

## Options for Socio-Economic development in the trilateral Wadden

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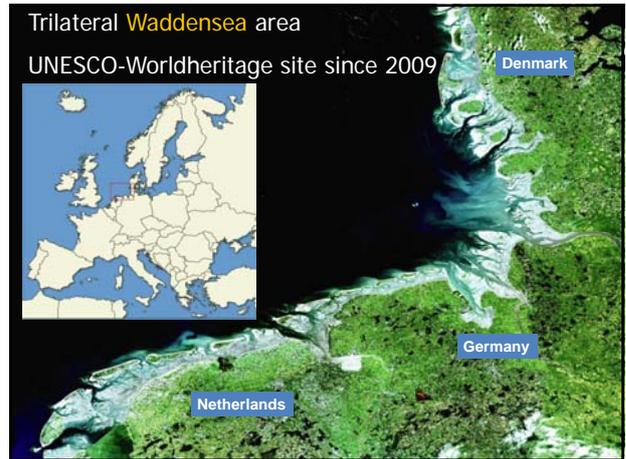
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The Wadden Sea is the world's largest coherent intertidal flats with a unique ecosystem characterized by a rich benthic fauna supporting millions of coastal birds

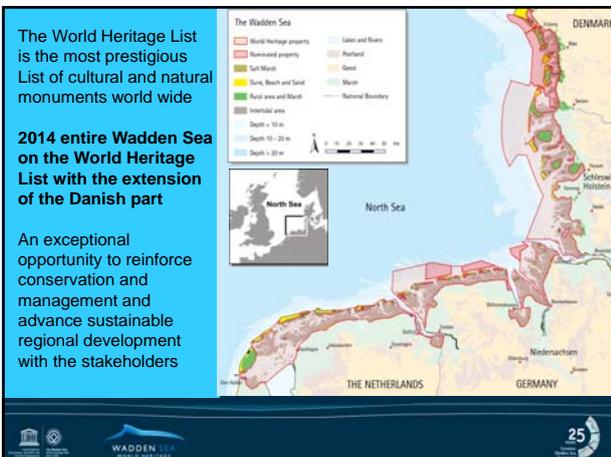


## Ecological' values



## Trilateral Waddensea area

UNESCO-Worldheritage site since 2009



## Wadden Sea Region: 25 inhabited islands

- The area counts 25 inhabited islands and several smaller vegetated islands and barren high sands.
- The total area of the islands is about 2.000 km<sup>2</sup> and the Wadden Sea itself covers about 8.000 km<sup>2</sup>.
- The mainland is one of the oldest and most complex cultural landscapes in Europe and has been inhabited for more than 5.000 years
- At present, 1 million inhabitants live on islands and administrative regions directly bordering the Wadden Sea. An estimated 3.5 million inhabitants live in the 17,500 km<sup>2</sup> of land with severe flooding risks. i.e. at less than 5 m above or even below mean sea-level in this region.

## Nature Conservation and Human Interaction in the Wadden area since many centuries

- Towards safety and protection of flooding: building dikes
- From reclaiming land to nature protection
- From nature protection to shared use
- From national to trilateral management
- The Wadden system needs to be managed so that both the ecosystem and the social system can develop in a sustainable way. This in itself is a real challenge. **Proper management can only be applied if there is sufficient ecological and social background information and knowledge to manage this integral system**  
→ establishment Waddenacademie



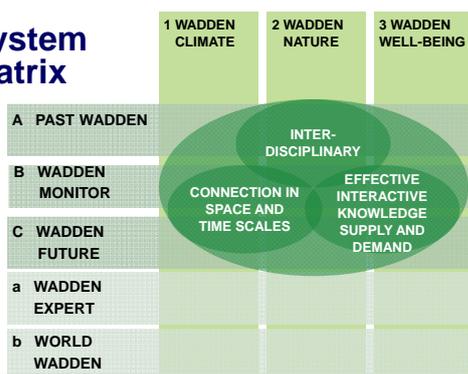
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## Wadden Academie tasks:

- to identify gaps in cross-domain knowledge in order to assist in the sustainable development of the Wadden Sea Region;
- to promote a coherent research programme at regional, national and international level and;
- to promote information supply and knowledge exchange within and between research institutes, government, industry and social organisations.



