



Contribution to the trilateral scientific Social Science Research Agenda

Thematic Strand:

“Economics and Society in the Wadden Sea Region”

Version August, 2016

Committee members:

1. Professor Torben Dall Schmidt, Department of Business and Economics, University of Southern Denmark, tds@sam.sdu.dk (chair)
2. Professor Dr. Jouke van Dijk, Faculty of Spatial Science, University of Groningen, jouke.van.dijk@rug.nl
3. Professor Dr. Ingo Mose, Institut for Biology and Environmental Sciences, Carl von Ossietzky Universität, Oldenburg, Ingo.Mose@uni-oldenburg.de

Preamble

The Wadden Sea is one of the world's most valuable stretches of coastline. It extends roughly 500 km along the southeast coast of the North Sea from Den Helder in the Netherlands via the German coast to Blåvands Huk in Denmark. The area contains the world's largest coherent inter-tidal flats: 4700 km² emerge at low tide. The unique natural values of the Wadden Sea are internationally recognized as World Heritage Site (WHS). A specific feature of the WHS is that it is located (see Figure 1) relatively close to substantial concentrations of populations, like e.g. the big city Hamburg, and also with important concentrations of industrial activities with large numbers of jobs, especially in and near harbour areas. At present, an estimated 3.5 million inhabitants live in the 17,500 km² of land that is at risk of severe flooding (i.e. less than 5 m above and in places even below mean sea-level), while about 1 million inhabitants live on the islands and administrative regions directly bordering the Wadden Sea.

The Wadden Sea region is heterogeneous in being situated in three countries and various sub-regions with different local foci and that, therefore, future strategies will have to address the regional differences and interactions between the sub-regions. The spatial dimension of the Wadden Sea Region (WSR) defined by the Wadden Sea Forum (WSF)

includes three Dutch provinces, fourteen German municipalities or cities and three Danish municipalities (see Figure 2). The research questions on the thematic stand “Economics and Society” will use this spatial definition as the baseline for a contribution to the Trilateral Research Agenda. Considering the orientation towards economic and societal development for residents, guests and business within the WSR, the contribution will though take into account that economic systems are spatially interlinked. The contribution will therefore not consider the 3+14+3 administrative units of WSR as one economic unit, but will also consider how the development of economy and society in WSR depends on the contexts and interlinks within and beyond the WSR. The issue of economic and societal development is one of several important aspects for the WSR. Being a coastal area, clearly issues of local amenities become important. Therefore the following will have a local focus in terms of developing a research agenda for the WSR.

The aim of this contribution is to set an agenda for research to support the economic and societal development of the WSR. A major challenge for policy is to manage the Wadden area such that both the ecosystem and the social system can develop sustainably. Humans occupy and use the area, and consequently put direct pressure on the ecosystem (such as through fisheries) and also apply indirect pressure to its physical (such as through dredging, channel deepening and mining) and chemical subsystems (such as through pollution). The effects of this relationship are many, complex and cumulative. A major challenge is how to manage this so that both the ecosystem and the social system can develop in a sustainable way. Proper management can only be applied if there is sufficient ecological and socioeconomic information and knowledge to understand the underlying processes and interactions to manage this integral system. In this document we will focus on the research agenda from the spatial socio-economic perspective. As such, the issue becomes both how to ensure a population base providing a labour force basic for economic development, but also to secure jobs for the population. The WSR faces challenges in terms of being attractive as areas of residence and work for the population. The latter must be seen in the context of private business and the public sector and may be concerned with e.g. securing networks among public and private actors of economic development. Such networks and relations may be spatially very local or be of more interregional nature.

Thematically, therefore the question becomes what do we need to know to economically develop localities in the WSR taking into account potential trade-offs both within the context of economic and societal development, but also trade-offs relating cross-cutting research across the different contributions to the Trilateral Research Agenda, e.g. with respect to geosciences, ecology, climate and water and culture heritage and identity. Such trade-off may both constitute complementary opportunities, but may also reflect dilemmas of choosing among different objectives of development. In either situation, having precise information on how to assess such is important. What are the potential (material and immaterial) costs and benefits from different initiatives in the WSR and how can policies be adopted trilaterally to include such knowledge? From that perspective the issue of monitoring and quantifying the WSR from an economic and societal perspective is in that respect crucial. Given the trilateral nature of the WSR, research cooperation across the borders of the region is crucial to offer insights into common synergies and possible differences that have to be taken into account in such an endeavour. Furthermore, the trade-offs may be contingent on national and local policies in the respective countries.

