p. 54-73.
430. Mizgajski, A., Bernaciak, A., Kronenberg, J., Roo-Zielińska, E., Solon, J., Śleszyński, J. (2014) Development of the ecosystem services approach in Poland. Ekonomia i Środowisko 4, p. 11-19.
431. Mobley, C., Vagias, W.M., DeWard, S.L. (2009) Exploring additional determinants of environmentally responsible behavior: the influence of environmental literature and environmental attitudes. Environment and Behavior 42, p. 420-447.
432. Mol, A., Sonnenfeld, D. (2000) Ecological modernisation around the world: an introduction. Environmental Politics 9, p. 3-14.
433. Moldan, B., Janoušková, S., Hák, T. (2012) How to understand and measure environmental sustainability: indicators and targets. Ecological Indicators 17, p. 4-13.
434. Montgomery, C.A. (2002) Ranking the benefits of biodiversity: an exploration of relative values. Journal of Environmental Management 65, p. 313-326.
435. Morf, A. (2006) Participation and planning in the management of coastal resource conflicts: case studies in West Swedish municipalities. PhD dissertation. University of Göteborg, Göteborg.
436. Morf, A., Kull, M., Piwowarczyk, J. Gee, K. (2019) Towards a ladder of marine/maritime spatial planning participation. In: (eds.) Zaucha, J., Gee, K. Maritime spatial planning, past, present, future, p. 219-244. Palgrave Macmillian, Cham.
437. Morrison-Saunders, A., Hodgson, N. (2009) Applying sustainability principles in practice: guidance for assessing individual proposals. Presented at: IAIA09 Impact Assessment and Human Well-Being, 29th Annual Conference of the International Association for Impact Assessment, 16-22 May 2009, Accra, Ghana.
438. Mróz, A., Ocetkiewicz, I., Tomaszewska, B. (2020) What should be included in education programmes – the socio-education analysis for sustainable management of natural resources. Journal of Cleaner Production 250, 119556.
439. Mulvihill, P.R., Milan, M.J. (2007) Subtle world: beyond sustainability, beyond information. Futures 39, p. 657-668.

440. Musialik, M., Chrzanowski, M.M., Buczek, I., Arèvalo-Garcia, E.B., Ostrowska, B. (2013) Elements of environmental education in the new Polish curriculum for teaching chemistry and selected chemistry textbooks at ISCED 2 and ISCED 3 level. Proceedings of ECOpole 7, p. 133-142.
441. Myers, D. (2005) A review of construction companies' attitudes to sustainability. Construction Management and Economics 23, p. 781-785.
442. Nash, K.L., Blythe, J.L., Cvitanovic, C., Fulton, E.A., Halpern, B.S., Milner-Gulland, E.J., Addison, P.F.E., Pecl, G.T., Watson, R.A., Blanchard, J.L. (2020) To achieve a sustainable blue future, progress assessments must include interdependencies between the Sustainable Development Goals. One Earth 2, p. 161-173.
443. NCA (2004) Ustawa z dnia 16 kwietnia 2004 r. o ochronie przyrody. Dz.U.2004 nr 92 poz. 880.
444. Neumann, B., Ott, K., Kenchington, R. (2017) Strong sustainability in coastal areas: a conceptual interpretation of SDG14. Sustainability Science 12, p. 1019-1035.
445. Neumayer, E. (2013) Weak versus strong sustainability: exploring the limits of two opposing paradigms. Edward Elgar Publishing Limited, Cheltenham.
446. Newman, L. (2006) Change, uncertainty, and futures of sustainable development. Futures 38, p. 633-637.
447. Newton, L.H. (2003) Ethics and sustainability: sustainable development and the moral life. Prentice-Hall, Inc, Upper Saddle River, NJ.
448. Nicolaij, S., Hendrickx, L. (2003) The influence of temporal distance of negative consequences on the evaluation of environmental risks. In: (eds.) Hendrickx, L., Jager, W., Steg, L. Human decision making and environmental perception: understanding and assisting human decision making in real-life settings, p. 47-67, University of Groningen, Groningen.
449. Niedoszytko, G., Wojcieszek, D., Podlesińska, W., Borowiak, K. (2019) Implementing ocean literacy through the bond of informal and formal education. In: (eds.) Fauville, G., Payne, D., Marrero, M., Lantz-Andersson, A., Crouch F. Exemplary practices in marine science education, p. 123-142, Springer, Cham.
450. Nilsen, H.R. (2010). The joint discourse "reflexive sustainable development" — from weak towards strong sustainable development. Ecological Economics 69, p. 495-501.
451. Norton, B.G. (1989) Intergenerational equity and environmental decisions: a model using Rawls' veil of ignorance. Ecological Economics 1, p. 137-159
452. Norton, B.G. (2005) Sustainability: a philosophy of adaptive ecosystem management. The University of Chicago Press, Chicago, IL.
453. Noss, R.F. (1995) Ecological integrity and sustainability: buzzwords in conflict? In: (eds.) Westra, L., Lemons, J. Perspectives on ecological integrity, p. 60-76, Springer Science+Business Media, Dordrecht.
454. Noy, S., O'Brien, T.L. (2019) Science for good? The effects of education and national context on perceptions of science. Public Understanding of Science 28, p. 897-916.
455. NRC - National Research Council (2008) Public participation in environmental assessment and decision making. The National Academies Press, Washington, DC.
456. Nurse, K. (2006) Culture as the fourth pillar of sustainable development. Commonwealth Secretariat, London, p. 31-48.
457. O'Riordan, T. (1996) Democracy and the sustainability transition. In: (eds.) Lafferty, W., Meadowcroft, J. Democracy and the environment: problems and prospects, p. 140-156, Edward Elgar, Cheltenham.
458. OECD (2001) Policies to enhance sustainable development. OECD, Paris.
459. Ofori, G. (1998) Sustainable construction: principles and a framework for attainment - comment. Construction Management and Economics 16, p. 141-145.
460. Olawumi, T.O., Chan, D.W.M. (2018) A scientometric review of global research on sustainability and sustainable development. Journal of Cleaner Production 183, p. 231-250.
461. Olejarczyk, E. (2016) Zasada zrównoważonego rozwoju w systemie prawa polskiego – wybrane zagadnienia. Przegląd Prawa Ochrony Środowiska 2, p. 119-140.

462. Opioła, R., Kruk-Dowgiałło, L. (2011) Skuteczność ochrony przyrody morskiej w świetle założeń polityki morskiej państwa i obowiązującego prawodawstwa. In: (ed.) Zaucha, J. Polskie drogi polityki morskiej: od wizji do działania, p. 149-166, Instytut Morski w Gdańsku, Gdańsk.
463. Opschoor, H., van der Straaten, J. (1993) Sustainable development: an institutional approach. Ecological Economics 7, p. 203-222.
464. Opschoor, J.B. (1994) Institutional change and development towards sustainability. Research Memorandum 1994-42, Free University Amsterdam, Amsterdam.
465. Orr, S.K. (2014) Environmental policymaking and stakeholder collaboration: theory and practice. CRC Press, Boca Raton, FL.
466. Owen, R., Macnaghten, P., Stilgoe, J. (2012) Responsible research and innovation: from science in society to science for society, with society. Science and Public Policy 39, p. 751-760.
467. Pandit, A., Minné, E.A., Li, F., Brown, H., Jeong, H., James, J.-A. C., Newell, J.P., Weissburg, M. Chang, M.E., Xu, M., Yang, P., Wang, R., Thomas, V.M., Yu, X., Lu, Z., Crittenden, J.C. (2017) Infrastructure ecology: an evolving paradigm for sustainable urban development. Journal of Cleaner Production 163, Supplement 1, p. S19-S27.
468. Parkin, S., Sommer, F., Uren, S. (2003) Sustainable development: the concept and practical challenges. Proceedings of the Institution of Civil Engineers – Engineering Sustainability 156, p. 19-26.
469. Parkinson, J., Schuster, L., Russell-Bennett, R. (2016). Insights into the complexity of behaviours: the MOAB framework. Journal of Social Marketing 6, p. 412-427.
470. Parma, A.N., Hilborn, R., Orensanz, J.M. (2006) The good, the bad and the ugly: learning from experience to achieve sustainable fisheries. Bulletin of Marine Science 78, p. 411-428.
471. Parry-Wison, H.M., Rees, S.E., Leather, H., Cole, R., Rugg, C., Attrill, M.J. (2019) Assessing behavioural and social responses to an eco-mooring trial for *Zostera marina* conservation management in Torbay, Southwest England. Ocean & Coastal Management 180, 104906.
472. Pattberg, P., Widerberg, O. (2015) Transnational multistakeholder partnerships for sustainable development: conditions for success. AMBIO 45, p. 42-51.
473. Paulsen, D. (2004) Leadership essentials: facilitation skills for improving group effectiveness. In: SIGUCCS '04: Proceedings of the 32nd annual ACM SIGUCCS conference on user services, p. 153-160, ACM Press, New York.
474. Pearce, D., Markandya, A., Barbier, E. (1989) Blueprint for a Green Economy. Earthscan, London.
475. Pecceu, E., Hostens, K., Maes, F. (2016) Governanace analysis of MPAs in the Belgian part of the North Sea. Marine Policy 71, p. 265-274.
476. Pepper, D. (1993) Eco-Socialism: from deep ecology to social justice. Routledge, London.
477. Perry, E.E., Needham, M.D., Cramer, L.A., Rosenberger, R.S. (2014) Coastal resident knowledge of new marine reserves in Oregon: the impact of proximity and attachment. Ocean & Coastal Management 95, p. 107-116.
478. Pezzoli, K. (1997) Sustainable development: a transdisciplinary overview of the literature. Journal of Environmental Planning and Management 40, p. 549-574.
479. Pietrzyk-Kaszyńska, A., Cent, J., Grodzińska-Jurczak, M., Szymańska, M. (2012) Factors influencing perception of protected areas – the case of Natura 2000 in Polish Carpathian communities. Journal for Nature Conservation 20, p. 284-292.
480. Pinheiro, H.T., Teixeira, J.B., Francini-Filho, R.B., Soares-Gomes, A., Ferreira, C.E.L., Rocha, L.A. (2018) Hope and doubt for the world's marine ecosystems. Perspectives in Ecology and Conservation 17, p. 19-25.
481. Piwowarczyk, J., Kronenberg, J., Dereniowska, M.A. (2013) Marine ecosystem services in urban areas: Do the strategic documents of Polish coastal municipalities reflect their importance? Landscape and Urban Planning 109, p. 85-93.
482. Piwowarczyk, J., Wróbel, B. (2016) Determinants of legitimate governance of marine Natura 2000 sites in a post-transition European Union country: a case study of Puck Bay, Poland. Marine Policy 71, p. 310-317.