## System Matrix



## Towards a trilateral research agenda of the Wadden Sea Area



## Goals of Trilateral Integrated Coastal Zone Management (ICZM) by Wadden Sea Forum

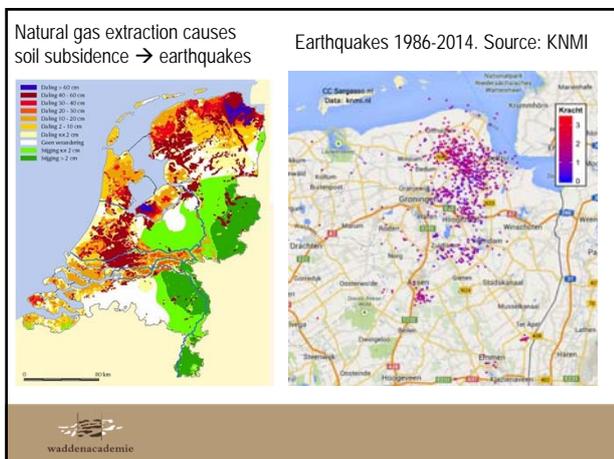
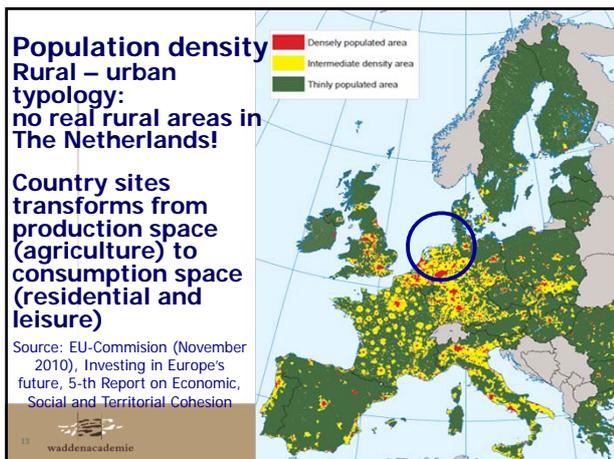
- A **balanced population structure** with a healthy share of young and elderly people, with indigenous young people choosing to stay in the region and population decline being averted.
- **Almost full employment** for which a wide diversity of jobs is needed.
- With regard to welfare WSR residents should have an adequate income, good living conditions and high life expectancy. Social equality and work-life balance should ensure satisfaction among the population.
- **This requires balanced economic development that provides future prospects for people living and working but should also generate surpluses for environmental protection measures.**
- The economy in the WSR should be made resilient for economic recessions and international competition by means of strategies for innovation and entrepreneurship.



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## Resilience of regions





- ### Policy dilemma
- How to create jobs and income for the inhabitants of the Wadden area without damaging the unique ecological values of the ecosystem
  - Dutch investments funds available as compensation for gas extraction, but only in the very narrow coastal zone
  - With this fund job creation in farther away more urban areas within commuting distance is not allowed
  - What is the appropriate spatial scale for this problem?
  - How big is the problem?
  - What type of activities do lead to suitable jobs for the inhabitants and do not damage the eco-system?
- waddenacademie

## Lack of data at a small spatial scale

- A major problem with the implementation of especially the economic aspects of the ICZM is the lack of up-to-date and comparable information at the trilateral level with regard to demographic change, (un)employment and the structure of the regional economy.
- The available information is fragmented and restricted to certain areas at the national or regional scale or specific economic sectors.
- The problem is often that definitions of e.g. economic sectors are not the same for small spatial areas in the three countries. Comparable information is often only available at the level of rather large spatial administrative regions, while information is needed at the detailed geographical scale of municipalities or parishes for effective ICZM, where the regional demarcation of the area is small enough to assume a strong relation between the ecosystem in the Wadden Sea and the demographic and socio-economic situation for the inhabitants in the coastal zone.