This contribution on “Economic and Society in the Trilateral Wadden Sea” develops the research themes from the spatial socio-economic perspective for policies to manage the Wadden area such that both the ecosystem and the social system can develop sustainably to be presented at the 13th Trilateral Ministers Wadden Sea Conference in 2018 in Leeuwarden.

Figure 1. The boundaries of The Wadden Sea World Heritage 2008 property and the nominated Danish and German extensions designated in 2014 and land types. (Source: CWSS, 2012)

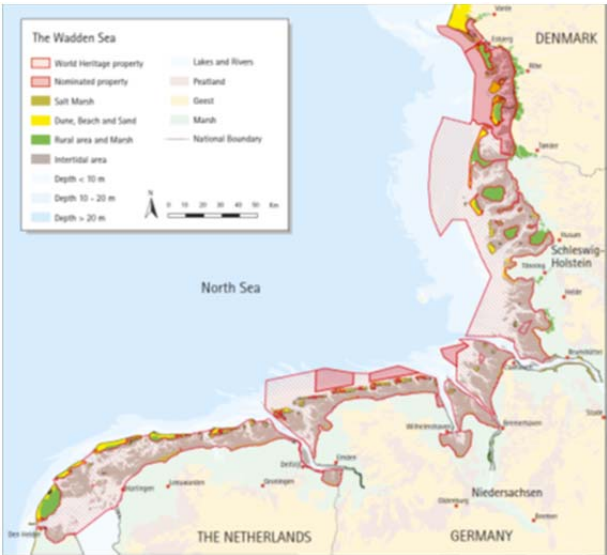
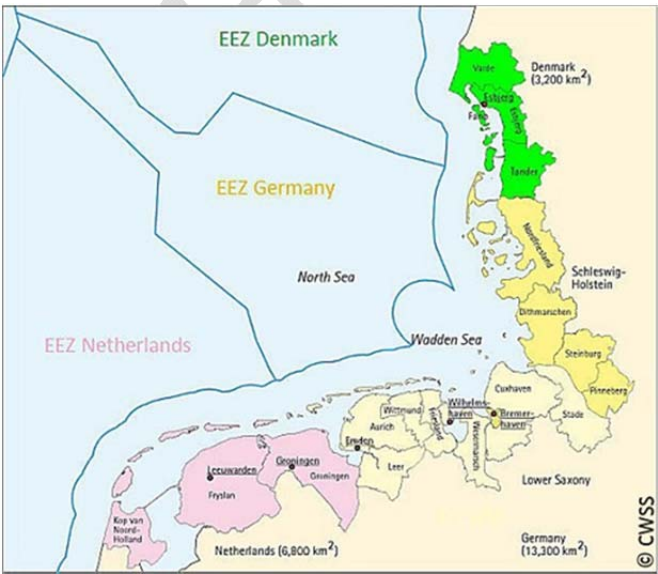