483. Piwowarczyk, J., Gee, K., Gilek, M., Hassler, B., Luttmann, A., Maack, L., Matczak, M., Morf, A., Saunders, F., Stalmokaitė, I., Zaucha, J. (2019a) Insights into integration challenges in the Baltic Sea Region marine spatial planning: implications for the HELCOM-VASAB principles. Ocean & Coastal Management 78, p. 98-109.
484. Piwowarczyk, J. Matczak, M., Rakowski, M., Zaucha, J. (2019b) Challenges for integration of the Polish fishing sector into marine spatial planning (MSP): do fishers and planners tell the same story? Ocean & Coastal Management 181, 104917.
485. Plested, B.A., Edwards, R.W., Jumper-Thurman, P. (2006) Community readiness: a handbook for successful change. Tri-Ethnic Center for Prevention Research, Fort Collins, CO.
486. Płonka, A., Dacko, M. (2019) Secondary school youth and the idea of sustainable development – opinions and attitudes. Scientific Papers of Silesian University of Technology, Organization and Management Series 139, p. 489-502.
487. Poczta-Wajda, A., Sapa, A. (2017) Paradygmat rozwoju zrównoważonego – ujęcie krytyczne. Progress in Economic Sciences 4, p. 131-141.
488. Polosky, M.J., Schuppisser, S.W., Beldona, S. (2002) A stakeholder perspective for analysing marketing relationships. Journal of Market-Focused Management 5, p. 109-126.
489. Popovič, B., Jankovič Šoja, S., Paunovič, T., Maletič, R. (2019) Evaluation of sustainable development management in EU countries. Sustainability 11, 7140.
490. Portman, M.E. (2016) Environmental planning for oceans and coasts: methods, tools and technologies. Springer, Switzerland.
491. Potts, T., O'Higgins, T., Mee, L., Pita, C. (2011) Public perceptions of Europe's seas – a policy brief. EU FP7 KNOWSEAS Project, p. 23.
492. Potts, T., Pita, C., O'Higgins, T., & Mee, L. (2016) Who cares? European attitudes towards marine and coastal environments. Marine Policy 72, p. 59-66.
493. Pörtner, H-O., Roberts, D.C., Masson-Delmotte, V., Zhai, P., Poloczanska, E., Mintenbeck, K., Tignor, M., Alegría, A., Nicolai, M., Okem, A., Petzold, J., Rama, B., Weyer, N.M. (eds.) (2019) IPCC Special Report on the Ocean and Cryosphere in a Changing Climate, Technical Summary.
494. Prochaska, J.O., DiClemente, C.C. (1983) Stages and processes of self-change of smoking: toward an integrative model of change. Journal of Consulting and Clinical Psychology 51, p. 390-395.
495. Prusek, A. (2017) Neoliberalna polaryzacja dochodowo-majątkowa i jej konsekwencje dla rozwoju społecznego i gospodarczego. Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu 489, p. 328-337.
496. Prusek, A. (2019) Nowa pokryzysowa polityka rozwoju zrównoważonego a polska Strategia Odpowiedzialnego Rozwoju. Nierówności Społeczne a Wzrost Gospodarczy 57, p. 173-187.
497. Purvis, B., Mao, Y., Robinson, D. (2019) Three pillars of sustainability: in search of conceptual origins. Sustainability Science 14, p. 681-695.
498. Purvis, M. (2004) Geography and sustainable development. In: (eds.) Purvis, M., Grainger, A. Exploring sustainable development: geographical perspective, p. 33-49, Earthscan, London.
499. Qiu, W., Jones, P.J.S. (2013) The emerging policy landscape for marine spatial planning in Europe. Marine Policy 39, p. 182-190.
500. Quental, N., Lourenço, J.M., da Silva, F.N. (2009) Sustainable development policy: goals, targets and political cycles. Sustainable Development 19, p. 15-29.
501. Radziszewski, M. (2015) Rozwój polskiego społeczeństwa obywatelskiego. Studia Gdańskie. Wizje i rzeczywistość XII, p. 37-50.
502. Ragin, C.C. (1992) Introduction: cases of "what is the case". In: (eds.) Ragin, C.C., Becker, H.S. What is a case? Exploring the foundations of social inquiery, p. 1-18, Cambridge University Press, New York, NY.
503. Ramcilovic-Suominen S., Pülzl, H. (2018) Sustainable development – a 'selling point' of the emerging EU bioeconomy policy framework? Journal of Cleaner Production 172, p. 4170-4180.
504. Rammel, C., van den Bergh, J.C.J.M. (2003) Evolutionary policies for sustainable development: adaptive flexibility and risk minimising. Ecological Economics 47, p. 121-133.

505. Ramos, J., Soma, K., Bergh, Ø., Schulze, T., Gimpel, A., Stelzenmüller, V., Mäkinen, T., Fabi, G., Grati, F., Gault, J. (2015) Multiple interests across European coastal waters: the importance of a common language. ICES Journal of Marine Science 72, p. 720-731.
506. Randall, A. Benefit-cost analysis and a safe minimum standard for conservation. In: (eds.) Atkinson, G., Dietz, S., Neumayer, E. Handbook of sustainable development, p. 91-105, Edward Elgar, Cheltenham.
507. Ravetz, J.R. (2011) Postnormal science and the maturing of the structural contradictions of modern European science. Futures 43, p. 142-148.
508. Raymond, C.M., Fazey, I., Reed, M.S., Stringer, L.C., Robinson, G.M., Evely, A.C. (2010) Integrating local and scientific knowledge for environmental management. Journal of Environmental Management 91, p. 1766-1777.
509. Raymond, C.M., Kenter, J.O., van Riper, C.J., Rawluk, A., Kendal, D. (2019) Editorial overview: theoretical traditions in social values for sustainability. Sustainability Science 14, 1173.
510. Razaei-Zadeh, M., Hogan M., O'Reilly J., Cleary, B., Murphy, E. (2004) Using Interactive Management to identify rank and model entrepreneurial competencies at universities' entrepreneurship curricula. The Journal of Entrepreneurship 23, p. 57-94.
511. Recuero Virto, L. (2018) A preliminary assessment of the indicators for Sustainable Development Goal (SDG) 14 "Conserve and sustainably use the oceans, seas and marine resources for sustainable development." Marine Policy 98, p. 47-57.
512. Reed, M.S., Graves, A., Dandy, N., Posthumus, H., Hubacek K., Morris, J., Prell, C., Quinn, C.H., Stringer, L.C. (2009) Who's in and why? A typology of stakeholder analysis methods for natural resource management. Journal of Environmental Management 90, p. 1933-1949.
513. Reed, M.S., Stringer, L.C., Fazey, I., Evely, A.C., Kruijsen, J.H.J. (2014) Five principles for the practice of knowledge exchange in environmental management. Journal of Environmental Management 146, p. 337-345.
514. Riley, S.J., Ford, J.K., Triezenberg, H.A., Lederle, P.E. (2018) Stakeholder trust in a state wildlife agency. The Journal of Wildlife Management 87, p. 1528-1535.
515. Rittel, H.W.J., Webber, M.M. (1973) Dilemmas in a general theory of planning. Policy Sciences 4, p. 155-69.
516. Robinson, J. (2004) Squaring the circle? Some thoughts on the idea of sustainable development. Ecological Economics 48, p. 369-384.
517. Roberts, T., Jones, P.J.S. (2013) North East Kent European marine site: overcoming barriers to conservation through community engagement. Marine Policy 41, p. 33-34.
518. Robèrt, K. (2002). The natural step story: seeding a quiet revolution. New Society Publishers, Vancouver.
519. Robertson, M. (2007) Discovering price in all the wrong places: the work of commodity definition and price under neoliberal environmental policy. Antipode 39, p. 500-526.
520. Robinson, J. (2004) Squaring the circle? Some thoughts on the idea of sustainable development. Ecological Economics 48, p. 269-384.
521. Rock, J., Sima, E., Knapen, M. (2019) What is the ocean: a sea-change in our perceptions and values? Aquatic Conservation: Marine and Freshwater Ecosystems 30, p. 532-539.
522. Rodriguez, N.J.I. (2017) A comparative analysis of holistic marine management regimes and ecosystem approach in marine spatial planning in developed countries. Ocean & Coastal Management 137, p. 185-197.
523. Roeder, T. (2013) Managing project stakeholders: building a foundation to achieve project goals. John Wiley & Sons, Inc., Hoboken, NJ.
524. Rogers, P.P., Jalal, K.F., Boyd, J.A. (2008) An introduction to sustainable development. Earthscan, London.
525. Roosa, S.A. (2008) Sustainable development handbook. The Farirmont Press, Inc. Lilburn, GA.

526. Rosa, D.C., Cabicieri Profice, C., Collado, S. (2018) Nature experiences and adults' self-reported pro-environmental behaviors: the role of connectedness to nature and childhood nature experiences. Frontiers in Psychology 9, 1055.
527. Rose, D.C., Mukherjee, N., Simmons, B.I., Tew, E.R., Robertson, R.J., Vadrot, A.B.M., Doubleday, R., Sutherland, W.J. (2017) Policy windows for the environment: tips for improving the uptake of scientific knowledge. Environmental Science & Policy, article in press, https://doi.org/10.1016/j.envsci.2017.07.013.
528. Rose, D.C., Sutherland, W.J., Amano, T., González-Varo, J.P., Robertson, R.J., Simmons, B.I., Wauchope, H.S., Kovacs, E., Durán, A.P., Vadrot, A.B.M., Wu, W., Dias, M.P., Di Fonzo, M.M.I., Ivory, S., Norris, L., Nunes, M.H., Nyuba, T.O., Steiner, N., Vickery, J., Mukherjee, N. (2018) The major barriers to evidence-informed conservation policy and possible solutions. Conservation Letter 11, e12564.
529. Rosel, S.A., Gantwerk, H. (2010) Moving beyond polls and focus groups. In: (eds.) Yankelovich, D., Friedman, W. Toward wiser public judgement, p. 110-128, Vanderbilt University Press, Nashville, TN.
530. Roux, D.J., Nel, J.L., Cundill, G., O'Farrell, P., Fabricius C. (2017) Transdisciplinary research for systemic change: who to learn with, what to learn about and how to learn. Sustainability Science 12, p. 711-726.
531. Ruane, J.M. (2006) Essentials of research methods. A guide to social science research. Blackwell Publishing, Oxford.
532. Ruf, B.M., Muralidhar, K., Brown, R.M., Janney, J.J., Paul, K. (2001) An empirical investigation of the relationship between change in corporate social performance and financial performance: a stakeholder theory perspective. Journal of Business Ethics 32, p. 143-156.
533. Ruiz-Frau, A., Kaiser, M.J., Edwards-Jones, G., Klein, C.J., Segan, D., Possingham, H.P. (2015) Balancing extractive and non-extractive uses in marine conservation plans. Marine Policy 52, p. 11-18.
534. Sagan, I., Masik, G. (2014) Economic resilience. The case study of Pomorskie Region. Raumforschung Und Raumordnung 72, p. 153-164.
535. Sagan, I., Masik, G. (2018) The economic crisis and the Pomorkie region in Poland: a case study of resistance. In: (eds.) Bristow, G., Healy, A. Economic crisis and the resilience of regions: a European case study, p. 25-40, Edward Elgar, Cheltenham.
536. Saito, O., Managi, S., Kanie, N., Kauffman, J., Takeuchi, K. (2017) Sustainability science and implementing the sustainable development goals. Sustainability Science 12, p. 907-910.
537. Sakurai, R., Ota, T., Uehara, T., Nakagami, K. (2016) Factors affecting residents' behavioral intentions for coastal conservation: Case study at Shizugawa Bay, Miyagi, Japan. Marine Policy 67, p. 1-7.
538. Saltelli, A., Funtowicz, S. (2017) What is science's crisis really about? Futures 91, p. 5-11.
539. Salvia, A.L., Filho, W.L., Brandli, L.L., Griebeler, J.S. (2019) Assessing research trends related to Sustainable Development Goals: local and global issues. Journal of Cleaner Production 208, p. 841-849.
540. Santos, C.F., Domingos, T., Ferreira, M.A., Orbach, M., Andrade, F. (2014) How sustainable is sustainable marine spatial planning? Part I—Linking the concepts. Marine Policy 49, p. 59-65.
541. Santos, C.F., Orbach, M., Calado, H., Andrade, F. (2015) Challenges in implementing sustainable marine spatial planning: the new Portuguese legal framework case. Marine Policy 61, p. 196-206.
542. Saunders, F., P., Gilek, M., Tafon, R. (2019a) Adding people to the sea: conceptualizing social sustainability in maritime spatial planning. In: (eds.) Zaucha, J., Gee, K. Maritime spatial planning, past, present, future, p. 175-200. Palgrave Macmillian, Cham.
543. Saunders, F., Gilek, M., Day, J., Hassler, B., McCann, J., Smythe, T. (2019b) Examining the role of integration in marine spatial planning: towards an analytical framework to understand challenges in diverse settings. Ocean & Coastal Management 169, p. 1-9.