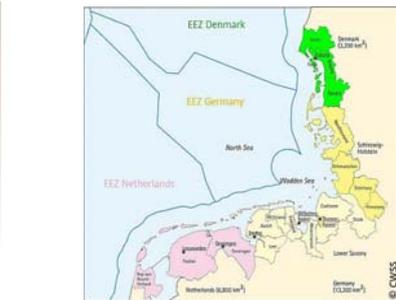
The World Heritage List is the most prestigious List of cultural and natural monuments world wide

**2014 entire Wadden Sea on the World Heritage List with the extension of the Danish part**

An exceptional opportunity to reinforce conservation and management and advance sustainable regional development with the stakeholders



**The Wadden Sea Region** covers an area, which encompasses the coastal zones, the Wadden Sea with its islands and sands and the relevant parts of the Exclusive Economic Zones (EEZ) of Denmark, Germany and the Netherlands. (WSF/CWSS)



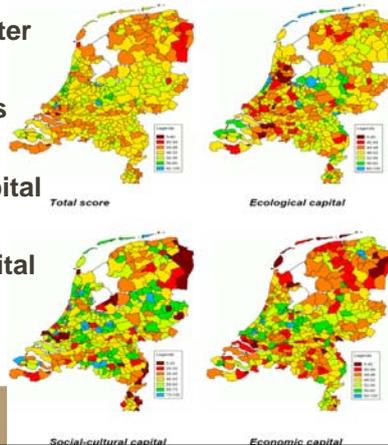
**Demarcation of the Wadden area (LAU-2 classification), 2013**



## Waddenbarometer

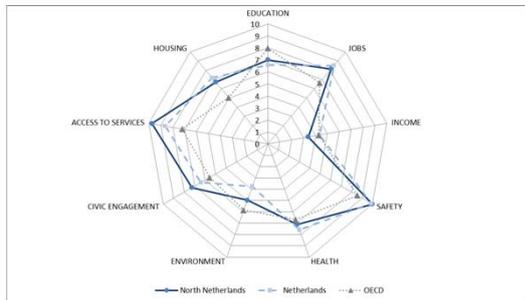
Set of indicators measuring:

- \* Ecological capital
- \* Social-cultural capital
- \* Economic capital



OECD-project: How is life in your region? Case study North of the Netherlands (also for Southern Denmark)

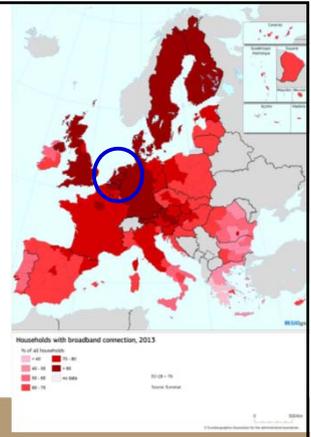
Wellbeing outcomes North NL, Netherlands, OECD (OECD, 2014)



Households with Broadband Access: overall the Netherlands does very well!

But: in some villages in peripheral lagging municipalities hardly access!

→ Spatial scale of measuring is important!



Broadband Access at a detailed spatial scale: in some villages in peripheral lagging municipalities hardly access!

See: Salemink and Dirk Strijker, 2014 ([http://www.rug.nl/frw/news/2012/final\\_breedband.pdf](http://www.rug.nl/frw/news/2012/final_breedband.pdf)) en Nieuwsuur-uitzending "Platteland digitaal achterlijk gehouden" (<http://nieuwsuur.nl/onderwerp/528319-platteland-digitaal-achterlijk-gehouden.html>)



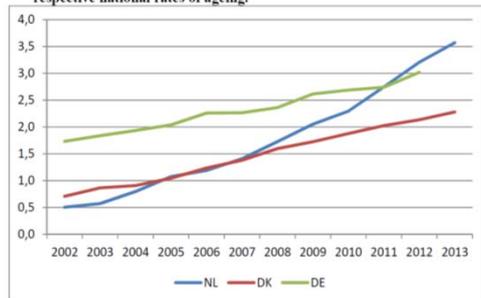
Composition of the HUMAN population in the trilateral Wadden area

Table 2. Composition of the human population on January 1, 2013 and its growth between 2002-2013 in Wadden area and on Wadden islands (based LAU-2 classification)

