

The 'Waddenbarometer'

Prototype

Presentation at the Wadden Symposium
Leeuwarden
December, 10 2014
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General Background

- Long existing wish within the Dutch Wadden community
- Lots of detailed knowledge and information available, but fragmented: strong desire for integration
- Recommendations from as well the National as the Northern Court of Audit
- Strong desire of the Waddenfund to have a guiding monitor which helps the Fund to set priorities

The process of developing the Waddenbarometer (1)

- In the Fall 2013 the Waddenacademie has explored the possibilities
- Chosen for the 3P approach of Telos in combination with IMSA
- February 2014 the assignment was given for developing a prototype
- February – June 2014: desk research and interviews with stakeholders to identify the long term policy goals and to define the monitoring framework (indicator set)
- July 2014 – today: data collection
- November, 13 2014: first official ‘coming out’ during the Waddenfondsday in Harlingen
- Today: presentation of the first results and debate



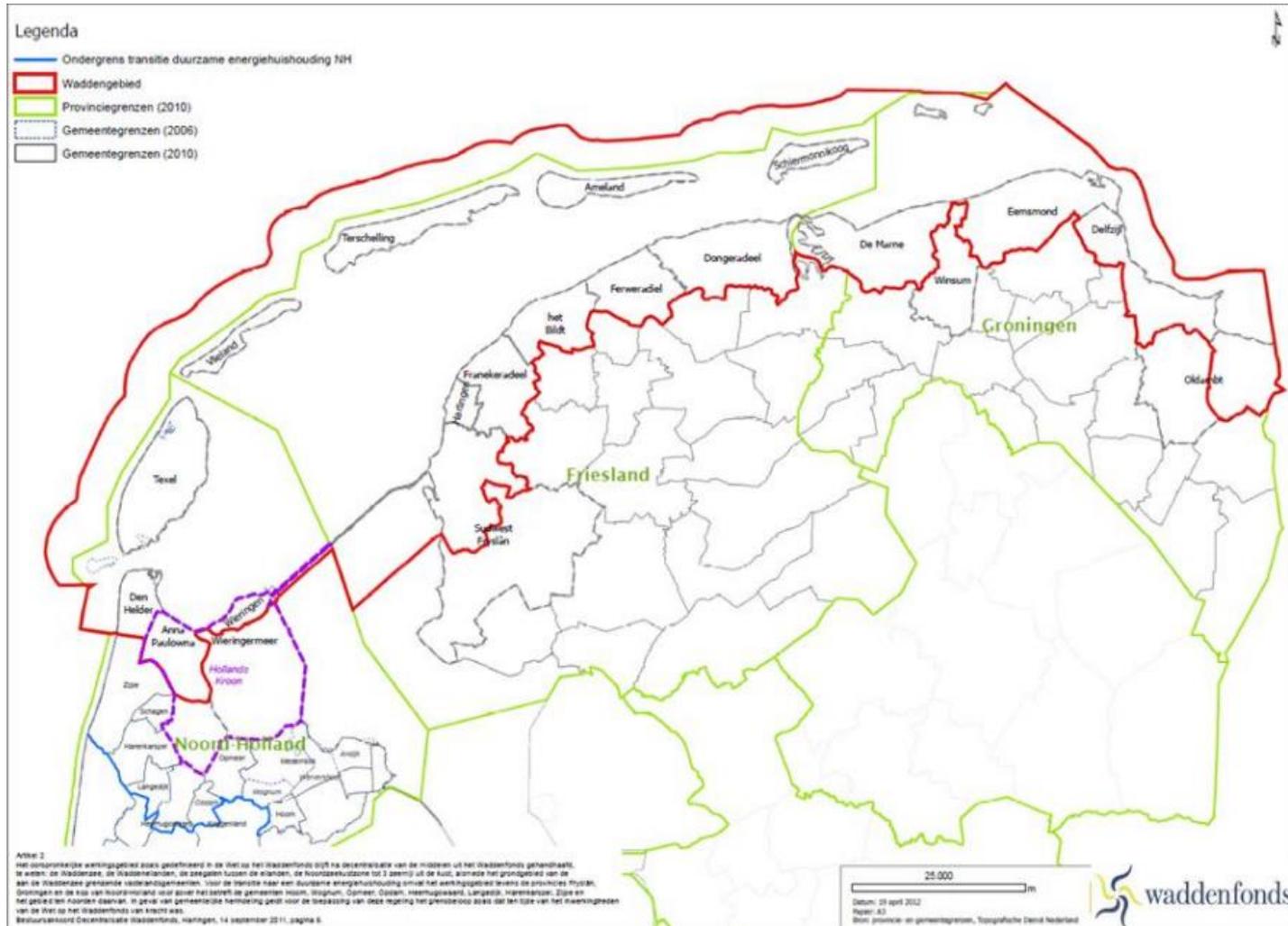
The process of developing the Waddenbarometer (2)

- December 2014/January 2015: report
 - Methodology
 - First results
 - Proposal for adjustment: goals, new indicators/research agenda, norms
 - Attention for design and interactivity
- First half of 2015: discussion with the Wadden Community (validation: are we measuring the right things in the right way?)
- Adjustment of the prototype
- Fall 2015: presentation of the final version of the Waddenbarometer

A number of 'issues' beforehand

- How to define the Waddenregion?
- In the vision of the three 'Wadden'provinces sustainable development should be the guiding principle for the development of the Waddenregion. But how to define and operationalize sustainable development?
- The Waddenregion is a large and very divers area: water, mainland, islands. How to deal with this diversity on the one hand and avoid presenting too many details on the other hand?
- Sustainability asks for an agenda of change: a shared agenda of all stakeholders. But who are these stakeholders and how to give them a role in the process of developing the Barometer?

The Waddenregion

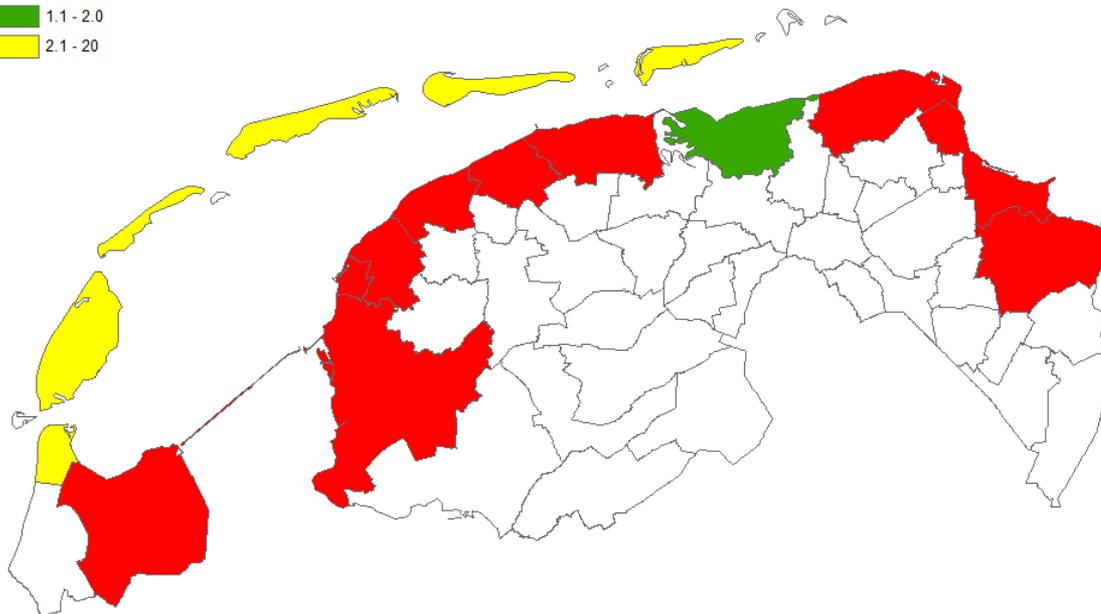


How to deal with diversity in the Waddenregion?

- By collecting most of the socio-economic data at municipal/regional level
- By collecting most of the ecological data at the level of the so called 'kombergingsgebieden'
- By showing the results also on maps

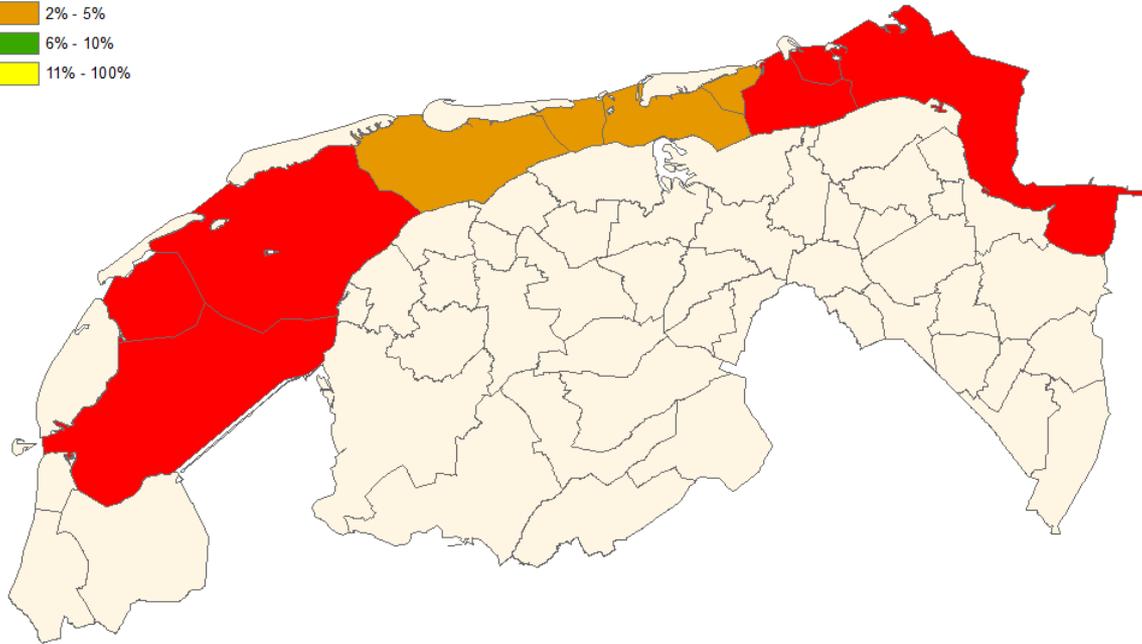
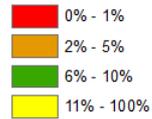
Example: hotspotindex