544. Scheffran, J. (2006) Tools for stakeholder assessment and interaction. In: (eds.) Stoll-Kleemann, S., Welp, M. Stakeholder dialogues in natural resources management. Theory and Practice, p. 153-186, Springer, Berlin-Heidelberg.
545. Schein, E.H. (1999) Process consultation revisited: building the helping relationship. Addison-Wesley Publishing Company, Inc.
546. Schlosberg, D. (2007) Defining environmental justice: theories, movements, and nature. Oxford University Press, Oxford.
547. Schrader-Frechette, K. (2002) Environmental justice: creating equity, reclaiming democracy. Oxford University Press, Oxford.
548. Schultz, P.W., Milfont, T.L., Chance, R.C., Tronu, G., Luís, S., Ando, K., Gouveia, V.V. (2014) Cross-cultural evidence for spatial bias in beliefs about the severity of environmental problems. Environment and Behavior 46, p. 267-302.
549. Schultz, P.W., Stone, W.F. (1994) Authoritarianism and attitudes toward the environment. Environment and Behavior 26, p. 25-37.
550. Schultz-Zehden, A., Weig, B., Lukic, I. (2019) Maritime spatial planning and the EU's Blue Growth policy: past, present and future perspectives. In: (eds.) Zaucha, J., Gee, K. Maritime spatial planning, past, present, future, p. 121-150, Palgrave Macmillian, Cham.
551. Schwartz, S.H. (1977) Normative influences on altruism. Advances in Experimental Social Psychology 10, p. 221-279.
552. Schwartz, S.H., Howard, J.A. (1982) Helping and cooperation: a self-based motivational model. In: (eds.) Derlega, V., Grzelak, J. Cooperation and helping behavior, p. 327-353, Academic Press, New York.
553. Schwichtenberg, A. (2006) Gospodarka turystyczna na obszarach chronionych polskiego wybrzeża. In: (ed.) Furmańczyk, K. Brzeg morski zrównoważony. Zintegrowane zarządzanie obszarami przybrzeżnymi w Polsce – stan obecny i perspektywy, część 2, p. 122-127, Uniwersytet Szczeciński, Instytut Nauk o Morzu, Szczecin.
554. Scoullos, M.J. (2010) Education for sustainable development: the concept and its connection to tolerance and democracy. In: (eds.) Nikolopoulu, A., Abraham, T., Mirbagheri, F. Education for sustainable development: challenges, strategies and practices in globalizing world, p.47-63, Sage Publications India Pvt Ltd, New Delhi.
555. Sedlacek, S. (2013) The role of universities in fostering sustainable development at the regional level. Journal of Cleaner Production 48, p. 74-84.
556. Seghezzo, L. (2009) The five dimensions of sustainability. Environmental Politics 18, p. 539-556.
557. Selge, S., Fischer, A., van der Wal, R. (2011) Public and professional views on invasive non-native species – a qualitative social scientific investigation. Biological Conservation 144, p. 3089-3097.
558. Shulla, K., Leal Filho, W., Lardjane, S., Sommer, J.H., Salvia, A.L., Borgemeister, C. (2019). The contribution of Regional Centers of Expertise for the implementation of the 2030 Agenda for Sustainable Development. Journal of Cleaner Production 237, 117809.
559. Singer, M. (2010) Eco-nomics: are the planet unfriendly features of capitalism barriers to sustainability? Sustainability 2, p. 127-144.
560. Sibbel, A. (2009) Pathways towards sustainability through higher education. International Journal of Sustainability in Higher Education 10, p. 68-82.
561. Singh, G.G., Cisneros-Montemayor, A.M., Swartz, W., Cheung, W., Guy, J.A., Kenny, T-A., McOwen, C.J., Asch, R., Geffert, J.L., Wabnitz, C.C.C., Sumaila, R., Hanich, Q., Ota, Y. (2018) A rapid assessment of co-benefits and trade-offs among Sustainable Development Goals. Marine Policy 93, p. 223-231.
562. Siraj-Blatchford, J. (2016) Towards the research programme for early childhood education on sustainable development. In: (eds.) Siraj-Blatchford, J., Mogharreban, C., Park, E. International research on education for sustainable development in early childhood, p. 193-210, Springer, Switzerland.
563. Siraj-Blatchford, J., Pramling-Samuelsson, I. (2016) Education for sustainable development in early childhood care and education: an introduction. In: (eds.) Siraj-Blatchford, J., Mogharreban, C., Park,

E. International research on education for sustainable development in early childhood, p. 1-16, Springer, Switzerland.
564. Skowroński, A. (2006) Panorama cywilizacji zrónoważonego rozwoju. Studia Ecologiae et Bioethicae 4, p. 243-257.
565. Sloan, J. (2006) Learning to think strategically. Butterworth–Heinemann, Oxford.
566. Smith, D.C., Fulton, E.A., Apfel, P., Cresswell, I.D., Gillanders, B.M., Haward, M., Sainsbury, K.J., Smith, A.D.M., Vince, J., Ward, T.M. (2017) Implementing marine ecosystem-based management: lessons from Australia. ICES Journal of Marine Science 74, p. 1990-2003.
567. Smith, G. (2005) Green citizenship and the social economy. Environmental Politics 14, p. 273-289.
568. Soini, K., Birkeland, I. (2014) Exploring the scientific discourse on cultural sustainability. Geoforum 51, p. 213-223.
569. Sokołowska-Durkalec, A. (2017) Identyfikacja wybranych problemów dotyczących implementacji koncepcji społecznej odpowiedzialności – perspektywa małego przedsiębiorstwa. Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu 499, p. 254-263.
570. Sol, J., Beers, P.J., Wals, A.E.J. (2013) Social learning in regional innovation networks: trust, commitment and reframing as emergent properties of interaction. Journal of Cleaner Production 49, p. 35-43.
571. Solon, J. (2005) Czy obowiązująca ustawa o ochronie przyrody jest dobrym narzędziem do rozwiązywania konfliktów „człowiek-przyroda" w polskich parkach narodowych? In: (eds.) Hibszer, A., Partyka, J. Między ochroną przyrody a gospodarką – bliżej ochrony: konflikty człowiek-przyroda na obszarach prawnie chronionych w Polsce, p. 9-17, Polskie Towarzystwo Geograficzne Oddział Katowicki – Ojcowski Park Narodowy, Sosnowiec – Ojców.
572. Soma, K., Dijkshoorn-Dekker, M.W.C., Polman, N.B.P. (2018) Stakeholder contributions through transitions towards urban sustainability. Sustainable Cities and Society 37, p. 438-450.
573. Soussan, J. (2004) Linking the local to the global: can sustainable development work in practice? In: (eds.) Purvis, M., Grainger, A. Exploring sustainable development: geographical perspective, p. 85-98, Earthscan, London.
574. Söderbaum, P. (2000) Ecological economics. Earthscan Publications Ltd, London.
575. Söderbaum, P. (2017) Democracy as a lead concept in dealing with unsustainable development. In: (eds.) Brown, J., Söderbaum, P., Dereniowska, M. Positional analysis for sustainable development: reconsidering policy, economics and accounting, p. 1-15, Routledge, Oxon.
576. Sørensen, T.K., Kindt-Larsen, L. (2016) Uncovering governance mechanisms surrounding harbour porpoise conservation in the Danish Skagerrak Sea. Marine Policy 71, p. 318-324.
577. Spangenberg, J.H. (2004) Reconciling sustainability and growth: criteria, indicators, policies. Sustainable Development 12, p. 74-86.
578. Spash, C.L. (2002) Greenhouse economics: value and ethics. Routledge, London.
579. Spence, A., Poortinga, W., Pidgeon, N. (2011) The psychological distance of climate change. Risk Analysis 32, p. 957-972.
580. Spence, M., Ben Boubaker Gherib, J., Biwolé, V.O. (2011) Sustainable entrepreneurship: is entrepreneurial will enough? A North–South comparison. Journal of Business Ethics 99, p. 335-367.
581. Steenberg, J.W.N., Duinker, P.N. Nitoslawski, S.A. (2019) Ecosystem-based management revisited: updating the concepts for urban forests. Landscape and Urban Planning 186, p. 24-35.
582. Stake, R.E. (2005) Qualitative case studies. In: (eds.) Denzin, N.K., Lincoln, Y.S. The Sage handbook of qualitative research, p. 443-466, Sage, Thousand Oaks, CA.
583. St Martin, K., Hall-Arber, M. (2008) The Missing Layer: geo-technologies, communities, and implications for marine spatial planning. Marine Policy 32, p. 779-786.
584. Stafford-Smith, M., Griggs, D., Gaffney, O., Ullah, F., Reyers, B., Kanie, N., Stigson, B., Shrivastava, P., Leach, M., O'Connell D. (2017) Integration: the key to implementing the Sustainable Development Goals. Sustainability Science 12, p. 911-919.
585. Starik, M. (1995) Should trees have managerial standing? Towards stakeholder status for non-human nature. Journal of Business Ethics 14, p. 207-217.

586. Steadman, M.E., Green, R.F. (1997) An extension of stakeholder theory research: developing surrogates for net organizational capital. Managerial Auditing Journal 12, p. 142-147.
587. Stern, P.C. (2000) Toward a coherent theory of environmentally significant behavior. Journal of Social Issues 56, p. 407-424.
588. Stirling, A. (2008) "Opening Up" and "Closing Down". Power, participation, and pluralism in the social appraisal of technology. Science, Technology & Human Values 33, p. 262-294.
589. Stojanovic, T.A., Farmer, C.J.Q. (2013) The development of the world oceans & coastal and the concepts of sustainability. Marine Policy 42, p. 157-165.
590. Stoll-Kleemann, S. (2019) Feasible options for behavior change toward more effective ocean literacy: a systematic review. Frontiers in Marine Science 6, 237.
591. Stoll-Kleemann, S., Welp, M. (2006) Towards a more effective and democratic natural resources management. In: (eds.) Stoll-Kleemann, S., Welp, M. Stakeholder dialogues in natural resources management. Theory and Practice, p. 17-42, Springer, Berlin-Heidelberg.
592. Støttrup, J.G., Dinesen, G., Schumacher, J., Gillgren, C., Inácio, M., Schernewski, G. (2019) The systems approach framework for collaborative, science-based management of complex systems. Journal of Coastal Conservation, doi: https://doi.org/10.1007/s11852-018-00677-5.
593. Strachan, D. (2006) Making questions work: a guide to what and how to ask for facilitators, consultants, managers, coaches, and educators. Jossey-Bass, San Francisco, CA.
594. Suchman, M.C. (1995) Managing legitimacy: Strategic and institutional approaches. Academy of Management Review 20, p. 571-610.
595. Suškevičs, M. (2012) Legitimacy analysis of multi-level governance of biodiversity: evidence from 11 case studies across Europe. Environmental Policy and Governance 22, p. 217-237.
596. Takács-Sánta, A. (2007) Barriers to environmental concern. Research in Human Ecology 14, p. 26-38.
597. Terema, E., Milligan, B. Jiménez-Aybar, R., Mace, G.M., Ekins, P. (2016) Accounting for the environment as an economic asset: global progress and realizing the 2030 Agenda for Sustainable Development. Sustainability Science 11, p. 940-950.
598. Teschner, N. (2019) The battle over the commons in port cities. Urban Geography 40, p. 918-937.
599. Thatcher, A. (2012) Early variability in the conceptualization of "sustainable development and human factors". WORK 41, p. 3892-3899.
600. Thatcher, A. (2014) Theoretical definitions and models of sustainable development that apply to human factors and ergonomics. In: (eds.) Broberg, O., Fallentin, N., Hasle, P., Jensen, P.L., Kabel, A., Larsen, M.E., Weller, T. Proceedings of the 11th International Symposium on Human Factors in Organisational Design and Management and the 46th Annual Nordic Ergonomics Society Conference, Vol. 1, 2, p. 747-752, IEA Press, Santa Monica, CA.
601. Thatcher, A., Yeow, P.H.P. (2015) A sustainable system of systems approach: a new HFE paradigm. Ergonomics 59, p. 167-178.
602. Thornton, J.A., Harding, W.R., Dent, M., Hart, R.C., Lin, H., Rast, C.L., Ryding, S-O., Slawski, T.M. (2013) Eutrophication as a 'wicked' problem. Lakes and Reservoirs: Research and Management 18, p. 298-316.
603. Throsby, D. (2017) Culturally sustainable development: theoretical concept or practical policy instrument? International Journal of Cultural Policy 23, p. 133-147.
604. Tietenberg, T. (2006) Environmental and natural resource economics. Pearson/Addison Wesley, Boston.
605. Titchen, A., Hobson, D. (2005) Phenomenology. In: (eds.) Somekh, B., Lewin, C. Research methods in the social sciences, p. 121-130, SAGE Publications Ltd., Padstow.
606. Torres, D.F., Oliveira, E.S., Alves, R.R.N. (2018) Conflicts between humans and terrestrial vertebrates: a global review. Tropical Conservation Science 11, p. 1-15.
607. Treichel, K., Höh, A., Biermann, S., Conze, P. (2017) Multi-stakeholder partnerships in the context of Agenda 2030: a practice-based analysis of potential benefits, challenges and success factors. Partnership 2030, Bonn, p. 42.