	Population by age group at Jan. 1 2013 (x 1000)			Average annual population growth by age group 2002-13 (%)			
	total	15-64	> 64	total	15-64	> 64	
NL							
Wadden area	268.9	171.8	51.5	45.6	-0.29	-0.71	2.56
Wadden islands	22.9	14.5	4.7	3.7	-0.10	-0.60	3.28
DE							
Wadden area	662.5	426.0	159.9	83.1	-0.31	-0.51	1.70
Wadden islands	51.3	33.4	12.6	5.3	-0.28	-0.74	2.48
DK							
Wadden area	80.1	51.3	16.1	12.7	-0.10	-0.36	2.29
Wadden islands	4.0	2.3	1.1	0.6	-0.16	-1.29	4.07

Source: Statistics Netherlands, Statistics Denmark, national and regional German statistical agencies

Figure 6. Rate of ageing in Dutch, German and Danish Wadden area, relative to the respective national rates of ageing.



Source: Statistics Netherlands, Statistics Denmark, national and regional German statistical agencies

Figure 4. Total population growth in 2002-2013 of the Wadden area (LAU-2 classification)

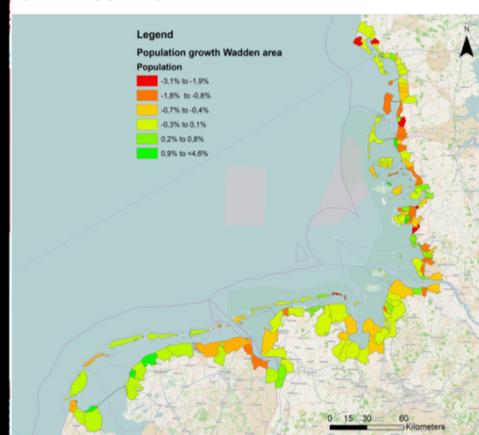
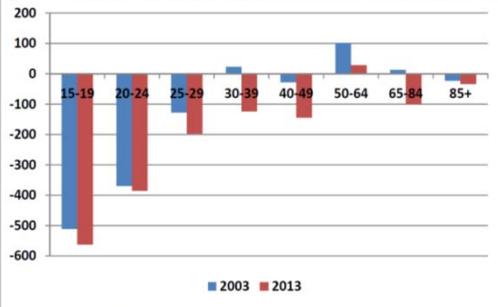
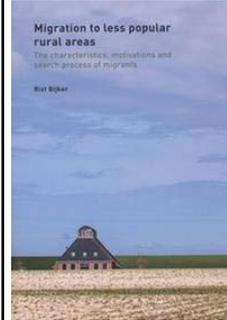


Figure 8. Net migration by age group in the Dutch Wadden area, 2003 and 2013



Source: Statistics Netherlands



Dissertation Rixt Bijker (January 2013): There are also many migrants to the less popular rural areas!  
Also important: quick connections to nearby city + fast ICT Broadband access

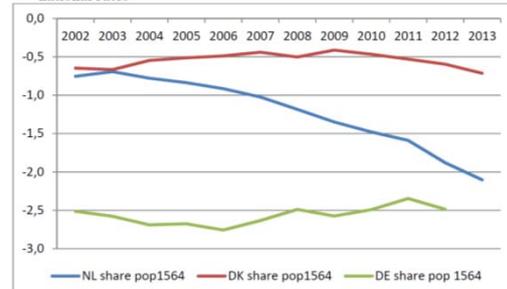


### Labour market indicators in the Wadden area

	Jobs × 1000	Perc. job growth annual %	Employ- ment function %	Unem- ployment rate %	Percentage of jobs in 2011 in				
					agric.	manuf	touris m	edu.	health
Wadden area	103.1	0.8	58.1	6.2	6.8	10.4	6.2	5.5	13.9
Wadden islands	12.8	0.6	86.9	3.9	7.7	4.1	25.7	4.8	7.3
Netherlands	8483.5	1.2	76.1	5.1	2.7	9.7	4.2	10.5	15.3
Wadden area	341.9	0.7	79.5	7.1	5.8	18.2	7.8	3.0	14.1
Wadden islands	30.7	0.0	104.1	4.2	7.0	2.5	36.5	1.5	11.7
Germany	39000.1	0.5	72.3	5.4	4.7	22.6	3.1	3.8	12.8
Wadden area	98.9	-0.4	73.5	4.0	5.6	14.7	3.6	7.3	18.9
Wadden islands	1.0	-0.7	53.5	3.5	1.3	2.1	11.0	8.8	17.1
Denmark	2600.0	-1.0	71.6	4.5	2.7	8.7	3.2	8.4	19.6