Hotspot index, 2014

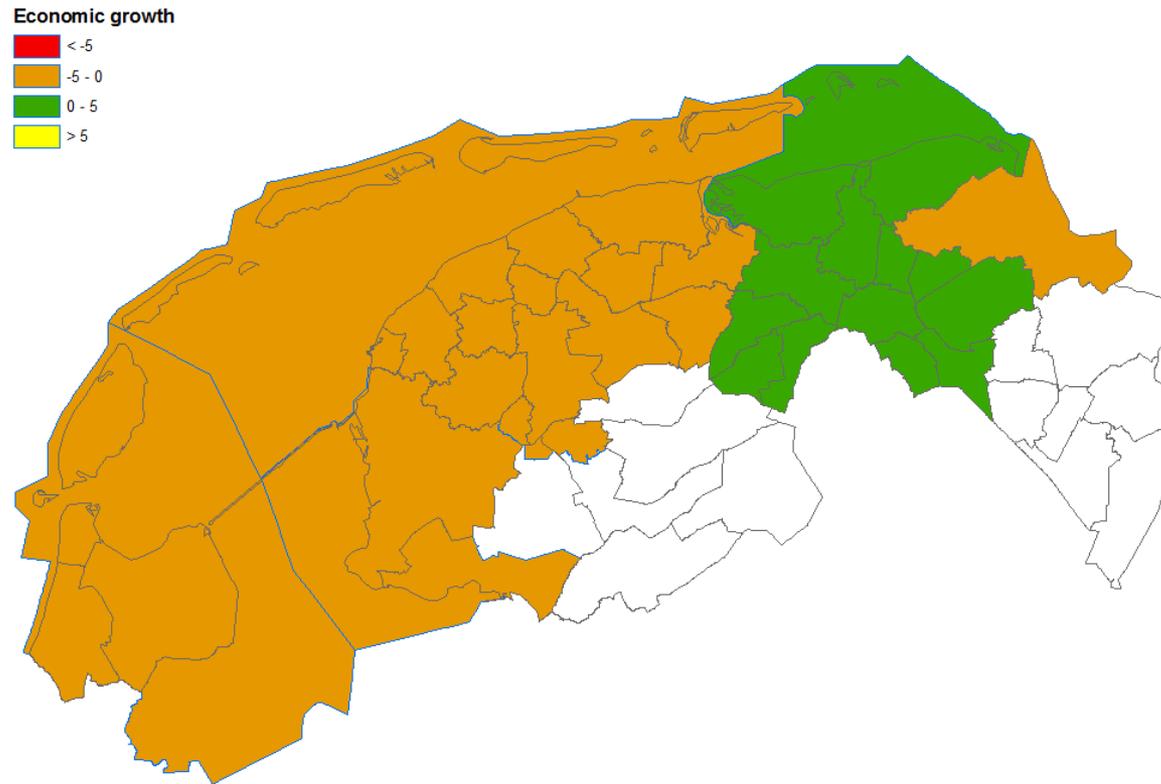


Example: musselbeds

mussel beds, 2011 - %



Example: economic growth



Why stakeholder participation?

- The nature of sustainability: intrinsic subjective/normative
- The need for balanced growth: all interests should be taken in account
- Stakeholders have valuable knowledge and experiences that can be used to improve the Barometer
- An early stage involvement of stakeholders helps to assure that:
 - The barometer gets enough support;
 - one is not confronted with unexpected and unnecessary/avoidable opposition during the process of development
- The awareness that we need everybody to make a change, we can't just rely on governments alone



Stakeholders in the first round

Personen	Organisaties
Martijn de Jong	Natuurmonumenten / PRW/Mosselconv
Kees van Es	PRW
Waldina Hulshoff	RCW
Bas Eenhoorn	RCW
Bram van de Klundert	Waddenfonds
Dick Hamhuis	Waddenfonds
Oeds Bijlsma	Prov Fryslân
Jan Marinus Propsma	Partoer
Herman Verheij	Waddenvereniging / WSF
Jaap Verhulst	Min EZ
Arjan Berkhuizen	Waddenvereniging
Klaas Laansma	It Fryske Gea
Jeroen Jansen	NAM
Ester Kuppen	Waddenvereniging
Hans Revier	Lector Lwd
Arjen Bosch	De Laar
Reiner de Vries	Gem Harlingen
Roel de Jong	Wetterskip
Pier Schaper	Wetterskip
Monique van Dungen	GSP
George Wintermans	(NAM) zoet-zout overgangen
JanPaul van Soest	Gemeynt
Div Havensecretarissen	Waddenhavens
Jeroen Dagevos	St. De Noordzee
Fokke Jansma	Vermilion
Durk van Tuinen	Frisia
Mark van Rijselberghe	Zoutwaterteelt Texel
Siebert van de Velde	NMF Groningen
André Faaij	Energy Academy
Koos Lok	ENSEA



Telos' vision on sustainable development

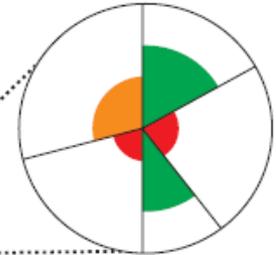
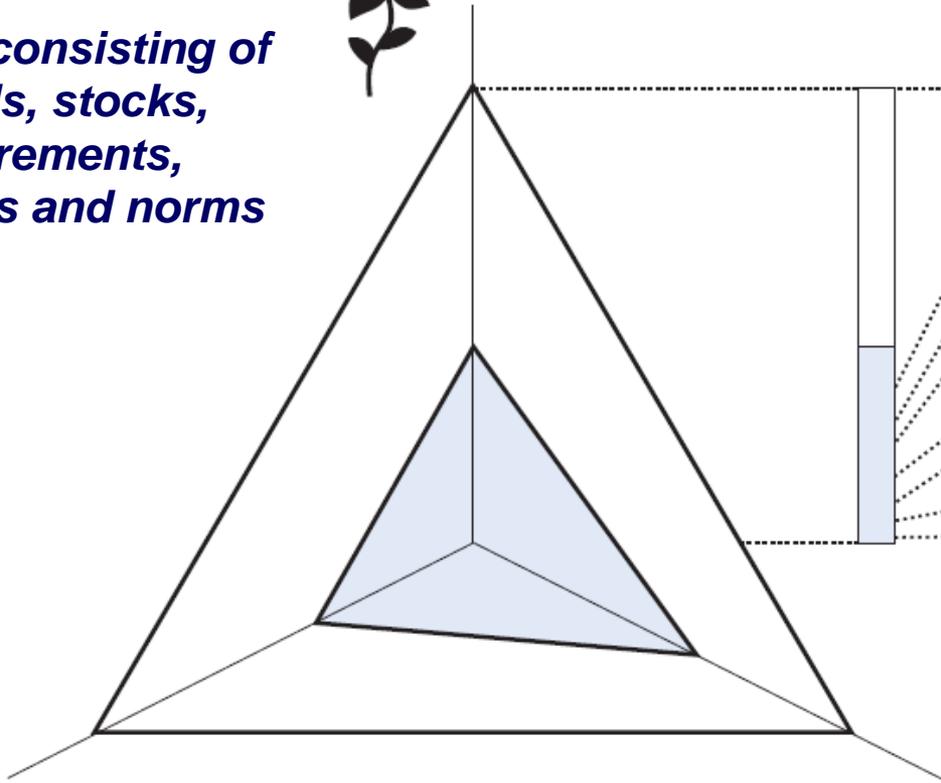
Following Brundtland (1987) sustainable development concerns:

- integrated optimization of economic, socio-cultural and ecological development conditions / principles (preventing negative trade-offs, stimulating win-win situations)
- according to principles of efficiency, social justice, resilience
- which at the same time optimizes development conditions for:
 - future generations (time)
 - other parts on the globe (space)