608. Turcu, C. (2013) Re-thinking sustainability indicators: local perspectives of urban sustainability. Journal of Environmental Planning and Management 56, p. 695-719.
609. Turner, R.K., Pearce, D.W. (1993) Sustainable economic development: economic and ethical principles. In: (ed.) Barbier, E.D. Economics and ecology: new frontiers and sustainable development, p. 177-194, Springer Science + Business Media, Dordrecht.
610. Tymiński, M., Koryś, P. (2015) An escape from backwardness. The Polish transformation as the modernization project. Roczniki Dziejów Społecznych i Gospodarczych LXXV, p. 59-76.
611. Ulate, K., Alcoverro, T., Arthur, A., Aburto-Oropeza, O., Sánchez, C., Huato-Soberanis, L. (2018) Conventional MPAs are not as effective as community co-managed areas in conserving top-down control in the Gulf of California. Biological Conservation 228, p. 100-109.
612. UN (2015) Transforming Our World: The 2030 Agenda for Sustainable Development. Resolution adopted by the General Assembly on 25 September 2015. A/RES/70/1.
613. UNEP (2011) Towards a green economy: pathways to sustainable development and poverty eradication - a synthesis for policy makers. United Nations Environment Programme, St-Martin-Bellevue.
614. van der Leeuw, S. (2018) Closing remarks: novel approaches to complex societal change and sustainability. Sustainability Science 13, p. 1589-1596.
615. Van der Werff, E., Steg, L., Keizer, K. (2013) The value of environmental self-identity: the relationship between biospheric values, environmental self-identity and environmental preferences, intentions and behavior. Journal of Environmental Psychology 34, p. 55-63.
616. van Tatenhove, J.P.M. (2013) How to turn the tide: developing legitimate marine governance arrangements at the level of the regional seas. Ocean & Coastal Management 71, p. 296-304.
617. Van Vuuren, D.P., Kok, M., Lucas, P.L., Prins, A.G., Alkemade, R., van der Berg, M., Bouwman, L., van der Esch, S., Jeuken, M., Kram, T., Stehfest, E. (2014) Pathways to achieve a set of ambitious global sustainability objectives by 2050: explorations using the IMAGE integrated assessment model. Technological Forecasting and Social Change 98, p. 303-323.
618. Varjopuro, R., Soininen, N., Kuokkanen, T., Aps, R., Matczak, M., Danilova, L. (2015) Communiqué on the results of the research on blue growth in the selected international projects aimed at enhancement of maritime spatial planning in the Baltic Sea Region (BSR). Bulletin of the Maritime Institute in Gdańsk 30, p. 72-77.
619. Vatn, A. (2009) Sustainability, institutions and behavior. In: (eds.) Beckmann, V., Padmanabhan, M. Institutions and sustainability: political economy of agriculture and the environment – essays in honour of Konrad Hagedorn, p. 293-314, Springer.
620. Vennix, J.A.M. (1996) Group model building: facilitating team learning using system dynamics. John Willey & Sons, Chichester.
621. Villarino, J., Font, X. (2015) Sustainability marketing myopia: the lack of sustainability communication persuasiveness. Journal of Vacation Marketing 21, p. 326-335.
622. Waas, T., Hugé, J., Verbruggen, A., Wright, T. (2011) Sustainable development: a bird's eye view. Sustainability 3, p. 1637-1661.
623. Wan, C., Shen, G.Q., Choi, S. (2017) A review on political factors influencing public support for urban environmental policy. Environmental Science & Policy 75, p. 70-80.
624. Walsh, J.C., Dicks, L.V., Raymond, C.M., Sutherland, W.J. (2019) A typology of barriers and enablers of scientific evidence in conservation practice. Journal of Environmental Management 250, 109481.
625. Warfield, J.M., Cárdenas, A.R. (1993) A handbook of interactive management. Ajar Publishing Company, Palm Harbor, FL.
626. Watson, S., McCracken, M. (2002) No attraction in strategic thinking: perception on current and future skills needs for visitor attraction managers. International Journal of Tourism Research 4, p. 367-378.
627. WB (2000) World Development Report 2000-2001: attacking poverty. Oxford University Press, New York.

628. WBCSD (1998) Trade, environment and sustainable development: a briefing manual. World Business Council for Sustainable Development, Geneva.
629. WCED (1987) Our Common Future. Oxford University Press, Oxford.
630. Weber, B.J., Chapman, G.B. (2004) The combined effects of risk and time on choice: Does uncertainty eliminate the immediacy effect? Does delay eliminate the certainty effect? Organizational Behavior and Human Decision Processes 96, p. 104-118.
631. Weber, M. (1947) The theory of social and economic organization. Free Press, New York.
632. Wehr, P. (1979) Conflict regulation. Westview, Boulder, CO.
633. Wertz, F.J. (2011) A phenomenological psychological approach to trauma and resilience. In: (eds.) Wertz, F.J., Charmaz, K., McMullen, L.M., Josselson, R., Anderson, R., McSpadden, E. Five ways of doing qualitative analysis: phenomenological psychology, grounded theory, discourse analysis, narrative research, and intuitive inquiry, p. 124-164, The Guilford Press, New York, NY.
634. Westheimer, J., Kahne, J. (2004) What kind of citizen? The politics of educating for democracy. American Educational Research Journal 41, p. 237-269.
635. Węsławski, J.M., Urbański, J., Kryla-Straszewska, L., Andrulewicz, E., Linkowski, T., Kuzebski, E., Meissner, W., Otremba, Z., Piwowarczyk, J. (2010) The different uses of sea space in Polish Marine Areas: is conflict inevitable? Oceanologia 52, p. 513-530.
636. Węsławski, J.M., Kotwicki, L., Grzelak, K., Piwowarczyk, J., Sagan, I., Nowicka, K., Marzejon, I. (2011) Przemysł turystyczny i przyroda morska na Półwyspie Helskim, Wstępna ocena wpływu turystyki i przemysłu rekreacyjnego na wartości naturalne przybrzeżnego ekosystemu morskiego na przykładzie półwyspu helskiego. WWF, Gdańsk.
637. Wheeler, S.M. (2004) Planning for sustainability: creating liveable, equitable, and ecological communities. Routledge, Oxon.
638. Winther, J., Dai, M., Rist, T., Hoeal, A.H., Li, Y., Trice, A., Morrissey, K., Juinio-Meñez, M.A., Fernendes L., Unger, S., Scarano, F.R., Halpin, P., Whitehouse, S. (2020) Integrated ocean management for a sustainable ocean economy. Nature Ecology and Evolution, https://doi.org/10.1038/s41559-020-1259-6.
639. Wodzikowski, C. (2005) Zrównoważony rozwój w służbie rozwiązywanie konfliktów społecznych ta tle konserwatorskiej polityki ochrony środowiska. In: (ed.) Papuziński, A. Zrównoważony rozwój: od utopii do praw człowieka, p. 201-214, Oficyna Wydawnicza Branta, Bydgoszcz.
640. Wojcieszyk, K. (2011) Wsparcie dla zintegrowanego zarządzania morzem i gminami nadmorskimi jako warunek lepszego pożytkowania korzyści z morza w kontekście tworzącej się zintegrowanej polityki morskiej. In: (ed.) Zaucha, J. Polskie drogi polityki morskiej: od wizji do działania, p. 51-58, Instytut Morski w Gdańsku, Gdańsk.
641. Wollf, M. (2015) From sea sharing to sea sparing: is there a paradigm shift in ocean management? Ocean & Coastal Management 116, p. 58-63.
642. Wulff, A., Johannesson, K. (2019) Bring the ocean to the classroom—introducing experimental studies to teachers with fair or no science knowledge. In: (eds.) Fauville, G., Payne, D., Marrero, M., Lantz-Andersson, A., Crouch F. Exemplary practices in marine science education, p. 363-376, Springer, Cham.
643. Wynveen, B.J. (2015) Perceptions of sustainability and sustainable living among non-environmentally motivated individuals. Society & Natural Resources 28, p. 1278-1289.
644. Yan, X., Lin, H., Clarke, A. (2018) Cross-sector social partnerships for social change: the roles of non-governmental organizations. Sustainability 10, 558.
645. Yankelovich, D., Friedman, W. (2010) How Americans make up their minds: the dynamics of the public's learning curve and its meaning for American public life. In: (eds.) Yankelovich, D., Friedman, W. Toward wiser public judgement, p. 1-8, Vanderbilt University Press, Nashville, TN.
646. Yin, R.K. (2009) Case study research: designs and methods. SAGE Publications, Inc., Thousand Oaks, CA.
647. Yin, R.K. (2010) Qualitative research from start to finish. The Guilford Press, New York, NY.

648. Young, W., Tilley, F. (2006) Can businesses move beyond efficiency? The shift toward effectiveness and equity in the corporate sustainability debate. Business Strategy and the Environment 15, p. 402-415.
649. Young, W., Hwang, K., McDonald, S., Oates, C.J. (2010) Sustainable consumption: green consumer behavior when purchasing products. Sustainable development 18, p. 20-31.
650. Zaccai, E. (2012) Over two decades in pursuit of sustainable development: influence, transformations, limits. Environmental Development 1, p. 79-90.
651. Zadek, S. (2007) The civil corporation: the new economy of corporate citizenship. Earthscan, London.
652. Zaharia, T., Micu, D., Nedelcu, M., Ganea, G., Ursache, C.M., Golumbeanu, M., Nenciu, M. (2012) Romanian marine fisheries and Natura 2000 network. Journal of Environmental Protection and Ecology 13, p. 1792-1798.
653. Zaucha, J. (2010) Pilot draft plan for the West part of the Gulf of Gdańsk: first maritime spatial plan in Poland, Maritime Institute in Gdańsk, Gdańsk.
654. Zaucha, J. (2012) Offshore spatial information – maritime spatial planning in Poland, Regional Studies 46, p. 459-473.
655. Zaucha, J. (2014a) Sea basin maritime spatial planning: a case study of the Baltic Sea region and Poland. Marine Policy 50, p. 34-45.
656. Zaucha, J. (2014b) The key to governing the fragile Baltic Sea. Maritime Spatial planning in the Baltic Sea Region and way forward. VASAB Secretariat, Riga.
657. Zaucha, J. (2018) Gospodarowanie przestrzenią morską. Sedno, Warszawa.

Appendix 1 List of barriers generated by the maritime stakeholders

A place to live

A) Deficiency in legal system

1. Inconsistent regulations concerning protection of the environment (6 votes)
2. Disregard for the existing regulations related to poor or lack of enforcement (10 votes)*
3. Loopholes in the law; no requirement that decisions should be agreed with all interested stakeholders; this approach is not in line with ICZM principles (3 votes)
4. Lack of responsible and accountable authorities in marine management (2 votes)
5. Increasing penalties for breaking the law (0 votes)
6. Too restrictive environmental regulations, e.g., regarding cormorants (2 votes)
7. Low water/water catchment protection in both rural and urban areas (2 votes)

B) Lack of state sufficient involvement in the marine issues

8. Low financial resources for nature conservation (4 votes)
9. Low benefits arising from marine ports for the Pomeranian province (4 votes)
10. Few direct actions for the conservation of marine environment (1 vote)
11. Lack of proper environmental monitoring (0 votes)
12. Low financial resources for environmental monitoring (1 vote)
13. Lack of relations between legal obligations at national level and financial resources granted to implement these obligations at local level (4 votes)
14. Low priority for sea in national politics (13 votes)*
15. Short-term financing based on EU-funds only (1 vote)
16. Low support for science, innovation and new technologies (2 votes)

C) Lack of coherent vision for the sustainable development for the Gulf of Gdansk region

17. Lack of marine and terrestrial spatial plans (9 votes)*
18. Lack of consistent vision for long-term regional development (10 votes)*
19. Insufficient investments in appropriate infrastructure in the region; future investments should be based on clear and coherent vision of regional development (0 votes)
20. Stagnation of smaller ports — lack of facilities and infrastructure (0 votes)
21. Lack of technical know-how and proper infrastructure for wind farm development (0 votes)
22. Disregard for the local landscape and local architecture; lack of spatial order (3 votes)
23. Short-term management and planning by local authorities (9 votes)*

D) Overexploitation

24. Focus on short term economic profits from the environment (16 votes)*
25. Too high expectations and pressures regarding the use of the sea for tourism (2 votes)
26. Low conservation traditions and experience in marine environment, which results in a utilitarian approach towards marine resources (0 votes)
27. Lack of proper planning in the waterfronts, i.e., lack of high prestige zones by the sea (2 votes)
28. Mistakes resulting from recent transformation to market economy, i.e., shortcomings of the legal system, corruption, disregard for historical traditions (0 votes)
29. Overfishing (4 votes)
30. Lack of coherent approach to fisheries in the Baltic Sea region countries, i.e., different fish species and fish sizes are considered suitable for human consumption (1 vote)
31. Industrial development outpaces nature (0 votes)
32. Focus on short-term political gains (4 votes)

E) Lack of cooperation and consensus seeking

33. Sectoral thinking, including authorities and NGOs (3 votes)

34. Lack of coordination between local authorities and managing agencies responsible for marine and coastal areas (7 votes)
35. Lack of agreement between the stakeholders (8 votes)*
36. Problems with (scientific) data sharing (1 vote)

F) Low efficiency of the bottom-up initiatives

37. Progressive degradation of the areas that previously belonged to the shipyards (0 votes)
38. Low community involvement (4 votes)
39. Disregard for the opinions of various users and stakeholders (8 votes)*
40. Low commitments to undertake any actions resulting from strong belief that citizen initiatives can change nothing (10 votes)*