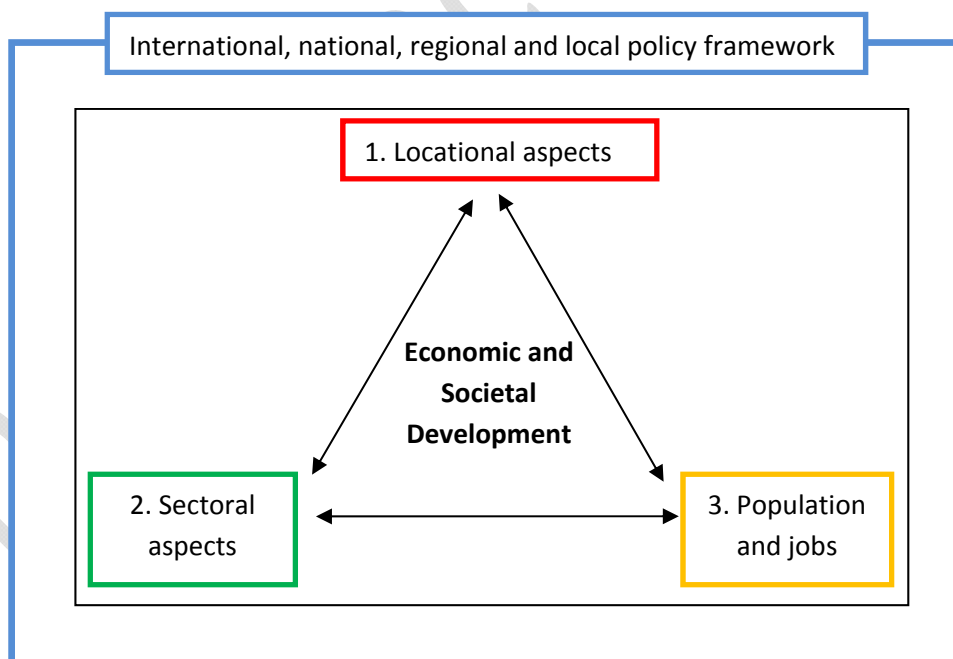
Figure 2. The Wadden Sea Region encompasses the coastal zones, the Wadden Sea with its islands and sands, and parts of the offshore Exclusive Economic Zones (EEZ) of Denmark, Germany and the Netherlands. Source: The Wadden Sea Region (WSR) by the Wadden Sea Forum (see: <http://www.waddensea-forum.org/index.php/forum/wsf-region>)



Introduction

The Wadden Sea Region is from an socio-economic perspective of particular interest in terms of research. Being located at a unique coastal line, which is now a Unesco World Heritage offers some important location advantages. At the same time, the WSR is interesting from a trilateral perspective, as the different parts of the WSR comprising areas in Germany, Netherlands and Denmark vary in terms of proximity to infrastructure and urban centres. Clearly, parts of the German area of WSR is located comparatively close to the big urban centre of Hamburg, while at the same time also potentially benefitting from being located at the Elbe, which is an important infrastructure in terms of shipping. Being only example of being at the intersection of waterways and the coastline, this emphasizes the importance of such locational aspects. This may offer some special location advantages. On the other hand, the Dutch and Danish part of the WSR is located in areas of infrastructures relating to the extraction of oil and gas. Common to the different areas is that the location to coastal areas provides opportunities relating to renewable energy and tourism. Particularly for tourism, the issue of recreational values in terms of landscapes and nature with the UNESCO Worldheritage status is at the core for the WSR. Such differences and commonalities in terms of contexts of the WSR points to the importance of three aspects for economic development reflected in Figure 3.

Figure 3: The three aspects of Economic and Societal Development of WSR



This approach stresses the importance of research on how locational aspects in terms of e.g. coastal environment, infrastructure and other locational strongholds interact with sectoral dynamics and employment. The overarching framework is defined by international, national, regional and local policies and planning regulation, which offers opportunities and restricts the manner in which the three aspects interact. The approach in Figure 3 thereby stresses

the policy relevance for the research on economics and society. The three factors of location, sectors and employment in the helix of Figure 3 offers a series of interdependencies that may promote economic development, but may also imply trade-offs within the economic system. Using locational aspects at the coastline, such as economic development due to access to a Worldheritage site, waterways and gas and salt resources may offer development potentials for some sectors and employment types. On the other hand, some of these activities may restrict the development potential in other sectors, like e.g. tourism. Clearly, therefore Figure 3 comprises a number of trade-offs that have to be assessed precisely in research to ensure the best societal development. Furthermore, the economic system of Figure 3 is intertwined with research related to e.g. geo-sciences, ecology, climate and water and cultural history. (We could add also a Figure with People – Planet – Profit to illustrate the interactions with the other disciplines) In the case of externalities from projects and investments ensuring economic development, can these be countered through measures in other research fields? In this sense, the trade-offs may not only prevail within the economic system, but may be cross-cutting relating to research in other fields. Therefore, Figure 3 in essence reaches into other research fields in a third, fourth or higher dimension. This stresses the complexity of assessing the economic and societal development potential for the WSR and the need to do elaborate trilateral research on this field.