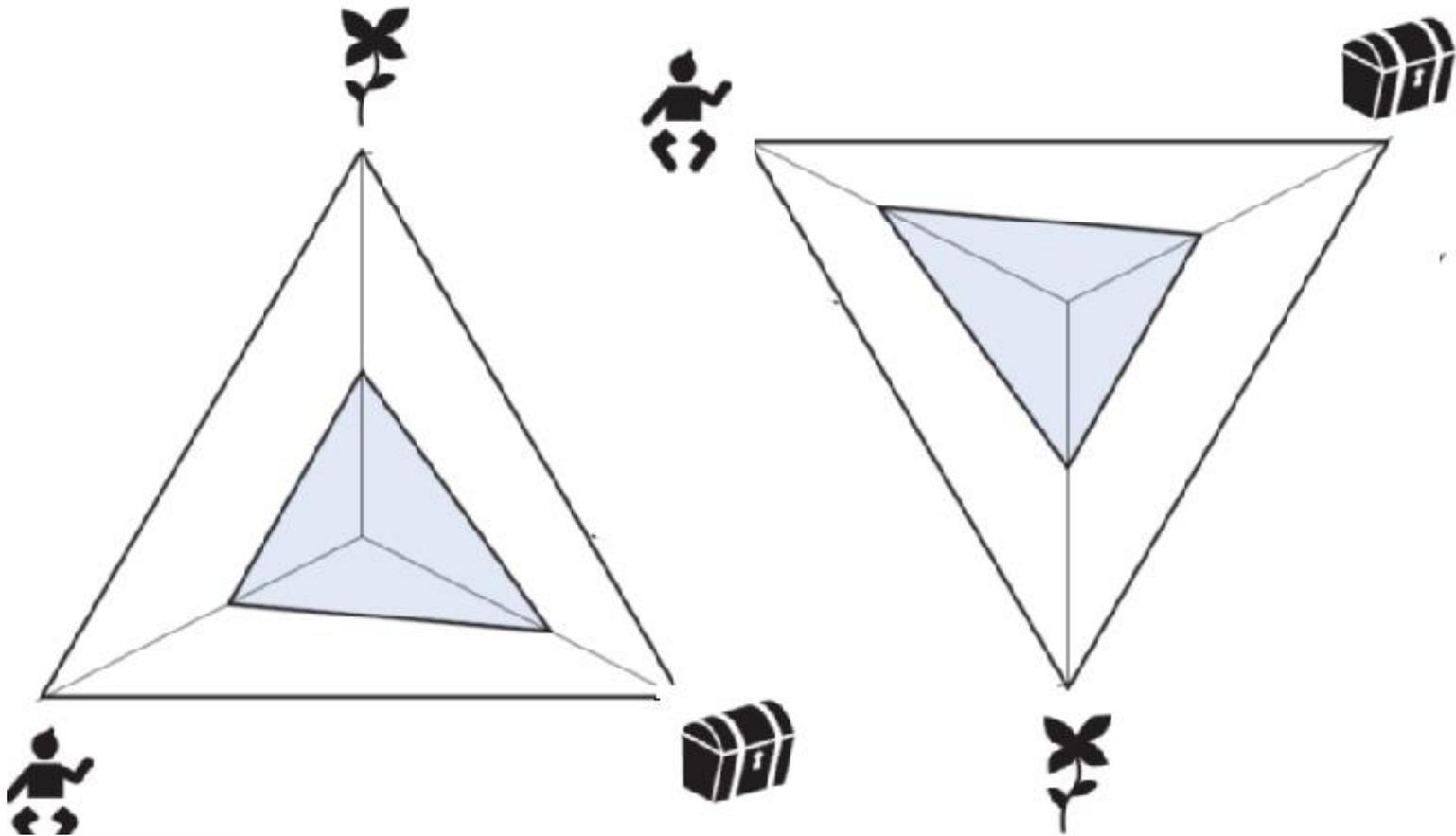
How to make sustainable development measurable in the Waddenregion?

Our answer: the Sustainability Balance Sheet

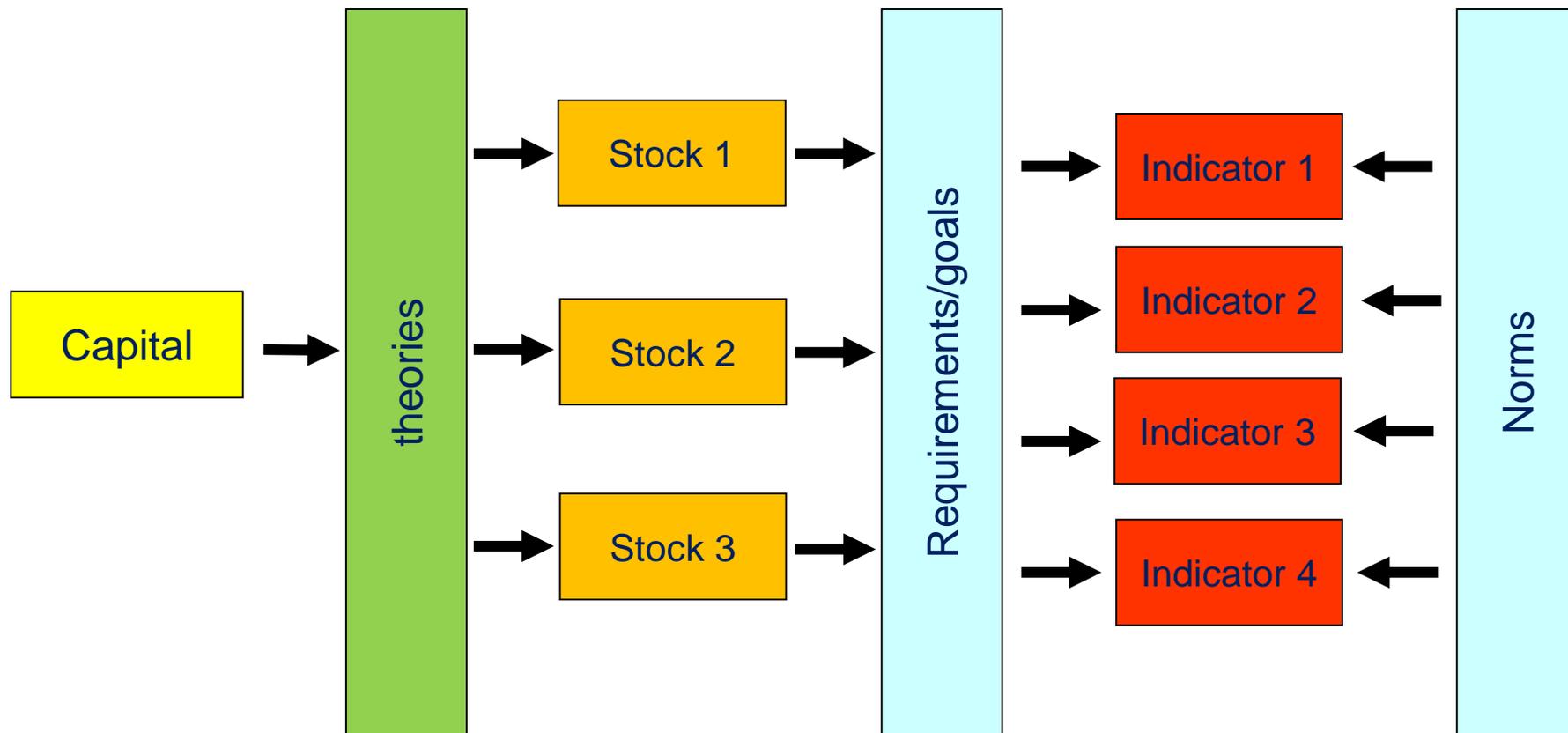
A model consisting of capitals, stocks, requirements, indicators and norms



Food for thought?



The framework of the Waddenbarometer



Science

Policymakers/
Stakeholders

Policymakers/
Stakeholders



Stocks per capital in the Waddenbarometer

Economic capital	Socio-cultural capital	Ecological capital
Labour	Social and Economic Participation	Nature and biodiversity
Capital	Political Participation	Land soil
Economic Structure (1)	Art, culture and cultural heritage	Sea soil
Economic Structure (2)	Safety	Air
Spatial conditions	Health	Salt (surface) water
Infrastructure/ connectivity	Housing and living environment	Fresh (surface) water
Energy, raw materials and consumables	Education	Groundwater
		Landscape



Requirements/goals

Based on provincial, national, trilateral, international visions and policy documents, laws and directives like:

- Trilateral Wadden Sea Cooperation
- Bird Directive
- Habitats Directive
- Water Directive
- OSPAR convention
- PKB
- 'Wadden van Allure'
- 'Naar een Rijke Waddenzee'

Indicators

- Indicate if the requirements are met
- Should be simple
- Come from reliable sources
- Should be reproducible in time so that we can monitor the development in time.
- Should make comparison possible with other regions (benchmarking)
- If possible, come from sources already used in the Waddenregion (WaLTER, Waddenseaforum, PBL, Sovon etc.)

Norms

Norms are based on:

- Policy documents and (Inter)national agreements e.g.
 - Trilateral Wadden Sea Cooperation
 - Natura 2000
 - Habitats Directive
 - Kyoto Protocol
 - The Water Framework Directive
- Comparison with other regions and in time
- Expert judgment

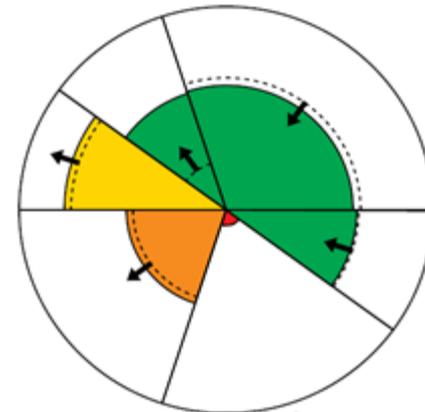


How does it look like in practice?

- A stock is represented by a pie diagram with indicators as pieces of the pie.
- Indicators have different weights. That's why pie pieces differ in size.
- The colours of the pie pieces show how we have to interpret the results.