Figure 9. Rate of population of working age (15-64) in all three Wadden areas relative to national rates



Source: Statistics Netherlands, Statistics Denmark, national and regional German statistical agencies

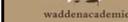
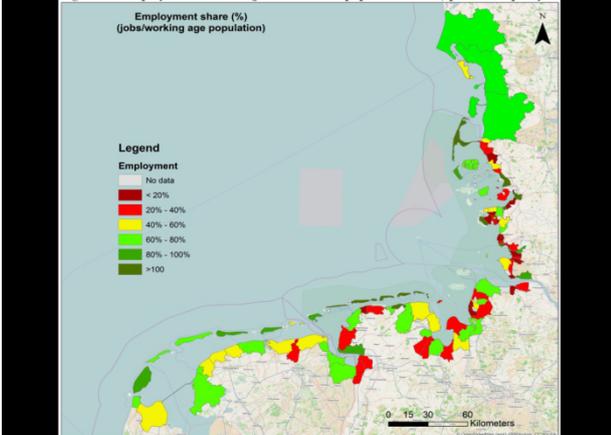
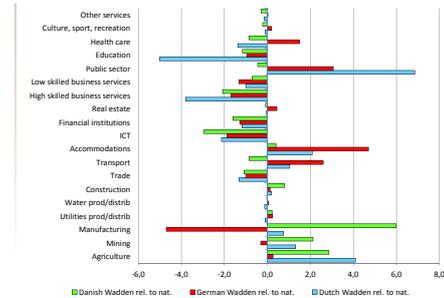


Figure 10. Employment function (jobs as share of population 15-64) per municipality 2011



### Employment structure of jobs Wadden area relative to national structure, 2011



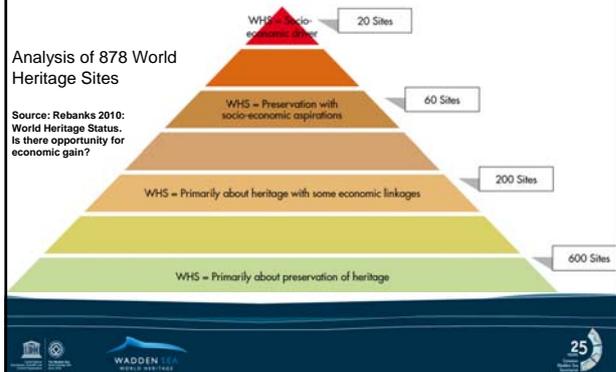
## Socio Economic challenges Wadden Region

- **Demography:** population decline, aging, spatial sorting
- Regional economy and labour market: jobs, unemployment, income, education → **well-being** (OECD)
- **Interaction Economie ↔ Ecology**, especially in sectors like fishery, agriculture, energy, tourism, harbour and related shipping and manufacturing activities
- Needed: **value change approach** and regional innovation and investment strategy; Social Impact Analysis
- Trilaterale coastal zone management; **science policy matrix**
- **Ecosystem Services:** economic valuation; Hotspot monitor, Big Data
- Economic spin-offs of the UNESCO World Heritage status

## Wadden Sea World Heritage – Perspectives for socio-economic development

Analysis of 878 World Heritage Sites

Source: Rebanks 2010: World Heritage Status. Is there opportunity for economic gain?