The importance of pursuing this research in a trilateral context is stressed by the evidence from data on socio-economic outcomes in the WSR. While such would be part of the possible research themes of the contribution to the research agenda, Figure 1 also points to the importance of considering the trilateral context of the WSR from a locational aspect. The land types covered by the WSR have the common denominator of being located in geography influences of tidal waters. Even so, the types of land in the different parts of WSR varies illustrated most clearly by the extent to which the WSR comprises areas of dunes, beaches and sands, which may be decisive for the development potential of some type of business sectors related to tourism. These seem more predominant in the areas to the north and south of WSR and less so around the Elbe. As mentioned, the Elbe on the other hand may offer opportunities for other types of business sectors being an important maritime infrastructure.

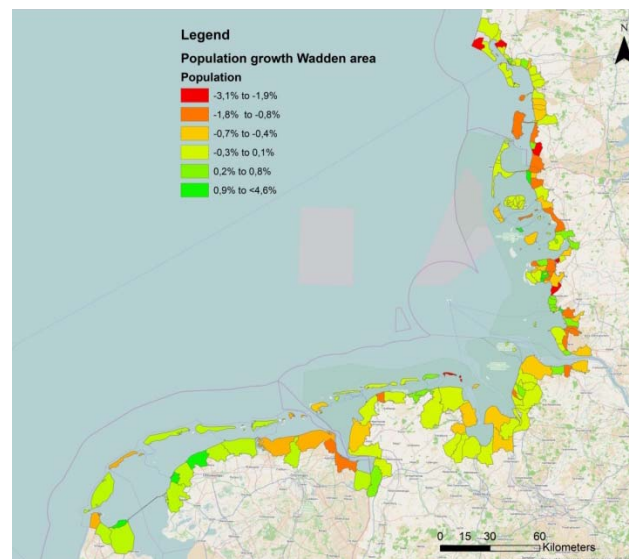
While such heterogeneity in land types offer interesting variation over the different geographies that would be important contexts for economic and societal development, the actual outcomes of economic and societal structures is equally interesting. Figure 4 presents the population growth in the municipalities of the WSR from 2002 to 2013, stressing the importance of building a basis in the areas for residential choice – in terms of e.g. jobs.

While these are some first indications on the importance of doing research on the WSR, it would be valuable to get even more insights into the dynamics and trade off relating to economic and societal development. To assess such precisely, a crucial point is though that of ensuring a precise and compatible basis for assessing such development patterns. For this, a monitoring system is required and essential.

Returning to Figure 3, emphasizing the importance of location, sectors and employment, the following will briefly give examples of dimensions of location, sectors and employment that need to be researched and assessed in the context of a trilateral cooperation to ensure the full development potential of the WSR. It should again be stressed, that going through the dimensions of locational aspects, sectoral aspects and population and jobs aspect, the

development potentials embedded therein may include a series of trade-offs and possible dilemmas, as putting emphasis on one development potential may reduce the that of another potential. This is in essence the core of this contribution to the research agenda. Also, it should again be stressed, that going into detailed research on all these different aspects requires exact and harmonized information, which is why a precondition for successful research into these aspects is the availability of a precise and comprehensive monitoring system containing data on issues like e.g. population development, migration, composition of the labour force by age and education, income, unemployment and sectoral developments in terms of employment and GDP, firm demography (entry, exit, growth, migration), etc.

Figure 4: Population growth in the Wadden Sea Region



Source: van Dijk, Broersma and Mehnen (2015)

Locational aspects

The WSR has a number of location aspects that are crucial to understand to assess the economic and societal development potential. This begs the question, what are the particular potentials for the locations of the WSR as settlement areas for population and business and how do these offer risks and opportunities for economic and societal development? This first aspect connects to its coastal location that offers advantages in terms of access to maritime transportation, extraction of traditional and renewable energy, and recreational values. This relates to the issue of ecosystem services relating to the benefits obtained from the ecosystem to all four categories including supporting services (as reflected in soil formation), provisioning services (as reflected in e.g. seafood and raw materials), regulating services (as reflected in climate regulations) and cultural services (as reflected in recreational experiences and science/education). What becomes essential from a locational perspective is to gain knowledge on the extent to which economic activities in the WSR build on such locational factors and whether it constitutes possible externalities strengthening or weakening locational advantages. If so, this would then ask for research into the issue of ecological management to ensure persistent locational advantages, including the role of infrastructure and accessibility.