- The indicator scores change in time because of changes in the behaviour of consumers and firms and as a result of policy measures of governments.
- These changes are shown by using arrows.
- The dotted line shows the situation in the previous measurement.
- An arrow directed outwards means improvement, directed inwards means worsening



Ecological Capital

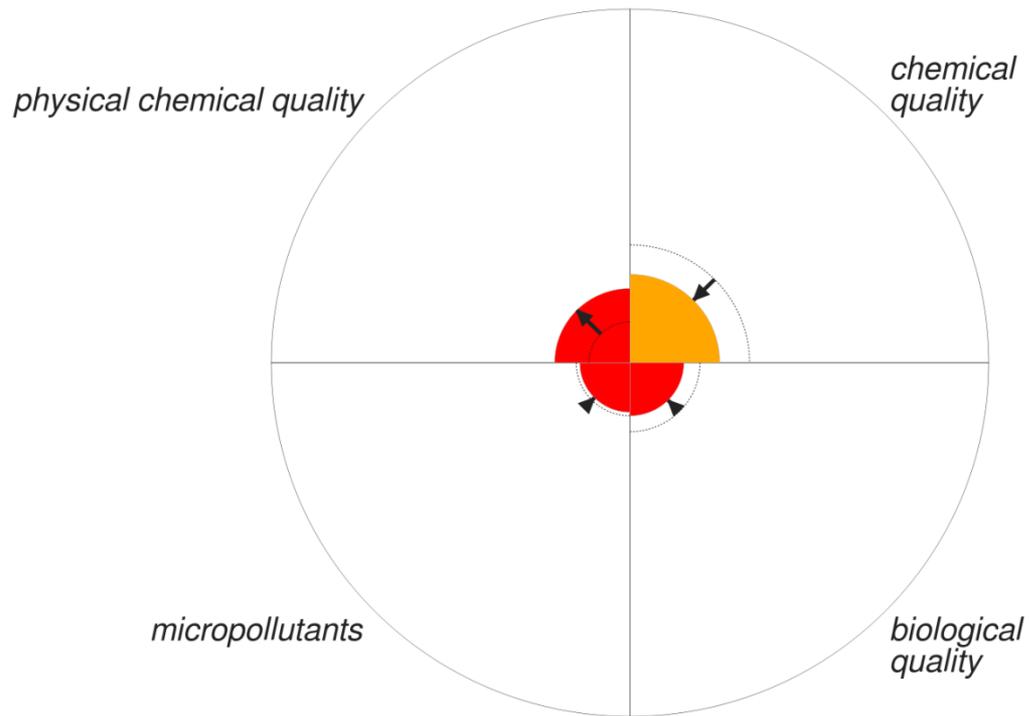
Fresh water

The fresh surface water is clean and of good quality

- chemical quality
- biological quality
- Micro pollutants
- physical chemical quality

There should be adequate water storage capacity in order to deal with periods of shortage (drying out) and surplus (retention)

Fresh water



Landscape

The identity of the landscape should be protected and, if possible, the natural development should be strengthened

- meadows
- urban area
- hotspot index
- natural area

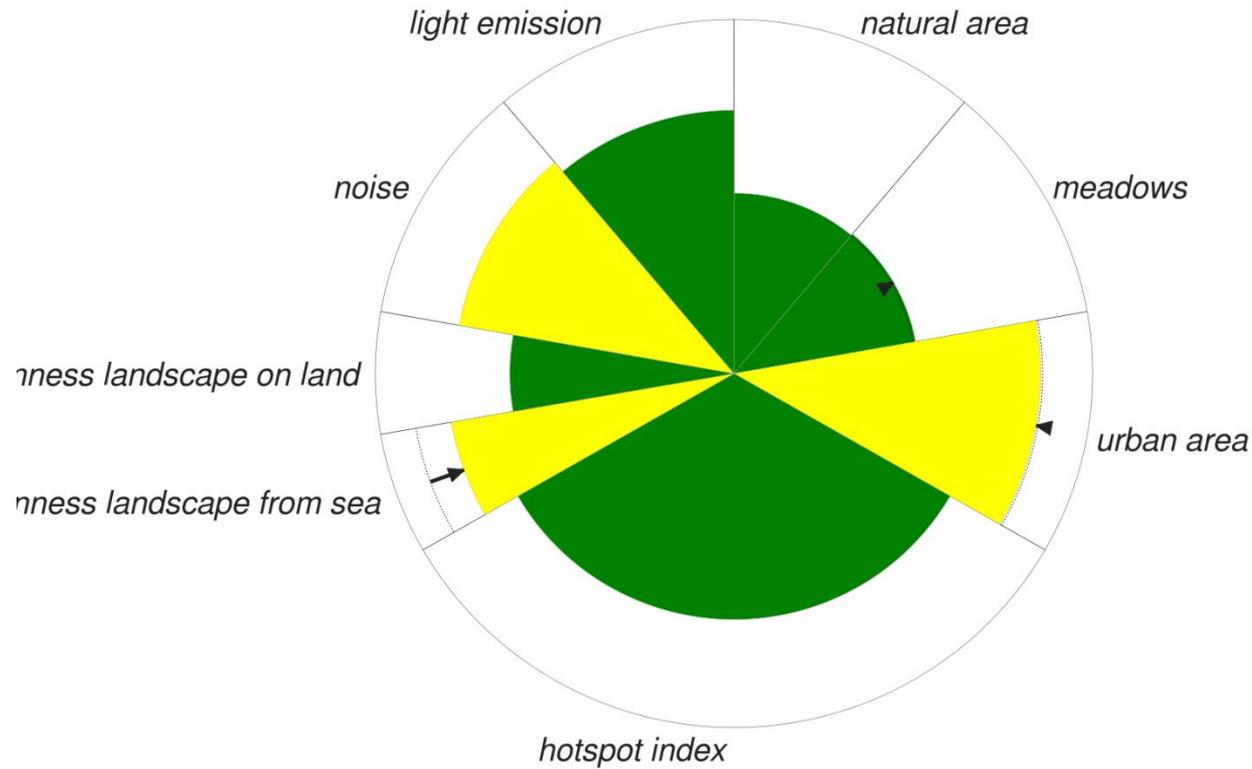
Values of the landscape (like peace, quietness, darkness and openness) and of cultural heritage are of high quality and are being protected.

See also stock [art, culture and cultural heritage]

- openness landscape from sea
- openness landscape on land
- noise
- light emission



Landscape



Nature and biodiversity

- Four approaches possible:
 1. Regulatory protection
 2. Habitat functions
 3. Food chain
 4. Threat – Weighted Ecological Quality Area
- First three combined in three stocks: biodiversity, littoral and sublittoral habitats, habitats on land
- T-EQA: systematic approach to assess quality of ecosystems



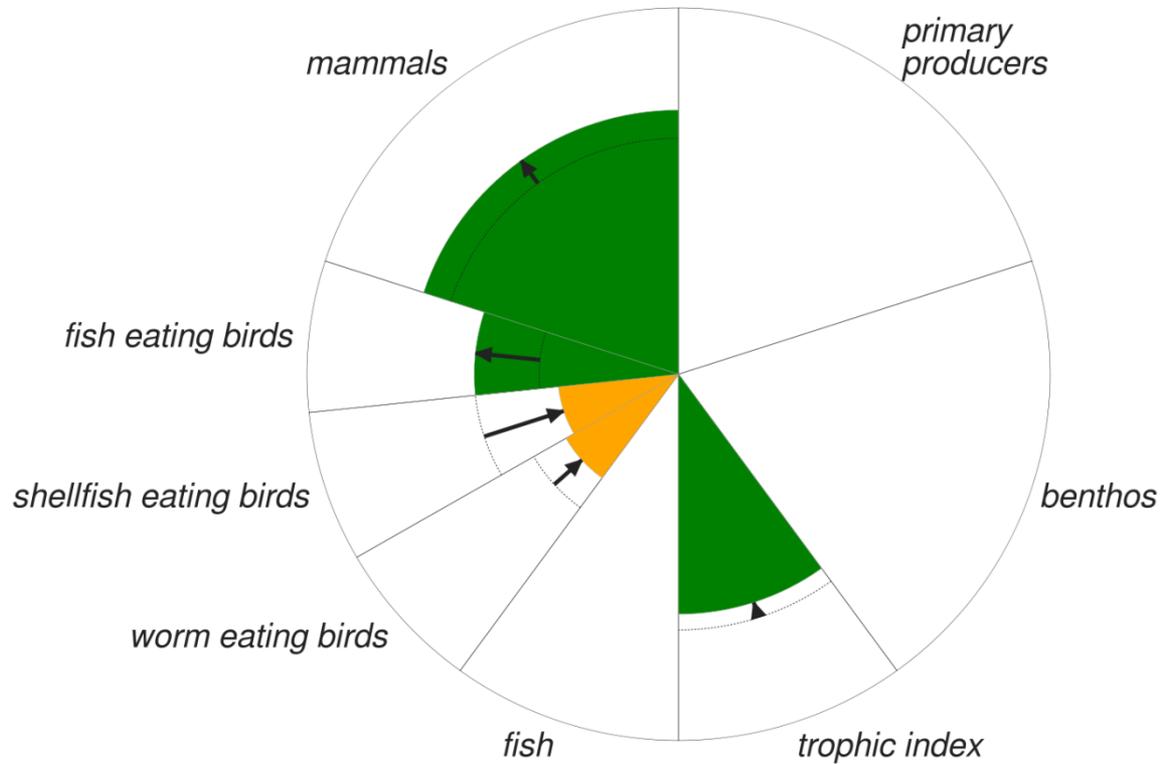
Nature and biodiversity

The Wadden Sea fulfils its functions as nursery area for fish, stopping place for migratory birds, food- and rest area for winter visitors, breeding birds and mammals