SCIENCE-POLICY MATRIX	TOURISM	CONSERVATION	FISHING AND AQUACULTURE	AGRICULTURE	MIXING	ENERGY TRANSITION	PORTS AND SHIPPING	COASTAL PROTECTION	CLIMATE CHANGE	BIOLOGICAL DIVERSITY	CULTURAL HERITAGE	RESPONSE	OVERALL STATUS
<b>GENOZONE</b>													
Subsurface use and profiles													
Longer term geomorphology													
Shorter term morphodynamics													
<b>BIOLOGICAL DIVERSITY</b>													
Biodiversity - Reefbuilding Zoobenthos													
Biodiversity - Diadromous Fish													
Biodiversity - Breeding Birds													
Habitats - Subtidal Sandbanks													
Habitats - Salt Marshes													
Habitats - Beaches & Dunes													
Functions - Primary Productivity													
Functions - Wintery North Sea Fish													
Functions - Fueling Station Migratory Birds													
<b>CULTURAL HERITAGE</b>													
Awareness/valuation													
Maintenance													
Access													
Public access													
<b>SOOC ECONOMY</b>													
Employment													
Revenue													
Population													
Sustainability													
<b>CLIMATE/HAZARD</b>													
Longer term sea level rise													
Fresh water availability													
Weather extremes													

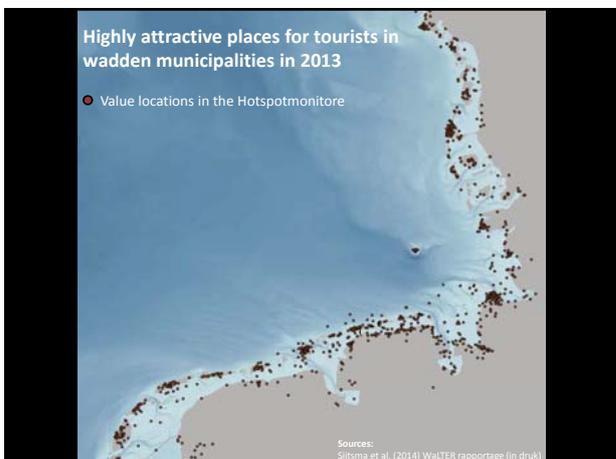
Size of the box: degree of concern to management	High	Moderate	Low
High	Management has a high level of concern for the value due to its current degraded condition and/or the high level of single or cumulative pressures affecting it.		
Moderate	Management has a moderate level of concern for the value due to its current condition and/or the moderate level of single or cumulative pressures affecting it.		
Low	Management has a low level of concern for the value due to its current good condition and/or the low level of single or cumulative pressures affecting it.		
Colour of the box: Adequacy of Information	Good	Moderate	Low
Good	The good level of information available directly supports management decisions and is currently sufficient to allow progress on the particular issue/interaction. However, further information to support ongoing adaptive management may still be required.		
Moderate	The moderate level of information gives a reasonable basis for management decisions, but decisions regarding some aspects of the issue/interaction may be hampered by current knowledge gaps.		
Low	The low amount or adequacy of information is a hindrance to management. Decisions are pending the availability of improved scientific understanding of the issue/interaction.		

## Options for economic development and jobs

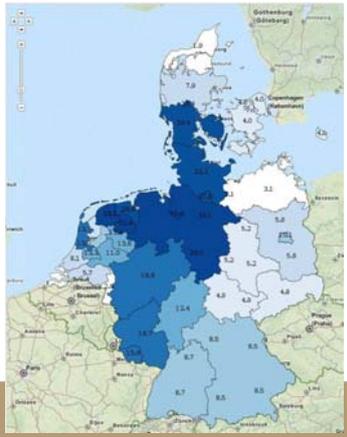
- Economic activities with locational advantages in the Wadden area: (i) agriculture and fishing, (ii) extraction of energy (oil, gas, wind), (iii) harbours and (iv) tourism and related personal and business services
- Innovations: production of salt-tolerant potatoes and other crops that will grow in a salt environment
- Promote more localized value chain for shrimp fishing: innovative mechanical shrimp peeling machines instead of peeling in Maroc (3.000km away) because of cheap labour → higher prices for better product with less catch
- Attraction of footloose economic activities and people with zero effect on the ecosystem: designers, journalists, scientists, writers, artist can do their business everywhere but like the quiet and healthy environment of the Wadden region. They live and do their business in redundant farms, churches and industrial buildings. Crucial: fast ICT-Broadband access

## Highly attractive places for tourists in wadden municipalities in 2013

Value locations in the Hotspotmonitor



Origin of the people who find the Wadden an attractive location: distance decay, but less in Germany



## Thank you for your attention! Questions?

For more information and pdf's of all publications, please visit:  
<http://www.waddenacademie.nl>