G) Lack of reliable information

41. Lack of knowledge about the threats resulting from the state of the marine environment (10 votes)*
42. Short-term and often misguided public campaigns (1 vote)
43. Dominance of negative information on the Baltic Sea in the media (4 votes)
44. Lack of promotional campaigns about sport activities and marine-related events (0 votes)
45. Stereotypes concerning the state of the marine environment, i.e., fears that the water is polluted, and health concerns arising from these beliefs (2 votes)
46. Weapons sunk in the sea (0 votes)
47. Information on the state of the environment, on regulations and restrictions, and on marine-related research does not reach the general public (5 votes)
48. Popular urban myths (4 votes)
49. Independent research does not reach the general public and are not regarded as trustworthy (3 votes)
50. Selective and partial information presented in the media (2 votes)

H) Insufficient education

51. Lack of understanding of environmental, social and economic relationships between the land and the sea (1 vote)
52. Lack of general knowledge about marine ecosystems and its influence on the quality of life (13 votes)*
53. Lack of marine education in Poland, i.e., Polish people do not know much about their sea (2 votes)
54. Lack of regional and marine education focusing on regional values and problems (6 votes)
55. Lack of marine educational programs in national media (4 votes)
56. Lack of general education (4 votes)
57. Misguided education on marine and environmental issues, e.g., the term 'sustainable development' is used without real understanding of what it really means (4 votes)
58. History of the region, i.e., large number of "new" immigrants and no sense of home (1 vote)
59. Issues with keeping the beach clean — need for more education and more restrictions (0 votes)

I) Inadequate social attitudes

60. Lack of attitude of common responsibility (16 votes)*
61. NIMBY („not in my backyard") attitudes (5 votes)
62. Lack of treating sea and land as interrelated (0 votes)
63. Contamination and eutrophication (2 votes)
64. Sewage (0 votes)
65. Lack of good practices in agriculture (2 votes)

Energy

A) Politics and regulations

1. Lack of legal regulations that could enhance rapid and effective developed of off-shore energy sector (6 votes)
2. Lack of studies that demonstrate the need to develop the off-shore energy sector in the national strategic documents (2 votes)

3. Lack of political will to answer questions if and when to support offshore energy sectors, problems with local co-financing of such investments (7 votes)*
4. Lack of shared vision and strategy between all stakeholders, including the agreement on energy mix (4 votes)
5. Ineffective system of granting location permissions and connection conditions to national electrical grid (0 votes)
6. Inability to co-manage resources and investments at regional and Member States levels; lack of common and coherent vision on the future of the Baltic Sea Region (1 votes)
7. Lack of transformation vision of the Polish energy sector towards development of renewable and off-shore energy sub-sectors (11 votes)*
8. Lack of regulations who or what organizations are entitled to submit protests during the energy investments (0 votes)
9. Limited share reserved for biomass energy within renewable energy sector in the Polish energy mix (0 votes)
10. Coastal regions lack vision in development of their energy strategies (2 votes)
11. Lack of national programme or strategy to coordinate development of the off-shore energy sector; lack of strategic assessment on how and where this sector should develop (1 vote)
12. Centralized system to support development of renewable energy; this barrier does not apply to micro-installations to generate renewable energy (0 votes)
13. New system to support renewable energy investments is not designed to support off-shore development (0 votes)
14. "Eat one's cake and have it, too": there is no possibility to develop renewable energy sector without proper support (3 votes)
15. Lack of possibilities and lack of will of the coastal regions to use marine areas for off-shore energy development (0 votes)

B) Economy

16. Lack of Polish producer of the renewable energy devices (3 votes)
17. Lack of financial system to support investments in distributed energy resources; distributed power systems are high risk investments for private financial institutions (8 votes)*
18. Lack of reliable market solutions to support aggregated/combined distributed energy sources (6 votes)
19. Too early start of solar energy sub-sector (0 votes)
20. High installation costs of renewable energy devices when compared with traditional sources (10 votes)*
21. Changes in electricity tariff: new unfavourable price is a barrier for prosumers to invest in renewable energy (1 votes)
22. Possibly-criminogenic character of inadequate subsidization of various energy sources (0 votes)
23. Underestimation of the importance of energy management; production fetishism against the effectiveness of the economy as a whole (5 votes)
24. Global competition on the coal market (0 votes)
25. Fluctuations in fuel and energy prices (1 votes)

C) Societal aspects

26. Insufficient information on renewable energy is provided to the society; black PR (8 votes)*
27. NIMBY attitudes: social mentality, social awareness, fears and concerns, 'yes' for investments but not my neighbourhood (2 votes)
28. Low social acceptance for new investments in energy infrastructure; people have many fears and concerns about these investments (6 votes)
29. Public consultation and social dialogue in Poland are fictional; opinions of the society are not included in the decision-making processes (3 votes)
30. Low societal awareness on the development of new renewable energy sector (11 votes)*
31. Media has no interests in energy sector and its problems (1 vote)

32. Lack of social awareness that we will run out of coal, and the introduction of new energy sources lasts between 50 and 100 years (1 vote)
33. Lack of effective and integrated management, inter-branch conflicts, and low level of participatory co-management (2 votes)

D) Knowledge and competences

34. Lack of technological knowledge and know-how how to develop off-shore sector (0 votes)
35. Little knowledge of decision-makers of various levels on the benefits and threats related to renewable energy, and especially off-shore and on the coast (10 votes)*
36. Decisions are undertaken based on incomplete knowledge; mythologizing and overemphasizing selected environmental issues; protecting "everything" because there is no knowledge what should really be protected (8 votes)*
37. The concept of 'sustainable development' is misunderstood by politicians, businessmen and technicians, and within their sub-groups; short-term vested interests prevail (4 votes)
38. Limited competences of the officials evaluating environmental aspects of the planned investments (7 votes)*
39. General lack of flexibility and adaptability, petrified procedures, treating existing maps as if holy writ (4 votes)
40. Dispersed knowledge (1 vote)

E) Conflicts

41. Lack of collaboration between all four stakeholders' groups — business, science, governance and society — towards common strategy for energy sector development (5 votes)
42. Conflicts of interests: fisheries, tourism, logistics, transportation, protection of the environment, renewable energy (off-shore wind farms and biogas), minerals extraction (shall gas), linear investments (13 votes)*
43. Greed, profit at all cost (5 votes)
44. Conflicting interests of various users and owners of the areas in the coastal zone (5 votes)
45. Problems with neutral valuation of coastal areas, and defining their most optimal combination of uses (0 votes)
46. Negative influence on the environment (environmental restrictions for investments and high natural values in the region) (3 votes)
47. Lack of or insufficient care about the cultural values of the landscapes and of its protection; insufficient zoning and spatial zoning regulations (1 vote)
48. Some investors underestimate the importance of environmental aspects of energy investments; this results in slowdown of the investment process (1 vote)

F) Technology

49. Infrastructure of electrical grids requires further development and modernization; there is a problem how to connect off-shore farms with the existing grids (13 votes)*
50. Current electricity grid does not allow to collect electricity from wind farms and other renewable energy sources (4 votes)
51. Lack of technological and market solutions for solar and wind energy storage; solar and wind energy are natural resources of the coast (12 votes)*
52. Technological barriers and related reduced potential for Polish hydrotechnical companies (2 votes)
53. Limited operating time of energy infrastructure: problems with future infrastructure recycling and recycling costs, permanent changes in the landscape (0 votes)
54. Lack of actual possibilities for energy storage (for micro-installations and distributed energy resources) (6 votes)
55. Lack of stable energy resources in the Pomeranian Region (1 vote)

Food supply

A) Incomplete knowledge on marine ecosystem functioning and on interactions between various parts of this ecosystem and fisheries

1. Industrial fisheries in the Baltic Sea (5 votes)
2. Lack of restrictions in fishing for flounders and sand eels for industrial purposes (5 votes)
3. Decrease in cod size (1 vote)
4. Overexploitation of fish species from the lowest trophic level, i.e., fish feeding on plankton (1 vote)
5. Discards (0 votes)
6. Sea should be a source of food and not a place for industrial fishing; lack of proper regulations concerning large industrial vessels (10 votes)*
7. Limited possibility to use pelagic fish for food, including no or limited market demand (5 votes)
8. Invasive fish species (1 vote)
9. Food waste — discards (7 votes)*
10. No infrastructure on land that would allow for fishing with no discards (0 votes)
11. Excessive seal population, increased infections with parasitic nematodes (*Anisakis*) within this population, threating the health of cod stocks (6 votes)*

B) Lack of integrated maritime management

12. Too many fishers fishing with nets, and too many nets per individual fisher (2 votes)
13. Pressures coming from energy sector and its demand for marine space, e.g., off-shore wind farms and nuclear power plants (1 vote)
14. Lack of accountable management of living resources that influence the fishery sector, e.g., cormorants (7 votes)*
15. Many users/stakeholders operate in the same limited space; problems with balancing space and economic needs — fisheries, maritime transport, wind farms, energy sector, tourism (4 votes)
16. Conflicts between different groups of users and stakeholders (8 votes)*
17. Too much focus on non-commercial use of sea space — restriction on fisheries resulting from strong pro-environmental activities and regulations (1 vote)
18. Too much environmental lobbying and too many protection measures on the sea, i.e., Coastal Landscape Park in the Puck Bay, restoration of reeds, Natura 2000 areas (1 vote)
19. Lack of effective measures concerning too large populations of cormorants and seals in the Puck Bay (6 votes)

C) Bureaucracy and centralized fishery management

20. Inappropriate distribution of fishing quotas between the Baltic Sea region Member States (0 votes)
21. Inadequate system of fishing quota allocation at the national level (3 votes)
22. Individual transferable fishing quotas (1 vote)
23. Lack of continuous and reliable fish supplies for the fish processing sector (3 votes)
24. Lack of flexibility in the use of fishing quotas (6 votes)*
25. Negative social implications of the current system of fishing quota allocation, i.e., problems with using the fishing quota at the national level (0 votes)
26. No dedicated environmental measures to protect spawning and nursery grounds (0 votes)
27. Inadequate regulations concerning fishery and environmental sector; many possibilities for various interpretations of these regulations (0 votes)
28. Inability to undertake quick decisions what makes it impossible to prevent problems (9 votes)*
29. Impractical regulations concerning coastal/artisan fisheries (3 votes)
30. Lack of flexibility in fishery management, including management of living resources, controlling procedures, management of fishing areas and fishing efforts (14 votes)*

D) Ineffective management of recreational fisheries

31. Recreational fishing is in fact a regular industry and a competitor to professional fisheries; however, no annual fishing quota apply to this sector (2 votes)

32. Lack of proper supervision over anglers and recreational fishers (7 votes)*
33. Disproportional penalties for not complying with legal restrictions for commercial and recreational fishers (0 votes)
34. Anglers and recreational fishers are not obliged to report their catch; as a result it is not possible to estimate the influence of recreational fishing on the fish stocks (13 votes)*
35. Lack of regulations concerning fishing techniques for recreational fishers (0 votes)
36. Breaking the rules concerning maximum daily catch by anglers and recreational fishers (2 votes)

E) Insufficient marine education and promotion of Baltic Sea fish

37. Competition from imported fish (0 votes)
38. Situation on international markets — the price of various fish species — significantly influences the profitability of the fishing sector in Poland (2 votes)
39. Lack of knowledge on marine ecosystems resulting in no or limited marine awareness among users and consumers (11 votes)*
40. High market demand for species from high trophic levels — cod or salmon — and low market demand for other species, e.g., sprat (1 vote)
41. Dioxins in the fish are presented and viewed as a threat by consumers, such a presentation limit market demand for wild fish (0 vote)
42. Consumer awareness is not based on scientific knowledge (16 votes)*
43. Overloading of fishing boats and no consequences concerning this overloading (1 vote)

F) Negative influence of human activities on the Baltic Sea environment

44. Overfishing and its influence on good environmental status of marine waters (3 votes)
45. Negative impact of agriculture on the Baltic Sea ecosystem, e.g., discharges of pollutants (dioxins) affect fish quality (4 votes)
46. Increasing number of sick fish in commercial catches (1 vote)
47. Chemical weapons from World War 2 sunk in the sea (3 votes)
48. Pollution from agriculture (2 votes)
49. Urban and industrial pollution (2 votes)
50. Environmental disasters on the sea (3 votes)
51. Lack of rapid coastal rivers, which are important breeding and nursing places for salmonids, eels or lampreys (4 votes)
52. Shipping pollution, i.e., waste water, garbage, bilge waters polluted with oil (3 votes)

Human health

A) Ecosystem and environment

1. Development of communes and municipalities is not based on sustainable use of local natural resources (5 votes)
2. Focus on use: lack of harmonious coexistence with sea and nature (8 votes)*
3. Lack of prevention measures to protect the Baltic Sea against pollutions (3 votes)
4. Deterioration of marine food quality due to pollution of the marine environment (3 votes)
5. Poor utilization of excess algae biomass washed up on the beach (0 votes)
6. High impact of agriculture on the Baltic Sea pollution level (2 votes)
7. Low use of mineral resources (2 votes)
8. Poor use of ecological potential of the sea, e.g., wind energy (5 votes)