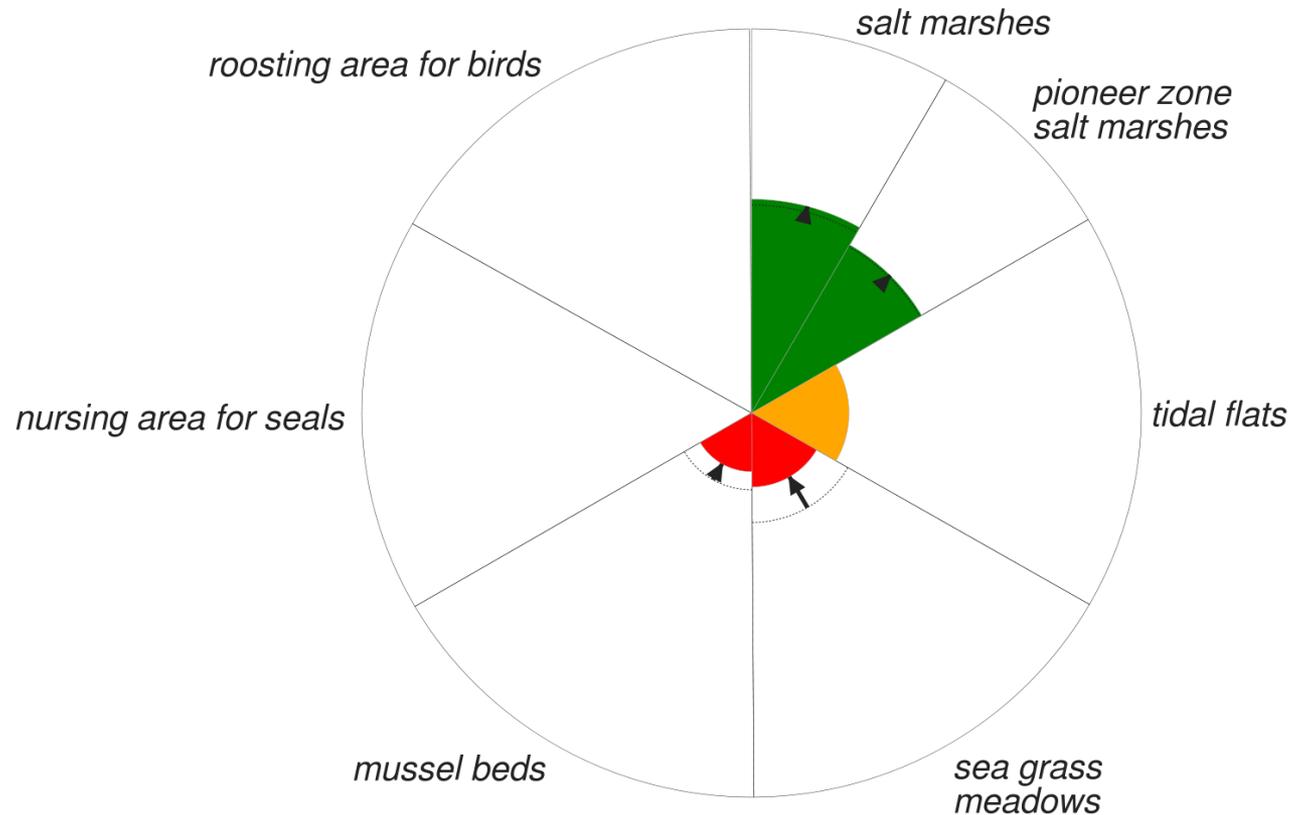
There are enough food, rest and breeding grounds for mammals, fishes and birds

Free migration of organisms is possible as result of restoring ecological linking zones

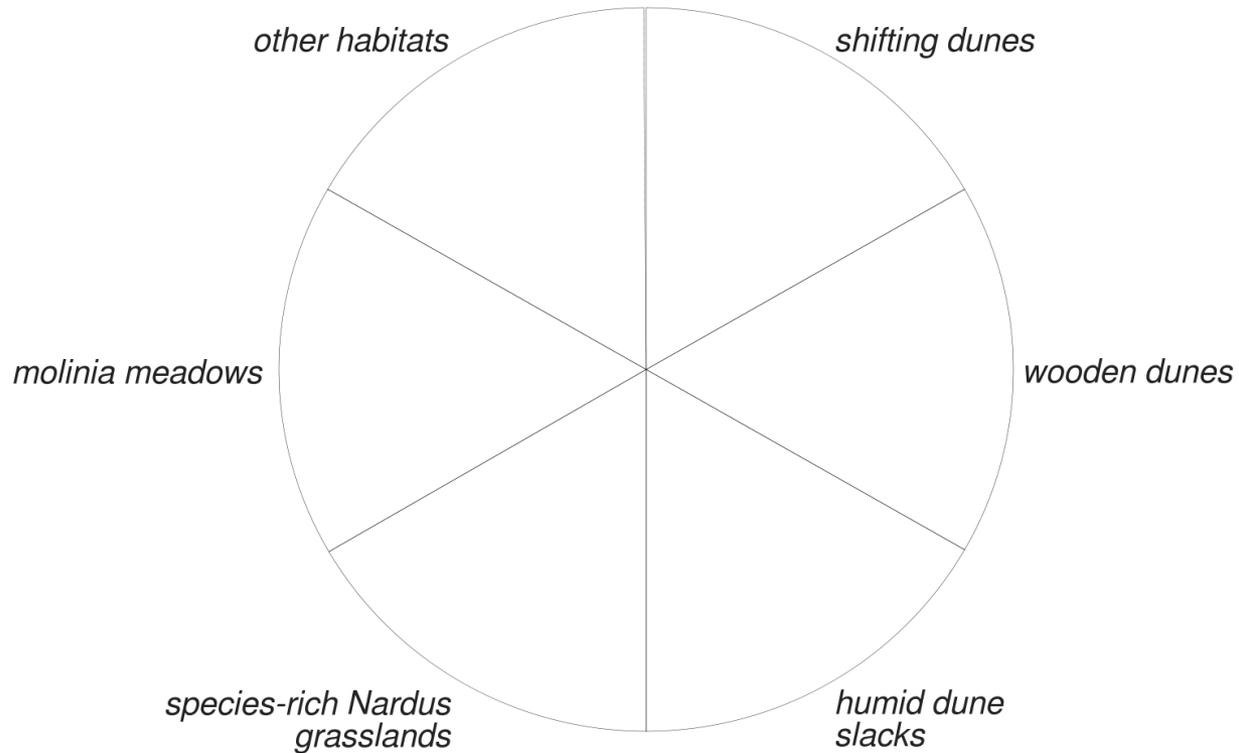
Biodiversity



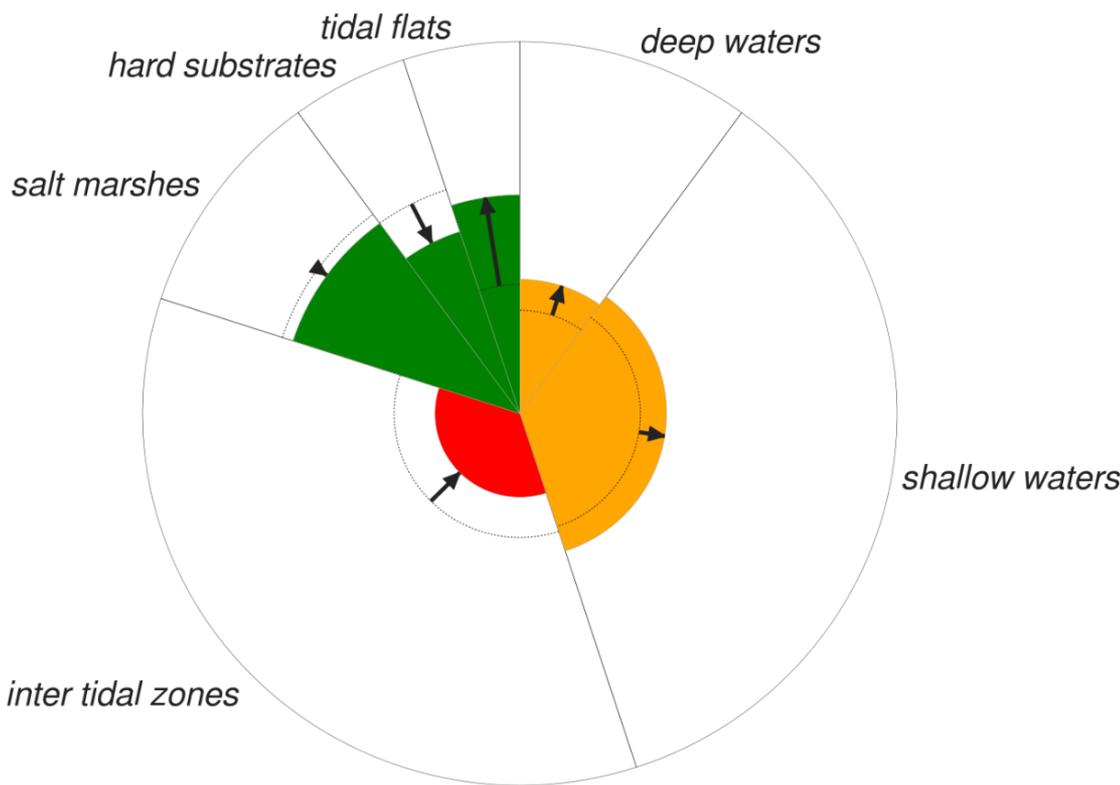
Litoral and sublitoral habitats



Habitats on land



Nature points

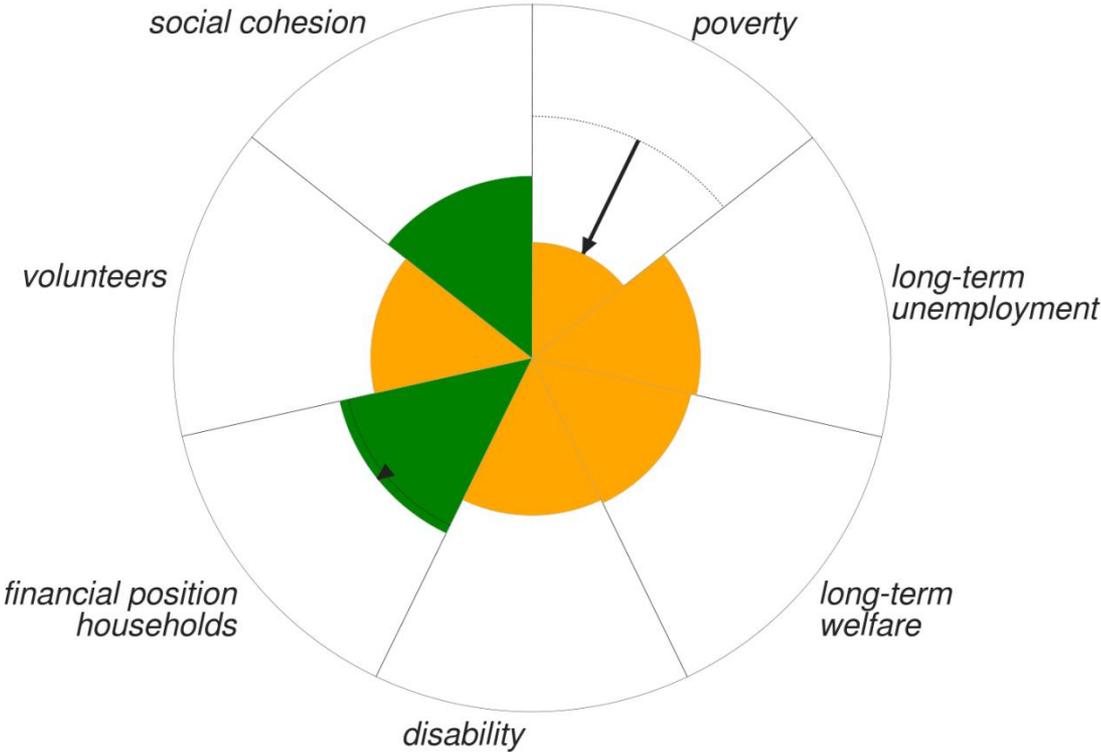


Social-cultural Capital

Social and economic participation

Social participation in society is guaranteed. Nobody is being excluded.	<ul style="list-style-type: none">• social cohesion
People trust each other	
Everybody has the right to cherish his or her own identity and diversity, unless this is restricting the right of other persons to do the same	
Citizens are active in society	<ul style="list-style-type: none">• volunteers
Citizens are able to maintain themselves economically	<ul style="list-style-type: none">• poverty• long-term unemployment• long term social welfare• disability• financial positions households