Sectoral aspects

Gaining economic development depends on the abilities to develop different business sectors. This begs the question, what are the sectors prevailing as strongholds in the WSR and how can these be developed further and new sectors evolve? A series of sectors have particular relevance given the locational aspects described above. One sector is fisheries, which is particularly dependent on some of the ecosystems services described above in terms of provision services. Another is agriculture on the other side of the dike. The soil and location in the Netherlands are particularly suitable for seed potatoes which are an important export product. Sea level rise can be a treat due to increasing salination, but maybe also be an opportunity for new initiatives for growing salt tolerant crops. An obvious sector is tourism, which similarly depends on e.g. the unique natural values of the UNESCO Worldheritage Wadden and cultural services in the coastal areas. Furthermore, some types of industry depend on the services ability to use harbours or access the coastline to deliver e.g. larger construction from shipbuilding and there are mining activities for salt and gas. As such, there is clearly interdependence to the locational aspect elaborated on above. An important trend is also the extent to which sectors are sensitive to robotization and automation which may lead to substantial job losses especially on the lower-medium vocational level. Some sector like harbour activities might be much more sensitive for this trend than other sectors, like hotel and restaurants in the tourism business. Business sectors do depend on human capital, which is embedded in the population of the WSR or neighbouring areas. As such, the ability to ensure appropriate education opportunities become important, just as the potential to attract (high skilled) labour from outside the WSR can be crucial. In this respect locational strategies of universities (e.g. the example of the University of Southern Denmark with many location versus the University of Groningen which just started with a branchplant in Fryslân) are interesting cases. Also the availability and quality of infrastructure (including fast broadband and internet access) and public transport might be of importance. Interesting to explore are also the options for footloose economic activities that are mainly related to (only) residential preferences. This all calls for an analysis of the economic potential for specific sectors related to as well business related location factors as to residential amenities related location aspects.

Population and jobs aspects

Economic and societal development often has a focus on providing opportunities for the population and securing jobs. This begs the question, what are the policy instruments essential to support and further economic and societal development given the nature of the WSR given either the trilateral nature comprising different administrative and policy competences or the locational and sectoral aspects. This comprises issues that intersect with both location and sectors, as e.g. road infrastructure may increase mobility of the population or fibernet connectivity increases the attractiveness in terms of a population residing in the WSR. Furthermore, issues of providing investments and funding for such, may be important to ensure the population basis, as property market development from urbanization leads to potential problems of credit rationing when e.g. wanting to invest in housing in areas outside the larger urbanizations, such as WSR. Commuting from the WSR to jobs in the inland might also be an option to prevent population decline while improving job opportunities for residents in the WSR. Another important factor is that of ageing populations, which requires

an increasing focus on the appropriate service provisions for such demographic changes. These different aspects of attractively for a residing population in the WSR defines the potential to develop an self-contained labour market in the sense of ensuring sufficient labour supply and developing jobs in the different sectors. The trend of the increasing number of self-employed might create opportunities, but can also be a treat depending on the locational requirements and preferences. In this respect clean air and quality of life (Danish example of the Good Live as a locational asset) are important amenities. This is an important aspect for research, as attracting a sufficient population basis by the given amenities and policies promoting mobility may be crucial for economic and societal development.

Cross-cutting aspects

The above short description focuses predominantly on the economic system in Figure 2. As mentioned previously, there are though a number of additional dimensions that could be taken into account with respect to research on the economic and societal development of the WSR. These are by nature cross-cutting relating to possible research in other fields. While such are obviously rich, a number of possible intersections between research on economic and societal development with other fields are quite important. The trend towards global warming puts on the agenda the whole issue of securing the coastline and relates to research questions in the field of climate and water. This climate effect may in a number of instances lead to a change of the locational aspects due to changes in flooding and storm risks that may have an impact on (intended) investment decisions for firms and households. And this may affect employment opportunities, the housing market and population development and migration behaviour and well-being and livability. Possible changes in securing the coastline may lead to a different landscape with possible new dike systems leaving more acres in a salty environment. This may constitute a challenge for some sectors like agriculture and tourism. However, besides a threat it may also create new opportunities for innovation in sectors like agriculture in a salty environment maybe in combination with new ideas for securing the coastline efficiently, like double dikes, providing e.g. new types of harbour services in the WSR might be affected.