B) Economy

9. Local products are expensive and not easy to buy (0 votes)
10. Poor and unstable economic situation of many Polish people; no money and time to buy high quality ecological products (7 votes)*
11. Lack of cooperation between sectors that benefit from the sea: polarization of interests (15) (5 votes)
12. Neoliberalism: pressures of the free market and growth (8 votes)*
13. Commercialization of coastal areas (3 votes)

14. Focus on economic growth in the short perspective only: healthy society contributes to country's well-being in the long term (3 votes)
15. Various conflicting groups of interests (34) (0 votes)
16. High costs of summer holiday by the seaside: high costs of food, accommodation and other holiday-related expenses (0 votes)

C) Eating habits and behaviours

17. Bad eating habits: little knowledge on nutritional and health benefits of eating fish (8 votes)*
18. Industrialization of food production (10 votes)*
19. Advertisements of dietary supplements: it is healthy food that should be promoted and not the supplements (3 votes)
20. Dietary supplements for children are too common: flood of aggressive advertising (3 votes)
21. Lack of health monitoring (3 votes)
22. Lack of simple food without supplements (0 votes)

D) Inadequate education

23. Lack of health prevention: children (and adults) do not spend enough time outdoor (7 votes)*
24. Poor knowledge on what sustainable development really is, resulting from poor education on sustainable development at schools (2 votes)
25. Lack of thinking that healthy society does not generate costs, that it generates wealth (2 votes)
26. Lack of long-term health education strategy to promote physical health and outdoor activities (7 votes)*
27. Lack of knowledge among media, politicians and local communities (5 votes)
28. Poor marine education outside coastal areas (4 votes)
29. Lack of knowledge on objectives and responsibilities of various administration bodies in the region (1 votes)
30. Focus on exams' results: school does not focus on its education role, instead it only prepares how to score best during exams (6 votes)*
31. Schools are not considered to be a part of creation and empowerment of local communities (4 votes)
32. Lack of marine culture and marine safety education (1 votes)

E) Infrastructure constraints

33. Infrastructure restrictions in the context of sustainable development (2 votes)
34. Lack of social pressure on municipalities and communes to properly organize seaside leisure areas (1 votes)
35. Lack of tourism and recreation offer outside the high season (2 votes)
36. Building and fencing in the coastal zone (2 votes)
37. Location of ports, yards and container terminals within the cities (0 votes)
38. Lack of sufficient transport connections, e.g., by water trams, within the Gulf of Gdansk (0 votes)
39. Moving-around-in-the-city-by-car-only paradigm: unprofitability of alternative means of transportation, including water transport between cities in the coastal area (2 votes)
40. Difficulties to reach seaside spa resorts by public transportation (0 votes)
41. Lack of vision for development of coastal tourism destinations; lack of ideas for their sustainable use and promotion (2 votes)
42. Financial constraints concerning development of infrastructure (5 votes)
43. Poor infrastructure in spa resorts (3 votes)
44. Spa tourism is poorly developed (4 votes)
45. Illegal constructions without proper sewage infrastructure (3 votes)
46. Poor infrastructure for disabled people in the coastal zone (0 votes)

F) Societal barriers

47. Improper relationships between various authorities and the society: local communities are very weak, and no cooperation concerning regional development is, therefore, possible (4 votes)
48. Lack of professional NGOs that could apply for external funds (in smaller and poorer places) (1 votes)
49. Car is a symbol of social position (1 votes)

50. Focus on restrictions and not on positive messages (2 votes)
51. Lack of sufficient cooperation between large cities to promote and achieve clean Baltic Sea (2 votes)
52. Lack of interests in local news and local problems; sensational news are more interesting (0 votes)
53. No sense of social justice and no sense that decisions undertaken can be influenced by the individuals and the society (4 votes)
54. Social apathy: low level of social engagement (1 votes)
55. Inability to cooperate with each other at the community level; distrust for grassroots initiatives (11 votes)*

G) Power and politics

56. Opposition of local authorities to organize seaside leisure areas (1 votes)
57. Lack of leader that could coordinate development at the regional level (0 votes)
58. Local authorities do not use knowledge and expertise of their citizens (0 votes)
59. Incoherent and chaotic legislation (8 votes)*
60. Authorities neither require nor promote the usage of good habits and good practices; there is a need for positive message about such habits and such practices (3 votes)
61. Too much focus on market profitability: some initiatives are worth supporting despite their unprofitability (6 votes)*
62. Lack of long-term strategic planning: focus on effects and not on root causes (5 votes)
63. Political pressure on small local media not to write on sensitive issues (0 votes)
64. The results of the public consultations are rarely considered in the decision-making processes (1 vote)

H) Financial barriers

65. No funding mechanisms to support development of seaside leisure areas infrastructure (1 vote)
66. No tax solution to support pro-ecological companies (5 votes)
67. Regional authorities do not fund research that could lead to solving local problems (11 votes)*
68. Lack of proper support for high risk projects; such projects generate high costs (3 votes)

Tourism and leisure

A) Short tourism season

1. Seasonal tourism (2 votes)
2. Seasonality — low demand for tourist services outside the high season (14 votes)*
3. Holiday season determined by relatively short school holidays (6 votes)
4. Everyone goes on holiday at the same time, no differences in vacation dates between various provinces (0 votes)

B) Limited offer off-season

5. Little focus on eco-tourism throughout the year (3 votes)
6. Poor promotion of the Baltic Sea as a tourist attraction for active recreation beyond the high-season (0 votes)
7. Lack of alternatives to beach-oriented tourism (1 vote)
8. Lack of tourist services off-season (14 votes)*
9. Lack of the tourist offer based on the regional values caused by poor knowledge about the potential of local identity for the sector (5 votes)
10. Insufficient promotion of the coastal areas as a place to visit throughout the year (4 votes)

C) Legal barriers

11. Lack of regulation to allow for long-term development of beach infrastructure (9 votes)*
12. International legal regulations, including these concerning the protection of the environment (0 votes)
13. Regulations that limit activities in the coastal areas, e.g., concerning alcohol, smoking, dogs (9 votes)*
14. The beaches are formally administered by the central government, not local authorities (0 votes)
15. Lack of regulations concerning recreational fishing and fishing vessels for recreational purposes (4 votes)

D) Conflict of interests

16. Limited space for human uses on the sea and in the coastal areas (4 votes)
17. Conflicts of interest between stakeholders and their values (9 votes)*

18. Natura 2000 areas are limiting for many stakeholders (1 vote)
19. Conflicts between authorities and business (6 votes)
20. Different spatial uses — fishing, sailing, conservation, military — are competing for space with tourism (3 votes)
21. Insufficient cooperation between coastal communes and municipalities, e.g., limited sharing of information, lack of common promotional strategy, conflicting timing of events (4 votes)
22. The greed of local authorities (2 votes)

E) Inconsistent spatial planning

23. Lack of plans and strategies covering the entire coastal area (5 votes)
24. Poor spatial and urban planning in the coastal areas (6 votes)
25. Lack of coherent vision for the development in the coastal areas (13 votes)*
26. Lack of zoning and spatial chaos (1 vote)
27. Lack of conservation of regional traditional architecture and natural landscape in the coastal areas; chaotic planning in this area (6 votes)

F) Shortcomings in local infrastructure

28. Lack of infrastructure in the coastal areas for tourists and residents (13 votes)*
29. Lack of infrastructure in marinas (0 votes)
30. Poor road infrastructure (6 votes)
31. Poor infrastructure concerning accommodation, possibility to organize cultural events, poor recreation for active lifestyle and in marinas (2 votes)
32. Limited public transport outside high season (4 votes)
33. Poor recreational infrastructure along the sea, e.g., roads, sidewalks, bike lanes (2 votes)
34. Few guarded beaches (0 votes)

G) Low ethics in business

35. Law quality of food services; businesses cheat on tourists (5 votes)
36. Low quality of tourist services; you have to pay for every little thing (10 votes)*
37. Bad ratio: price to quality (8 votes)*

H) Lack of education and information

38. Lack of knowledge among potential tourists and visitors that the coastal region can be attractive and worth visiting also off-season (10 votes)*
39. Little knowledge about local marine-related culture and tourism (2 votes)
40. Lack of understanding about the goals and tasks for the public and private sector (0 votes)
41. Contamination of the sea and beaches (3 votes)
42. Stereotype that Baltic Sea equals a trash bin (2 votes)
43. Lack of regional education in the school curriculum and of school trips to the coastal areas (0 votes)
44. Lack of promotion of health benefits of sea water; no easily available information on water temperature; strong belief that Baltic is always cold (0 votes)
45. Deep stereotype that the sea side can be visited only in the summer (51) (6 votes)
46. Low social awareness on marine issues (8 votes)*

I) Informational chaos

47. Lack of information of what is allowed on the beach and what is not (5 votes)
48. Media: sensational news rather than a positive (but true and science-based) view on the Baltic Sea (8 votes)
49. “Sponsored weather forecast”, i.e., weather forecast often does not show real situation on the sea side (0 votes)
50. Lack of a system of warnings about beaches closures because of cyanobacteria blooms (1 vote)
51. Too many regulations that are difficult to explain or inexplicable (8 votes)*

Nature conservation

A) Conflicts

1. Lack of integrated and multidisciplinary scientific data; no common interpretations of the same data sets (2 votes)
2. Many users of the same marine space with various ideas how marine environment should be used, and how they should be allowed to use marine resources (0 votes)
3. Protection/management plans focus on one or selected elements of the habitats; traditional professions and ways of living, such as fisheries, are disregarded when these plans are prepared, hence the larger picture is lost (1 vote)
4. Conflicts of interests: no attempts for reconciliation (14 votes)*
5. Tourism sector focuses too much on short term incomes at the expense of the natural environment (0 votes)
6. "Seamen" vs "landsmen" dilemma: sea is forgotten among the general public outside the coast; belief that sea begins on the beach and not in a tap at home (1 vote)
7. Contradictable, irreconcilable and often uncovered values behind motivations and reasoning of various social actors (9 votes)*
8. High implementation costs of pro-environmental solutions (3 votes)
9. Lack of mutual understanding between scientific community, decision-makers, fishers and NGOs (2 votes)
10. Lack of agreement and mutual understanding between agriculture and pro-conservation sectors (3 votes)
11. High pressures from developing tourism sector (0 votes)
12. High pressures put on local communities from the outsiders (0 votes)
13. Difficulties to balance energy demands and a need to protect marine and coastal ecosystems (0 votes)

B) Poor implementation

14. Lack of integrated environmental monitoring (0 votes)
15. Lack of coherence between available scientific knowledge and data, and administrative decisions undertaken (9 votes)*
16. Insufficient supervision of the shipping sector, and insufficient traffic monitoring (0 votes)
17. Poor implementation of the regulations that limit access to the dunes (0 votes)
18. Protection measures should focus on important phenomena and important species; often too much attention is put on insignificant details and ineffective actions (0 votes)
19. Lack of proper review and evaluation of scientific knowledge and data which is used to undertake and implement administration, and legal decisions and restrictions (1 vote)
20. Too broad scope of the Environmental Impact Assessments; EIAs are often not adequate to certain types and sizes of the investments (0 votes)
21. Failure to comply with existing regulations; new laws are established instead of improving the efficiency and effectiveness of the existing regulations (3 votes)
22. Lack of marine spatial plans (9 votes)*
23. Pressures from coastal municipalities to increase commercial use of the coastal zone (0 votes)
24. Lack of control over the implementation and achievement of conservation measures and sustainable development principles; planning vs reality (9 votes)*

C) Lack of awareness

25. Politicians have no understanding of sustainable development (1 votes)
26. Low ecological awareness resulting from poor ecological education (1 vote)
27. Lack of promotion of marine culture and awareness of the sea (0 votes)
28. Low ecological awareness (9 votes)*
29. Lack of marine education at schools (3 votes)
30. Lack of understanding that protected areas are established for animals and not for people; this results from poor ecological education (0 votes)
31. Lack of awareness that there are too many tourists compared to carrying capacity of coastal ecosystems (0 votes)

32. Lack of ecological education targeted at adults; we need not only to educate children as knowledge and awareness can increase through the observed behaviors of other and the influence of the surrounding social environment (8 votes)
33. Decision-makers have insufficient knowledge about the sea and its ecosystems (2 votes)
34. Lack of understanding and common perception that ecosystems are dynamic and are changing all the time (4 votes)
35. Lack of education on the consequences of increased urbanization in coastal agglomerations, and on associated conflicts of interests and needs of various actors in these coastal cities (1 vote)
36. Implementation of EU directives without understanding their aims and purposes (1 vote)