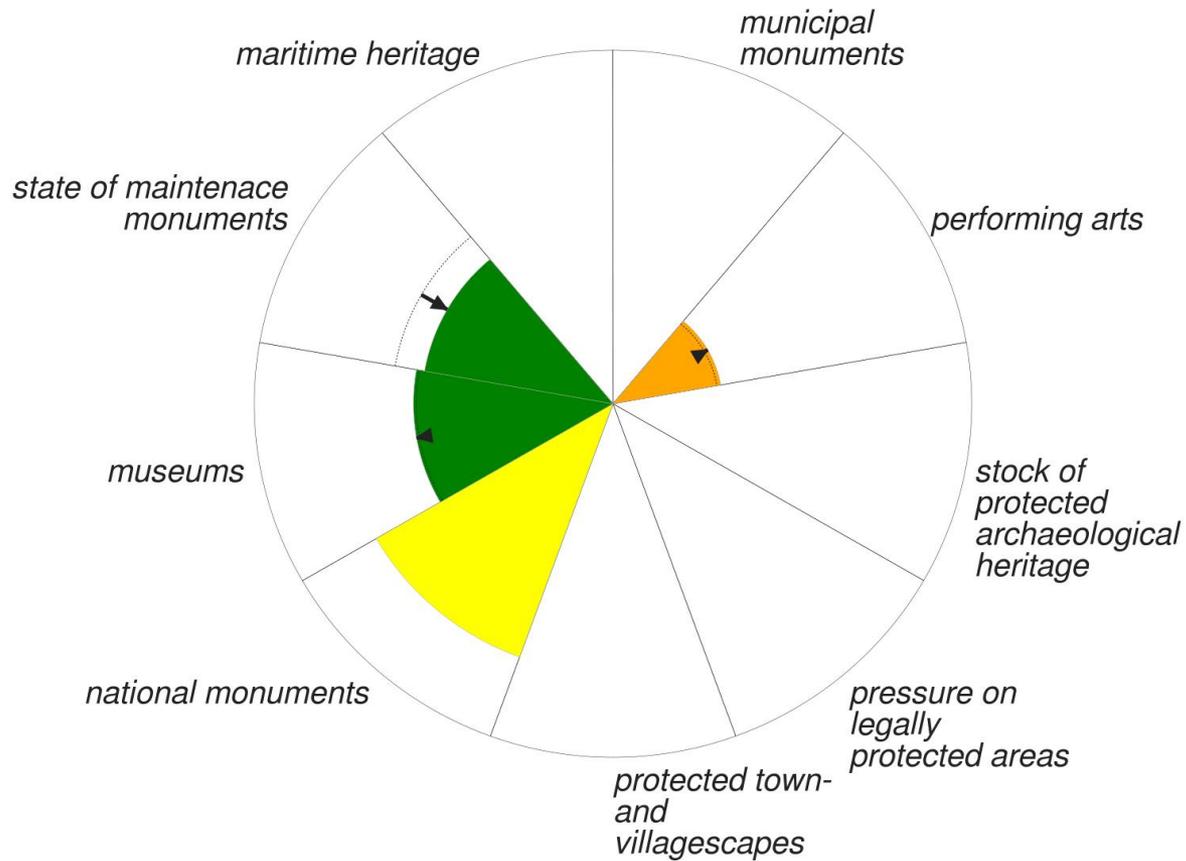
Social and economic participation



Art, culture and cultural heritage

The supply of cultural activities is sufficient and divers	<ul style="list-style-type: none">• museums• performing arts
Each citizen can participate, active and passive, in cultural activities	
The cultural heritage is being strengthened and protected. It is a carrier of the identity of the Waddenregion.	<ul style="list-style-type: none">• municipal monuments• stock of protected archaeological heritage• pressure on legally protected areas• protected town- and villagescapes• national monuments• museums• state of maintenance of monuments
The maritime archaeological heritage will be protected and preserved	<ul style="list-style-type: none">• maritime heritage

Art, culture and cultural heritage



Housing and living environment

Everyone has access to an affordable house of good quality

- new build homes
- real estate value

There are sufficient public and daily amenities in the direct living environment. They are accessible for everybody.

- vacancy rate retail
- satisfaction retail
- distance to supermarket
- number of people moving into region

Everyone is satisfied with their living environment: safe, healthy and pleasant

- satisfaction residential environment
- satisfaction urban green areas

Housing and living environment

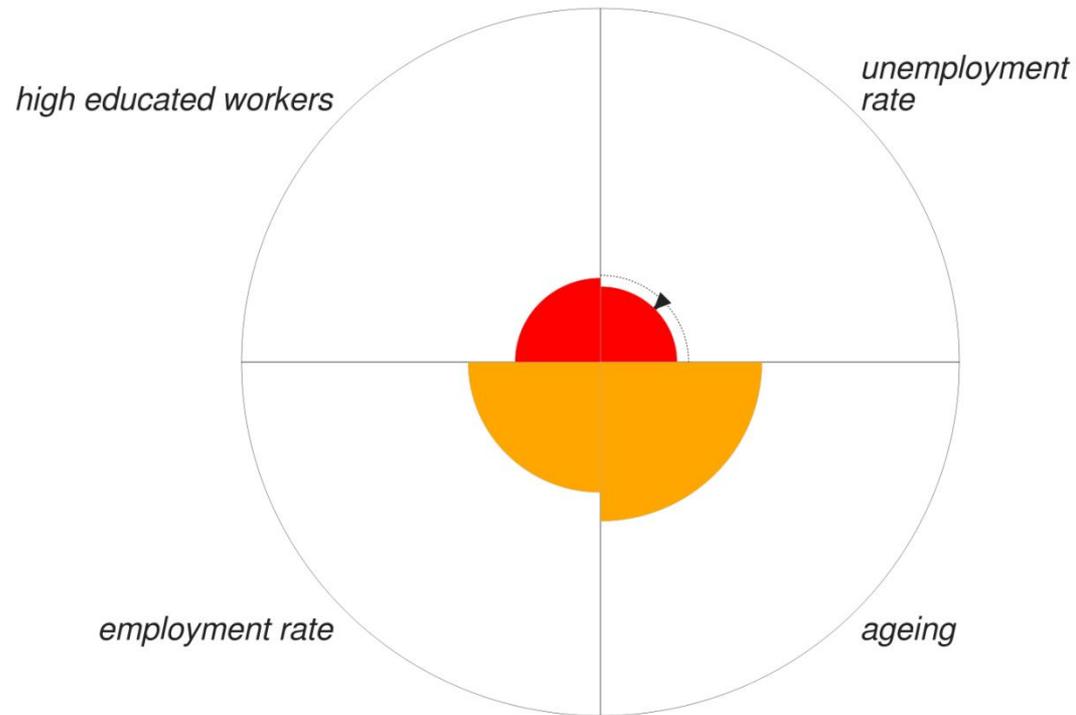


Economic Capital

Labour

There is enough work in the Waddenregion and the surrounding regions	<ul style="list-style-type: none">• unemployment rate• employment rate
The potential of the total potential workforce is being used	<ul style="list-style-type: none">• ageing
The labour supply has at least a start qualification	<ul style="list-style-type: none">• high educated workers