Finally, it may be mentioned that already in pre-existing climate conditions, there may be such intertwined research issues of economic and societal development with other fields. Examples are that of dredging as a precondition for some types of economic activity and its effects on the marine environment. Similarly, installation of offshore wind turbines may be a driver for economic and societal development, but may be problematic for biological diversity. This may then reflect upon ecotourism. These cross-cutting aspects emphasis the complex and elaborate nature of research into the WSR required making appropriate assessments on the economic and societal development.

Research questions that are of major importance for policy:

1. What are the regional economic opportunities for creating jobs and income, given the locational characteristics of the Waddenarea and preservation of the unique natural values of the Wadden UNESCO-Worldheritage site.
 - a. Which sectors provide the best economic opportunities that fit with the characteristics of the people and are directly interacting with the location. Obvious candidates for analysis are tourism, agriculture and fishing and mining. This requires a careful analysis of the benefits and cost for society including the impact on the natural values of the WHS, but also in terms of e.g. developing a trilateral marketing strategy.
 - b. Which sectors provide the best opportunities because they are more or less footloose and hardly have an impact on the ecosystem.
 - c. What are the business networks and supply chains that might be anchored locally in the WSR and how do they interact with WHS –does sharing knowledge and innovation efforts depend on local chains and networks.
 - d. To which extent does the WSR represent self-contained economic units and to what extent does the intra-sector and inter-sector business dynamics depend on business outside the WSR.
 - e. How will technological shocks to economy in general influence the economy of WSR – e.g. in terms of the increasing use of robots in production or what has been called “4. Industrial revolution”.
 - f. Which policies might foster the economics potentials in different sectors of the natural values of the WHS and how should these be designed and adapted in a trilateral setting.

2. Developing of a monitoring system that permits the analyses of the socio economic and demographic trends in terms of the development of jobs by sector and skill level; technical and social innovation potential with regard to products, processes and markets; firm growth and decline by sector and demographic and developments with regard to entry, exit and migration of firms, including self-employment; unemployment, labor force participation, social security by age, level of education; developments with regard to income, capital assets, home ownership; population development (births, deaths, migration) by household type, age, education, etc.; housing market developments; availability of facilities and service for education, health care, shopping, sports & recreation; interactions between regions within and outside the WHS with regard to export and trade relations, commuting, tourist flows also related to the quality of infrastructure, like roads, public transport, ICT-Broadband; developing of indicators for well-being, quality of life, life expectancy, perceived health, etc. etc. By means of this monitor the importance of the various kinds of economic activities in terms of jobs, income, etc. can be measured and used to compare the value of these economic activities for the regional economy and compare this with the potential negative effects on the unique natural values of the ecosystem of the WHS. To achieve this goal a detailed analyses is needed that requires data from a monitoring system with a trilateral set of consistent and coherent indicators at a detailed spatial scale (municipalities) over a longer time period (panel data).

3. Developing of models that permit the evaluation of investments in nature protection, coastline protection, exploitation of natural resources, etc. in terms of monetary values but also in terms of well-being and livability for the population and impact on the natural values and ecosystem of the WHS. This requires detailed insight in the interaction of investments and ecosystem services in terms of impact on the ecosystem in combination with the impacts on the regional economy and the well-being and quality of life to the inhabitants in the WSR but also on the global level for e.g. survival ratio's for migratory birds.
4. Consider the importance of education systems in the WSR to ensure the appropriate human capital stock with respect to the business sectors prevailing as important in the WSR, but also with respect to the future restructuring in sectors from general global trends and from policies related to WHS. This relates to:
 - a. How will education and building human capital over the life cycle of individuals influence the availability of appropriate labour supplies in the WSR considering the particular localization potentials of the WSR and the policies of the WHS.
 - b. What importance is associated with mobility and migration to and from the WSR in securing the appropriate labour supply relative to processes in business.
 - c. Should the emerging ageing process in populations in the three countries in general be associated with particular policy efforts to ensure a population base and labour supply in the WSR.
 - d. How can cooperation on building human capital in the different countries in the trilateral cooperation constitute a strength for the WSR and how can institutional settings relating to human capital in the different countries be matched in terms of cooperation.

5. More???