D) Attitudes

37. Disregard for scientific knowledge and available data when planning conservation measures for particular habitat, hence lack of credibility for conservation measures (1 vote)
38. Arrogance of power: disregard for the consequences of wrong decisions (9 votes)*
39. Mentality: Polish people do not like restrictions and limitations, and often do not follow them (0 votes)
40. Lack of willingness to self-restraint for the sake of a common good (8 votes)*
41. Lack of a common vision on the aesthetics of space and spatial order; contradictions occur not only at the community level but also at individual level (2 votes)
42. Lack of ecological morality; awareness is not enough (6 votes)
43. Lack of recognition and acknowledgement of natural threats to the protected species; too much attention is given to anthropogenic pressures (0 votes)
44. Media create negative picture of the Baltic Sea and Poland in general; there is a need for more self-promotion and self-esteem (0 votes)
45. Participation in the public consultations only under assurance that their results will comply with own pre-defined views (0 votes)
46. Local politicians know better what is needed by local communities; they do not listen to people (2 votes)
47. Contradictory expectations concerning the government(s): “leave us with peace” or “use your power and rule” (5 votes)
48. Deep-rooted thinking: “Sea can handle that!” (3 votes)

E) External processes

49. Deep-rooted distinguish between factors and processes that are “natural” or “artificial” (“anthropogenic”) (1 vote)
50. On-land pollution (11 votes)*
51. Eutrophication (10 votes)*
52. Emissions of nitrogen oxides from the ships (0 votes)
53. Processes that are not dependent on human activities, e.g., inflows to the Baltic Sea (4 votes)

F) Inadequate communication

54. Lack of proper information sharing between public administration and scientific community (4 votes)
55. Lack of proper dissemination of the results of environmental monitoring and scientific research (4 votes)
56. Biased information: media does not always provide objective information (6 votes)
57. Lack of cooperation between the representatives of public administration of various levels and investors (5 votes)
58. Lack of sufficient information about the environment to support decision-making at all levels (2 votes)
59. Lack of mutual dialogue (8 votes)*

G) Lack of vision

60. Lack of state policy that would focus on commercialization, and on collaboration between science and business (5 votes)
61. A high number of coastal cities for which the sustainable development is not a strategic priority (2 votes)
62. Lack of a coherent vision of sustainable development: no implementable strategy at central level (18 votes)*

63. Failure to reconcile various activities that take place on the sea; no recognition of the importance of compensations (3 votes)
64. Too much focus on compensations which are short term solutions; there is a need for solutions that will be sustainable in the long term (5 votes)

Transport

A) Lack of communication and collaboration

1. Conflict between nature and economic development (2 votes)
2. Lack of cooperation between different actors (7 votes)*
3. Low social capital (1 votes)
4. Antagonistic relationships between cities and ports (2 votes)
5. Lack of public consultation, and lack of real public influence on decisions undertaken (5 votes)
6. Lack of effective lobbying for maritime economy (6 votes)
7. Lack of proper connections between business and science (8 votes)*
8. Lack of cooperation between different ministries and departments (7 votes)
9. Need for new courses designed together by universities and employers (0 votes)
10. Shifting responsibilities (to implement the pro-environmental regulations at the end-users) (0 votes)
11. Limited social acceptance for new investments in the harbours (1 votes)

B) Lack of efficient and coherent maritime and transport policies

12. Lack of maritime spatial plans for the Polish marine waters (5 votes)
13. Myopic local policies of the large harbour cities (Gdynia, Gdansk, Szczecin, Swinoujscie) (7 votes)*
14. Harbours are situated close to city centres what causes problems with noise and pollution, and protests against further ports' development (0 votes)
15. Lack of consolidated and realistic transport policy (7 votes)*
16. Lack of interest in maritime economy at central/state level (10 votes)*
17. Delays in investments in harbour terminals (e.g., gas terminal in Swinoujscie) (1 votes)
18. No concerns to promote and protect running rights for Polish maritime transportation sector (0 votes)
19. Lack of support to enhance development of national companies in transportation sector (2 votes)
20. Competition for space with off-shore energy sector (0 votes)
21. Polish ports do not support the development of the associated industry in the region, they rather serve as a place where cargo is unloaded and immediately transported to other regions; no will and understanding that it should be changed (0 votes)
22. Competition for space with marine tourism (0 votes)
23. Lack of appropriate understanding and use of data on marine environment for off-shore investments (4 votes)
24. Inadequate monitoring of marine environment, inadequate assessment of its state (2 votes)
25. Lack of accessibility to data on marine environment; often lack of any data at all (3 votes)
26. Insufficient monitoring and evaluation of the implementation of sectoral development strategies (1 votes)

C) Infrastructural barriers

27. Lack of transport connections on the land (to complement maritime transport) (8 votes)*
28. Poor infrastructure on land: road and rail systems (9 votes)*
29. Insufficient infrastructure in Polish harbours (4 votes)
30. Inadequate ICT systems to support management of cargo clearance (0 votes)
31. Lack of sufficiently developed inland waterways (3 votes)

D) External conditions

32. Overall political and economic situation: global and in the Baltic Sea Region (14 votes)*
33. Geopolitical situation (3 votes)
34. Weather conditions on the sea (0 votes)
35. Competition from truck transport (2 votes)
36. Changes in demand for maritime transport (0 votes)

37. Geographical limitations (1 votes)

E) Financial and technological constraints

38. Lack of technological solutions (to meet certain environmental regulations) (6 votes)
39. Companies have limited funds to implement pro-environmental solutions; these solutions increase operational costs (3 votes)
40. Low commercialization rate (3 votes)
41. Pro-environmental technologies are expensive (12 votes)*
42. Long transit time in case of maritime transport (0 votes)

F) Inadequacies in the educational processes

43. Lack of knowledge in small companies from maritime sector on financial resources available through EU programmes (2 votes)
44. Education policy does not match the needs of maritime sectors (4 votes)
45. Insufficient marine education at all levels of school education (1 votes)
46. Decline in the higher education quality due to the demographic decline (0 votes)
47. Lack of practical maritime education for young people who want to start working on the sea; improper certification system (1 votes)
48. Lack of maritime professionals with vocational secondary education (4 votes)
49. Devaluation of recognition of education importance and education quality (0 votes)
50. Imperfect system of (maritime) higher and vocational training (8 votes)*
51. Lack of appreciation for maritime education and maritime careers (0 votes)
52. Difficulties to properly fund needed research (5 votes)
53. Poor financing system of public higher education (0 votes)
54. Mind-set of freight forwarders: they consider maritime transport as more difficult than truck transport (0 votes)

G) Legal constraints and bureaucracy

55. Environmental legislation is too strict (3 votes)
56. The overall set of sector-related legislation, including environmental rules and restrictions (6 votes)*
57. Lack of environmental regulations that are coherent, appropriate and well-suited to sector situation and to international regulations; the existing regulations limit growth and development (9 votes)*
58. Excessive administration procedures related to custom clearance (1 votes)
59. Environmental hazards connected to maritime transport, and especially transportation of liquid fuels (0 votes)
60. Implementation of the Nitrates Directive (that will have a negative influence on the whole maritime transportation sector in Poland) (8 votes)*
61. Too many cargo inspections in Polish harbours (4 votes)
62. Inadequate financial regulations concerning Polish sailors, e.g., taxation and social securities (0 votes)
63. No ships with Polish flag state (2 votes)
64. Limitations arising from seashore protection in passenger transportation in the context of tourism and recreation (0 votes)
65. No plans to combat potential threats and pollutions on the coast (2 votes)

Appendix 2 List of barriers generated by representatives of the coastal communities

The first workshop for coastal community

A) Social attitudes

1. Consumerism (37) (GP1) (2 votes)
2. A utilitarian approach to nature: nature is considered to be human's property and, therefore, humans can exploit it without any limitations (39) (GP1) (5 votes)*
3. Insufficient marine food culture (52) (GP1) (0 votes)
4. Dog owners do not clean after their pets (8) (GP1) (0 votes)
5. Lack of social responsibility of local citizens towards coastal cities; this lack of responsibility is especially evident in simple daily activities that everyone undertakes (16) (GP1) (10 votes)*
6. Lack of efficient public consultations: decision-makers are not interested to listen to citizens' opinions and recognise their needs; these needs and opinions are not, therefore, included in the decisions undertaken (20) (GP1) (4 votes)*
7. Individualism: no appreciation for the common goods (13) (GP1) (3 votes)
8. Longing for the past and disregards for the current problems (48) (GP1) (3 votes)

B) Degradation of the natural environment

9. Deforestation (18) (GP1) (3 votes)
10. Pollution of the Baltic Sea caused by the ships (3) (GP1) (1 vote)
11. Too many large-format advertisings (53) (GP1) (1 vote)
12. Baltic Sea fish are sick and, therefore, cannot be eaten; this is because of the water pollution (5) (GP1) (0 votes)
13. Municipal and industrial pollutions (4) (GP1) (7 votes)*
14. Chemical weapons sunk during WW2 (2) (GP1) (4 votes)
15. Air pollution resulting from a large number of cars in the region; cars owned by both the residents and the tourists are the problem (24) (GP1) (4 votes)
16. Mass tourism (21) (GP1) (0 votes)

C) Infrastructure

17. Insufficient public transport (17) (GP1) (6 votes)*
18. Insufficient number of trash bins and toilets, especially in the vicinity of the beaches (22) (GP1) (4 votes)
19. Insufficient development and use of the ecological means of transport, including city bicycles, roller skates, Segway vehicles, trams, trolleybuses, local trains and electric cars (31) (GP1) (2 votes)
20. Pedestrians and cyclist are not given priority in the cities' communications systems; cars are over-privileged (15) (GP1) (1 vote)
21. Roads and tourists attractions are not properly marked (23) (GP1) (3 votes)
22. Differences in the development of various city's districts: some areas are very attractive for the investors and some are not developing at all; local authorities do nothing to change it (34) (GP1) (4 votes)
23. Shopping centres built within the cities' borders threaten local communities by destroying local businesses (36) (GP1) (2 votes)
24. No proper planning of the coastal belt: construction of houses, hotels and restaurants is not properly supervised (19) (GP1) (3 votes)
25. There are no places on the beach where dogs are allowed in summer (7) (GP1) (1 vote)

D) Legal regulations

26. Too few police patrols responsible for the safety of the residents and tourists; the problem is relevant not only for the city districts but also for the beaches (10) (GP1) (1 vote)
27. Excessive bureaucracy that hampers economic development (12) (GP1) (2 votes)

28. A great number of defective legal acts that are ineffective due to obvious loopholes or other mistakes (33) (GP1) (1 vote)
29. Coastal municipalities do not prioritise ecology in their policies and strategies; in addition, there is no state strategy to support pro-environmental solutions and enhance municipalities to do so (50) (GP1) (0 votes)
30. Legal acts change too often (9) (GP1) (4 votes)
31. Unclear regulations, which are hard to understand and to interpret (11) (GP1) (11 votes)*
32. Pseudo-ecological regulations issued and enforced by the European Union; examples include the obligation to use special types of light bulbs or to use biomass in the power plants (32) (GP1) (0 votes)
33. Existence of the European Union (43) (GP1) (4 votes)

E) Financial aspects

34. Too high operating costs (including high taxes) for public and private companies (28) (GP1) (8)*
35. Limited budgets of the coastal cities that could be used to support their development (1) (GP1) (0 votes)
36. Ecological food is very expensive (45) (GP1) (2 votes)
37. Churches do not pay taxes (38) (GP1) (5 votes)*
38. Lack of true free market; no social control over taxation, overregulated money flows and too much governmental control over the economy (30) (GP1) (7 votes)*

F) Education and information

39. No or insufficient education on sustainable development at schools (25) (GP1) (8 votes)*
40. Lack of long-term thinking (46) (GP1) (6 votes)*
41. No promotion of the local and regional products (49) (GP1) (1 vote)
42. Media do not provide reliable information: they rather look for negative and sensational news (27) (GP1) (0 votes)
43. There are not enough educational campaigns that encourage people to undertake more sustainable choices in their every-day life (47) (GP1) (1 vote)

G) Power and politics

44. Aquaculture is not properly supervised: fish are not fed with high-quality fodder, and the consumers do not receive high-quality products (6) (GP1) (2 votes)
45. Fresh sea fish from the Baltic Sea is not available in the coastal cities (51) (GP1) (0 votes)
46. No policy to protect marine resources: private interests prevail over the public interests, and social responsibility of business does not work in practice (14) (GP1) (2 votes)
47. Large international corporations threaten the existence and development of regional companies (44) (GP1) (4 votes)
48. Agriculture is focused on mass production (41) (GP1) (3 votes)
49. Overall political and economic situation after the transition period in Poland; serious and long-lasting problems resulting from this period (35) (GP1) (6 votes)*
50. Traditional farms are not supported by the state (40) (GP1) (0 votes)
51. Seasonality in coastal tourism (29) (GP1) (2 votes)
52. A large amount of trash is being imported: there is no real control over this process (26) (GP1) (1 vote)
53. Traditional methods of production (crafts) are slowly disappearing (42) (GP1) (0 votes)