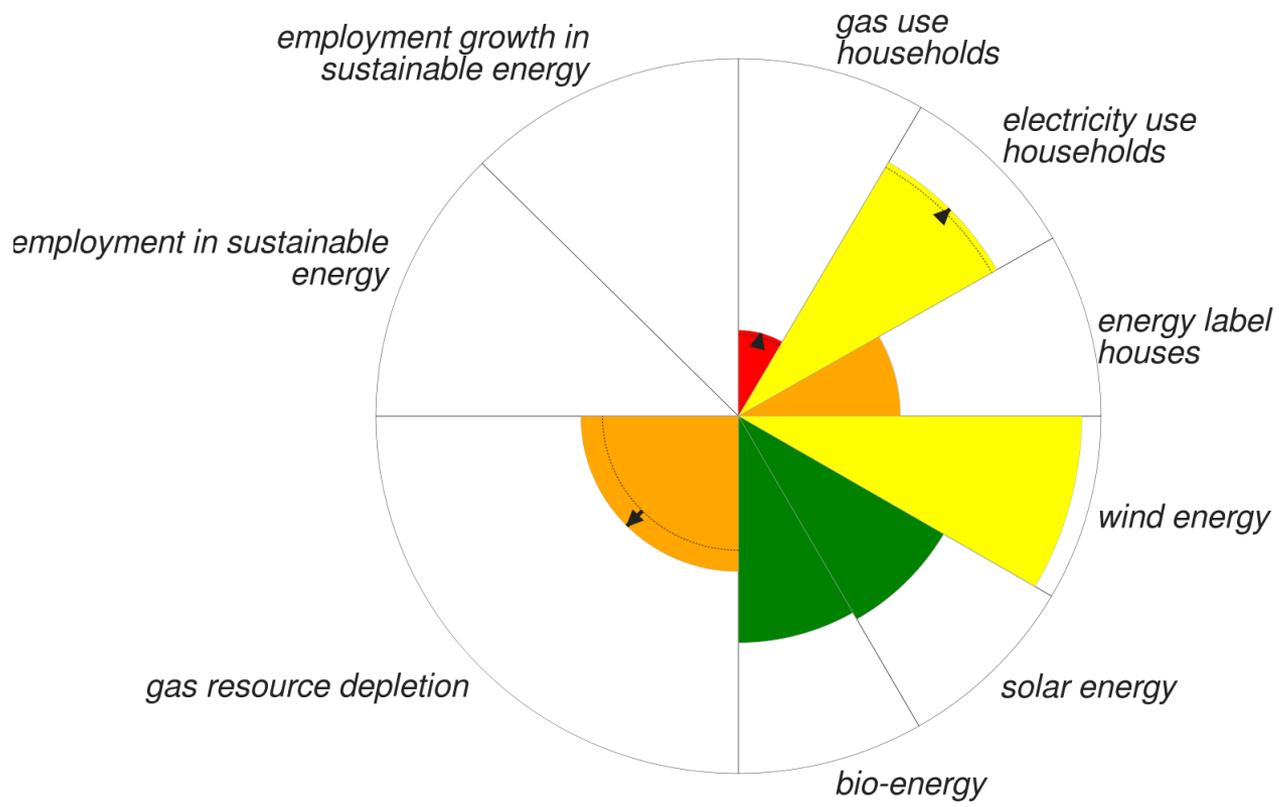
Labour



Energy, raw materials and consumables

Citizens consume less energy	<ul style="list-style-type: none">• gas use households• electricity use households• energy label houses
All consumed energy is produced sustainably	<ul style="list-style-type: none">• wind energy• solar energy• bio-energy
The Wadden Islands are self supporting and sustainable with regards to their energy consumption	
Non-renewable resources are being treated with great care	<ul style="list-style-type: none">• gas resource depletion
The production of sustainable energy has become a core economic activity	<ul style="list-style-type: none">• employment in sustainable energy• employment growth in sustainable energy

Energy, raw materials and consumables



Economic structure (1)

The touristic sector has succeeded in becoming one of the key sectors of the economy of the Waddenregion

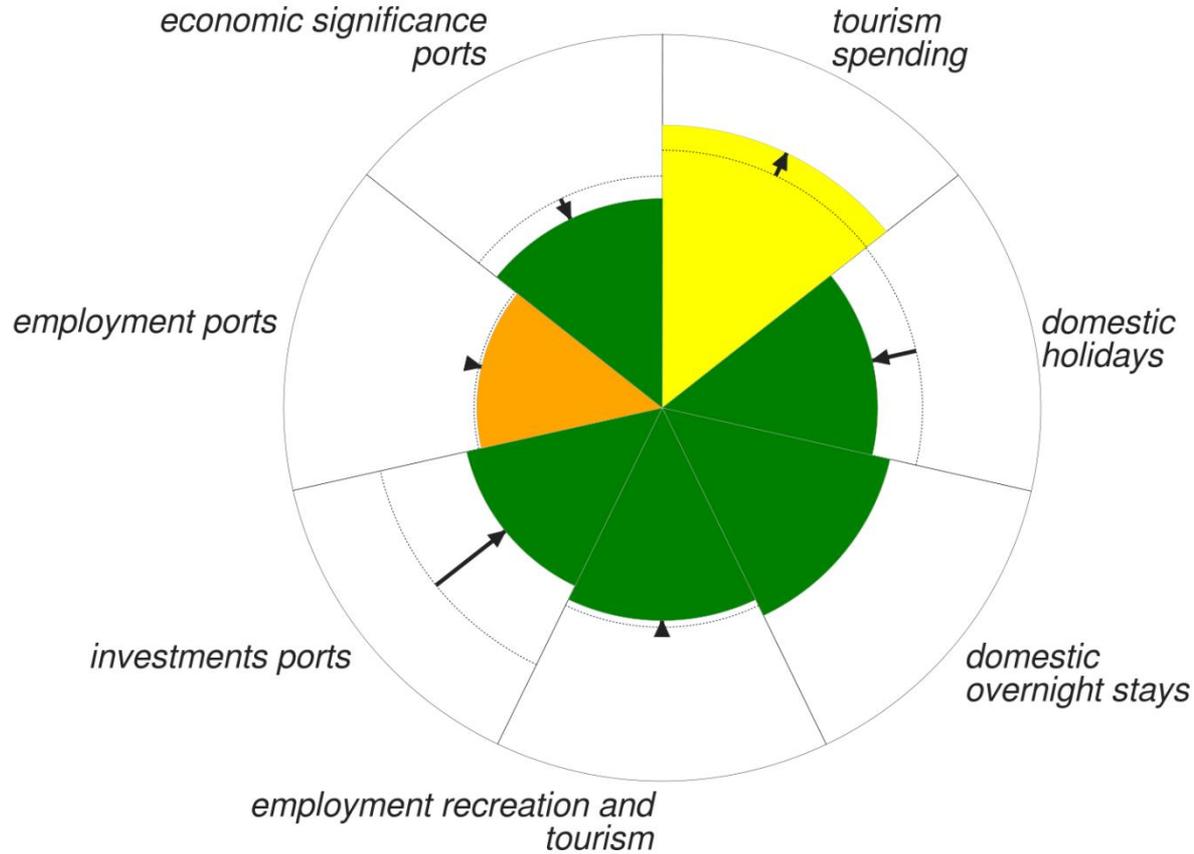
- tourism spending
- domestic holidays
- domestic overnight stays
- employment recreation and tourism

The harbors of the Waddenregion have developed themselves to sustainable harbors: World Heritage worthy

- investments ports
- employment ports
- economic significance ports



Economic structure (1)



Some conclusions: ecological capital

- Environmental quality in general ok, but a number of issues:
 - Salinisation: threat or chance?
 - CO₂ and NO_x emissions still high
 - Fresh surface water: polluted (like in the rest of the Netherlands)
- Landscape of high quality and highly rewarded, but the openness of the sea is threatened
- Nature and biodiversity:
 - land and borders of the Wad: OK
 - Problems especially in the intertidal zones as shown in all approaches: nature points, musselbeds and sea grass meadows and shellfish and worm eating birds



Some conclusions: social cultural capital

- Social and economic participation is under pressure: increasing poverty, high youth unemployment
- Art, culture and cultural heritage are OK as far as we are measuring this: more statistical information is needed
- Liveability, quality of life is under pressure: satisfaction with a number of local amenities is relatively low, school infrastructure is an issue
- Safety as far it is related to classical issues as crime, violence etc.: OK. Information on flood risks and earthquakes should be incorporated

Some conclusions: economic capital

- Economic crisis is leaving its marks: very high and increasing unemployment, negative economic growth (almost everywhere).
- Relatively high production of sustainable energy
- Tourism is scoring quite well
- Harbours under pressure
- Lots of information, especially on issues regarding the desired economic transition, is lacking

Final remarks

- The prototype is more or less finished. Now it should be validated and debated. Key questions:
 - are we measuring the right things,
 - in the right way,
 - and are the norms which we are using broadly accepted and shared?
- The existing visions for the Wadden region are foremost ecological and partly economic. A social-cultural vision is lacking with exception of cultural heritage
- Information is lacking as shown. Sometimes because the information still is not collected or asks for more (time) investments. Sometimes because it's not available at the requested geographical level. The results of our study can be used for setting a research agenda.
- A (further) connection needs to be made, directly and indirectly, with the program of the Waddenfund



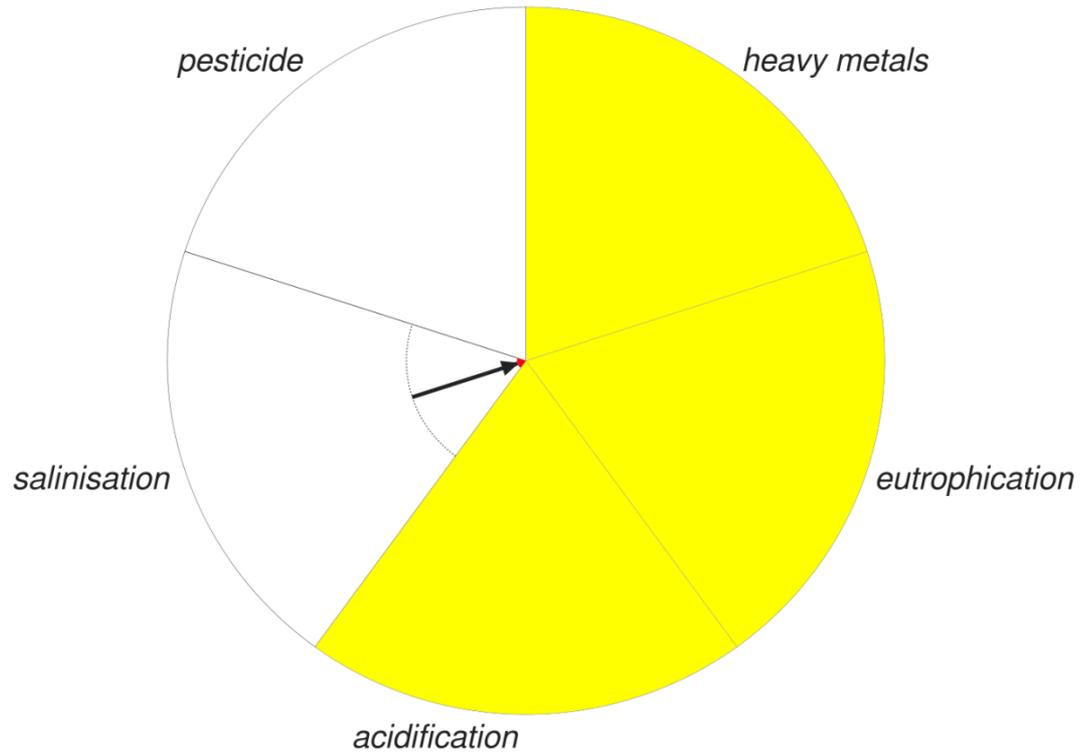
Thanks for you patience and attention!!!