The second workshop for coastal community

A) Transport and communication

1. The coast and the beaches are threatened by the sea; a lot of money needs to be invested in protecting the cliffs, the Hel Peninsula or the Vistula Spit (8) (GP2) (0 votes)
2. Public transportation is not well-thought, e.g., too large gaps between the trains and the platforms; such architectural barriers make public transport difficult to use for some groups of users, including older people and young children (9) (GP2) (1 vote)
3. Coastal municipalities around the Gulf of Gdańsk are poorly connected (insufficient number of roads, buses, trains or ferries) (10) (GP2) (5 votes)
4. Joint ticket system in the Tricity area (metropolitan ticket) is not working properly (11) (GP2) (2 votes)

5. Problems to travel, even within larger cities, by public transport (24) (GP2) (11 votes)*
6. Insufficient information, especially in foreign languages, on public transport (44) (GP2) (3 votes)

B) Power and control mechanisms

7. Lack of cooperation between different authorities in the region (15) (GP2) (7 votes)*
8. Coastal municipalities and communes do not cooperate to support sustainable development around the Gulf of Gdańsk (16) (GP2) (10 votes)*
9. Sustainable development has a low priority in the national politics; there are more urgent issues, such as poverty and education, that are more important for the national and regional governments (33) (GP2) (1 vote)
10. Lack of or insufficient public consultations (45) (GP2) (2 votes)
11. Citizen budgets do not support citizens' initiatives; rather they are treated as an excuse by the municipalities not to provide their citizens basic services such as renovations of sidewalks, street or playgrounds (47) (GP2) (0 votes)

C) Central and local management

12. Officials and clerks lack competences needed to perform their duties (18) (GP2) (5 votes)*
13. Unclear local regulations (19) (GP2) (0 votes)
14. Bureaucracy (20) (GP2) (10 votes)*
15. Fiscal laws are too detailed and difficult to understand (39) (GP2) (5 votes)

D) Society

16. Tourists leave a lot of rubbish on the beaches (2) (GP2) (0 votes)
17. Consumerism and slow degradation of the local businesses (5) (GP2) (2 votes)
18. Civil society in Poland is still not well-developed what it implies limited responsibility for common goods (17) (GP2) (9 votes)*
19. Insufficient social awareness of what sustainable development is; this insufficient awareness is further linked with inadequate care for the natural ecosystems (25) (GP2) (5 votes)
20. Many people do not want to work but only use social benefits (26) (GP2) (0 votes)
21. People do not get involved in local initiatives (42) (GP2) (2 votes)
22. A strong belief that individual people or groups of people can change nothing (46) (GP2) (2 votes)

E) Labour market

23. Lack of sufficient funding to support sustainable development in the Gulf of Gdańsk region (23) (GP2) (5 votes)*
24. Social inequalities concerning available opportunities and salaries (27) (GP2) (9 votes)*
25. Lack of well-educated people that could meet the requirements of the modern labour market (37) (GP2) (10 votes)*
26. Problems with the education system in Poland: schools and universities do not teach practical skills (38) (GP2) (5 votes)

F) Tourism

27. Lack of ideas and strategies to develop marine tourism around the Gulf of Gdańsk; in addition, access to existing infrastructure is very limited (21) (GP2) (10 votes)*
28. The Gulf of Gdańsk region is not truly interested in developing coastal tourism; there are no real efforts to develop public transport nor to revitalise old historic buildings (30) (GP2) (0 votes)
29. Insufficient promotion of the Gulf of Gdańsk region (34) (GP2) (4 votes)
30. Focus on one-time customers (35) (GP2) (1 vote)
31. Poland is considered abroad as a sad country with unfriendly people (36) (GP2) (0 votes)
32. Insufficient coastal infrastructure; there are not enough piers, wharves or marinas (41) (GP2) (0 votes)
33. No public toilets close to the beach (43) (GP2) (0 votes)
34. The insufficient revitalisation of the historical marine-related places; their insufficient use for tourism (49) (GP2) (5 votes)
35. Too many windbreaks on the beach (50) (GP2) (0 votes)

G) Ecology

36. Chemical weapons sunk in the Baltic Sea (1) (GP2) (5 votes)
37. Pollution of marine waters (3) (GP2) (4 votes)
38. Badly designed system of the collection of the municipal rubbish (4) (GP2) (1 vote)
39. The disappearance of the coastal dunes (31) (GP2) (0 votes)
40. Nature conservation and (tourism) infrastructure are not well balanced; investments are given priorities over the protection of natural ecosystems (32) (GP2) (6 votes)*
41. Limited access to high-quality ecological food, including fresh fish (40) (GP2) (2 votes)

H) Investments in the region

42. Electricity is expensive: citizens and companies have to pay too much for it (6) (GP2) (2 votes)
43. There is no strategy to develop shipbuilding industry (7) (GP2) (2 votes)
44. No appreciation for the high-quality public space; private interests and private investments are considered more important than public interests (12) (GP2) (1 vote)
45. Lack of well-though spatial policy at the municipal level (13) (GP2) (1 vote)
46. Too many apartments are built in the vicinity of the beach and the sea; areas close to the coast should be left for recreational purposes (14) (GP2) (0 votes)
47. Limited support for the renewable energy sector, especially the wind farms (22) (GP2) (1 vote)
48. Very expensive flats in some coastal cities (e.g., in Sopot); this issue is further exacerbated by the lack of proper policy to enhance social housing (28) (GP2) (2 votes)
49. Young people do not have free access for sport and recreational amenities, including tennis courts, gyms and swimming pools (29) (GP2) (3 votes)
50. Inappropriate investments that do not support development in the region (48) (GP2) (7 votes)*

The third workshop for coastal community

A) Local communities (we for ourselves)

1. There is too little focus and too little priority given the opinions and priorities of the communities (e.g., Kasubians, fishers, people working on the sea) during public consultations related to the governance of the region (6) (GP3) (1 vote)
2. Water sports are not properly developed and properly promoted (20) (GP3) (0 votes)
3. Lack of the sea and water culture (21) (GP3) (2 votes)
4. Too high prices of the coastal summer attractions; such prices are designed to make tourists pay as much as possible, but they disregard the needs of local citizens (22) (GP3) (1 vote)
5. Tourism and leisure are targeted at tourists only; lack of offer and actions targeted at local citizens (23) (GP3) (1 vote)
6. Limited availability of local and regional products and their commercialisation (34) (GP3) (7 votes)*
7. Local citizens do not feel that they are living by the seaside, i.e., limited personal connections with the sea (36) (GP3) (0 votes)
8. It is very difficult to buy fresh fish from the region; there are almost no coastal fisheries left (37) (GP3) (2 votes)
9. Lack of appreciation towards natural and cultural resources in the Gulf of Gdańsk region (43) (GP3) (6 votes)*
10. Illegal parking in the coastal areas; besides there is no willingness to do something about it as the local authorities do not want to irritate tourists (46) (GP3) (0 votes)
11. There are less and less agriculture and orchard lands close to big cities; it makes difficult to buy fresh food directly from the producers (60) (GP3) (2 votes)

B) Science and education (the modern nation)

12. Poor quality of the public education: it does not teach people how to be a conscious consumer (17) (GP3) (3 votes)
13. Lack of education on local and regional ecosystems (18) (GP3) (5 votes)*

14. Limited financial resources for research and innovation (29) (GP3) (6 votes)*
15. Transfer of ideas and innovations abroad; profits from these innovations are not used to support the Polish economy (32) (GP3) (7)*
16. Lack of education on the safety issues, including the pollution of the environment (49) (GP3) (1 vote)

C) Social awareness (we, you, they)

17. There is a lot of trash on the beach (5) (GP3) (2 votes)
18. Lack of spatial order: aesthetics is not a deciding factor for the housing industry (7) (GP3) (0 votes)
19. Wide acceptance for the grey economy (17) (GP3) (1 vote)
20. Lowe self-esteem (12) (GP3) (3 votes)
21. Low birth rate (14) (GP3) (2 votes)
22. Lack of social responsibility (15) (GP3) (8 votes)*
23. Lack of long-term thinking: people nowadays live fast, and they do not have time for deeper reflections (16) (GP3) (2 votes)
24. A rapid change in the social-cultural patterns: nowadays much more is permitted than it used to be in the past; as a result people care less about each other and the environment (19) (GP3) (2 votes)
25. Lack of long-term thinking including thinking about future long-standing consequences (38) (GP3) (4 votes)
26. Conformity and preferences to do things in an easy way (42) (GP3) (2 votes)
27. Consumerism (50) (GP3) (3 votes)
28. Low societal awareness about the consequences of eating habits on the quality of the environment, i.e., limited willingness to limit meat consumption and replace meat with other sources of proteins such as fish and other marine invertebrates (63) (GP3) (0 votes)

D) Law and administration (decision-makers for us)

29. High taxes put on the companies (1) (GP3) (3 votes)
30. Bad working conditions, including a high ratio of seasonal employment in the tourism sector (10) (GP3) (1 vote)
31. The employees are not properly protected by the legal regulations; in practice, labour law protects employers and not employees (13) (GP3) (2 votes)
32. Too many rules and regulations (31) (GP3) (9 votes)*
33. High labour costs (45) (GP3) (1 vote)
34. Too large differences in salaries, especially between young people and people with some experience (47) (GP3) (2 votes)
35. No long-term policies and strategies: after each election, the new government usually cancels all initiatives undertaken by its predecessor (48) (GP3) (1 vote)
36. It is not clear which agency or which authority is responsible for a given issue; the system of competences and responsibilities is complicated, and it is difficult for an average person to find help (55) (GP3) (3 votes)

E) Environment (we for the future)

37. Inefficient garbage and recycling policies; the problem is especially difficult concerning collecting and recycling garbage coming from ships (3) (GP3) (0 votes)
38. Harmful investments that deteriorate the state of the natural environment, e.g., streams regulation or marina at the end of the pier in Sopot (4) (GP3) (0 votes)
39. Decreasing number and size of the green areas in the cities; new investments are not required to provide enough greenery in their vicinity, and the existing green areas are often into parking lots (9) (GP3) (0 votes)
40. Not all wind turbines are environmentally-friendly: in Poland, the old technology predominates (35) (GP3) (0 votes)
41. Too large human impact on the environment, i.e., the industry develops too rapidly, and humans produce too much rubbish (39) (GP3) (4 votes)
42. The decreasing size of natural habitats (40) (GP3) (3 votes)
43. Pollution of the natural environment (41) (GP3) (7 votes)*

44. Too many packages are being used and — as a result — there is too much municipal waste (44) (GP3) (3 votes)
45. Natural beaches are not properly protected (51) (GP3) (0 votes)
46. Common use of substances that are poisonous for the natural ecosystems, e.g., GMO and Roundup (58) (GP3) (5 votes)*
47. Overfishing (59) (GP3) (0 votes)
48. A small number of ecological farms (61) (GP3) (1 vote)

F) Infrastructure (what bothers us)

49. Lack of comprehensible and long-term planning (8) (GP3) (7 votes)*
50. Lack of or insufficient public transportation in the region (33) (GP3) (8 votes)*
51. Rivers following into the Baltic Sea are not properly supervised and maintained (52) (GP3) (1 vote)
52. There are not enough beaches where dogs are allowed (57) (GP3) (0 votes)
53. Too little bicycle paths (62) (GP3) (1 vote)

G) Tourism (we for the guests)

54. Seasonality (2) (GP3) (3 votes)
55. Insufficient accommodation opportunities in the summer season (24) (GP3) (0 votes)
56. Insufficient promotion of the Pomeranian region (25) (GP3) (4 votes)
57. Information about the region and accommodation opportunities are not properly updated in the tourists' information centres (26) (GP3) (0 votes)
58. There is no one website, where it would be possible to find all information about the forthcoming events in the area (27) (GP3) (2 votes)
59. Big coastal cities (e.g., Gdańsk) do little to disseminate information about cultural events both among tourists and citizens (28) (GP3) (1 vote)
60. Many information is distributed only through the internet (digital exclusion) (30) (GP3) (1 vote)
61. There are not enough attractions for children in the coastal towns, e.g., lack of aquaria (53) (GP3) (2 votes)
62. Attractions of the rural areas in the region are much less advertised than these in the big cities; this results in big differences in their accessibility (54) (GP3) (6 votes)*
63. There are too many restrictions concerning what is allowed to do on the beach (56) (GP3) (0 votes)