Land soil

The soil is healthy and clean

- heavy metals
- eutrophication
- acidification
- salinization
- pesticide

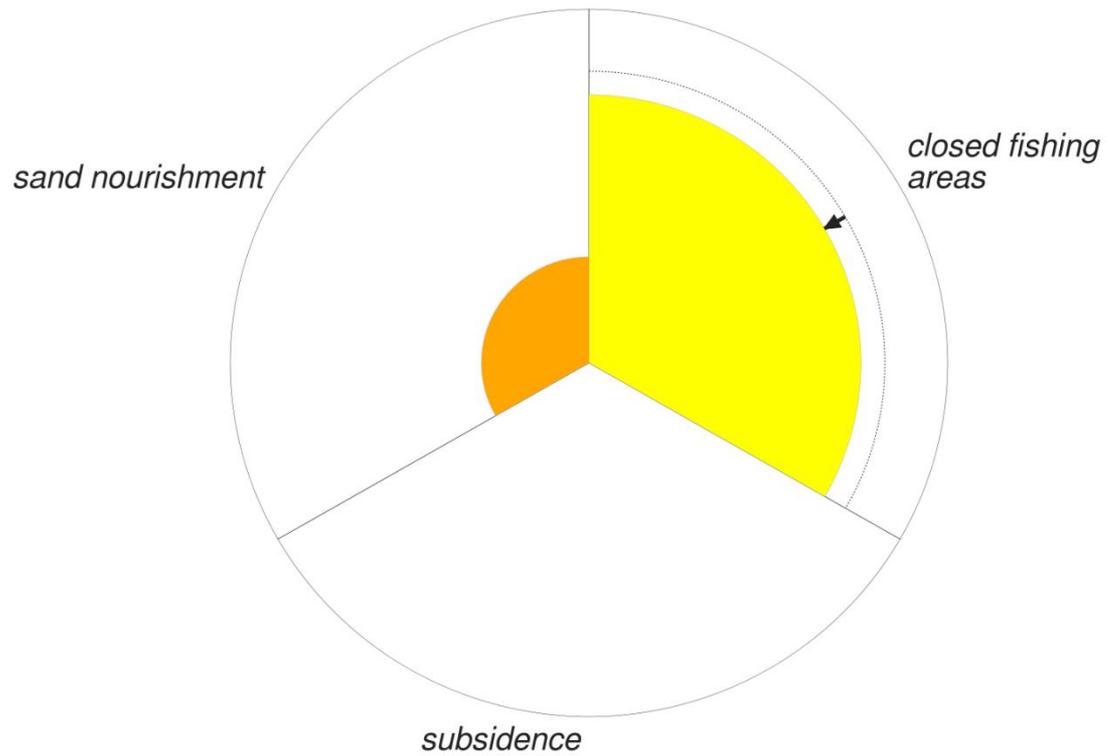
Land soil



Sea Soil

<p>The soil is healthy/clean</p>	<ul style="list-style-type: none">• [See also stock salt water]
<p>The disturbance of the soil is so restricted that an undisturbed development of natural mussel beds and sea grass fields can take place</p>	<ul style="list-style-type: none">• closed fishing areas• subsidence• sand nourishment
<p>The area of salt marshes will be enlarged to strengthen the natural functions of the Wadden Sea</p>	

Sea Soil



Groundwater

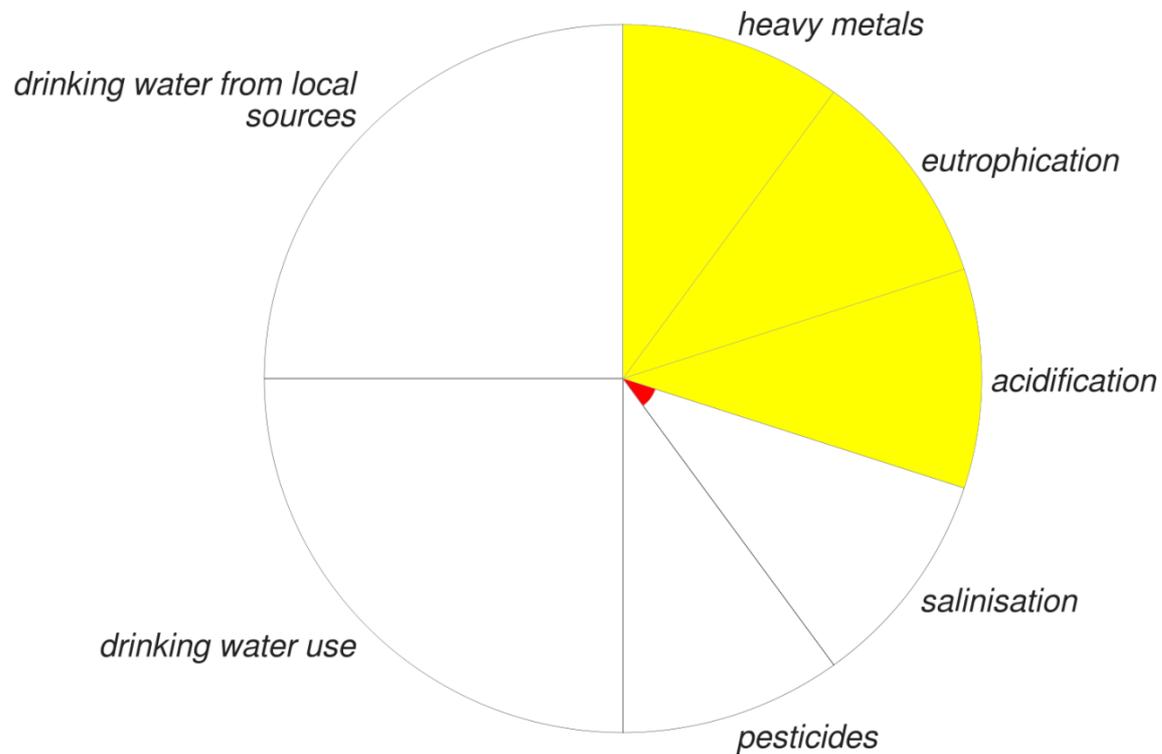
The groundwater is clean and of good quality

- heavy metals
- eutrophication
- acidification
- salinization
- pesticides

Sustainable freshwater supply is guaranteed

- drinking water use
- drinking water from local sources

Groundwater



Sea water

The natural development of trenches and plates (for currents, sand) will not be hindered

- [See sea soil]
- hydro morphological quality

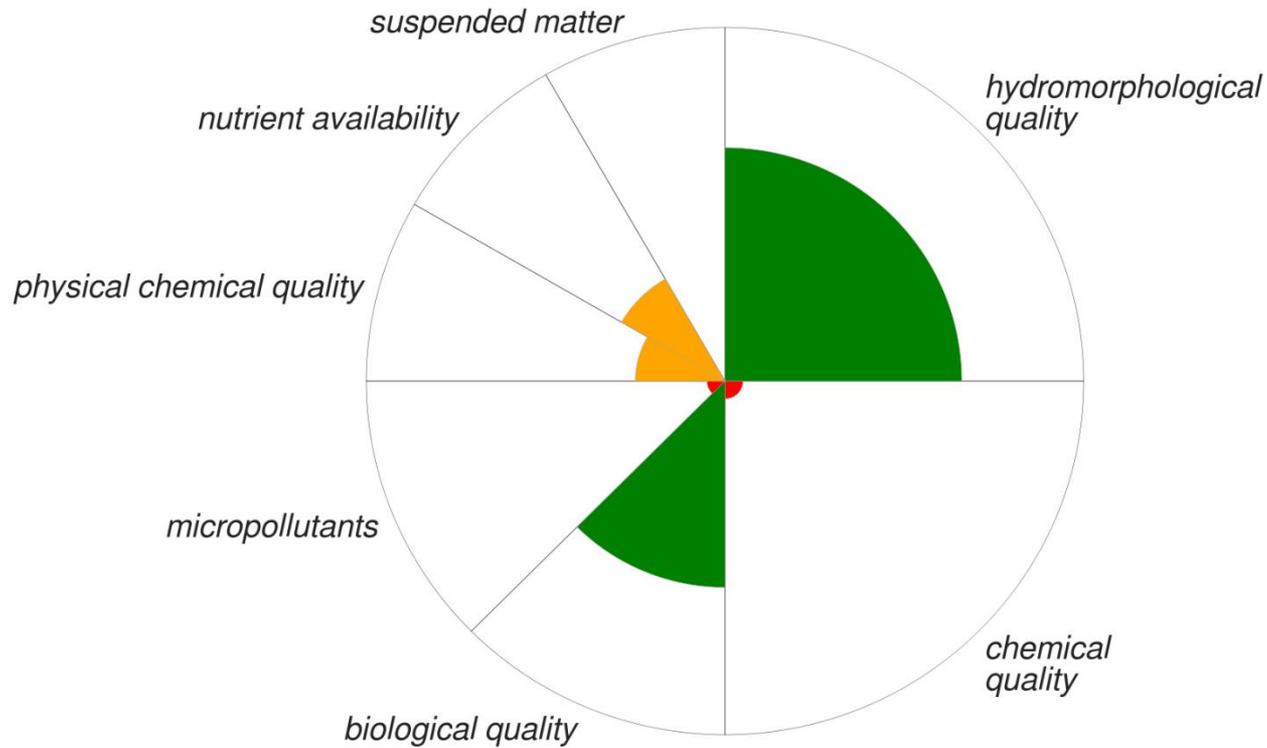
The sea water is clean and transparent enough

- chemical quality
- biological quality
- micro pollutants
- physical chemical quality

The food web is in balance

- nutrient availability
- suspended matter

Sea water



Air quality

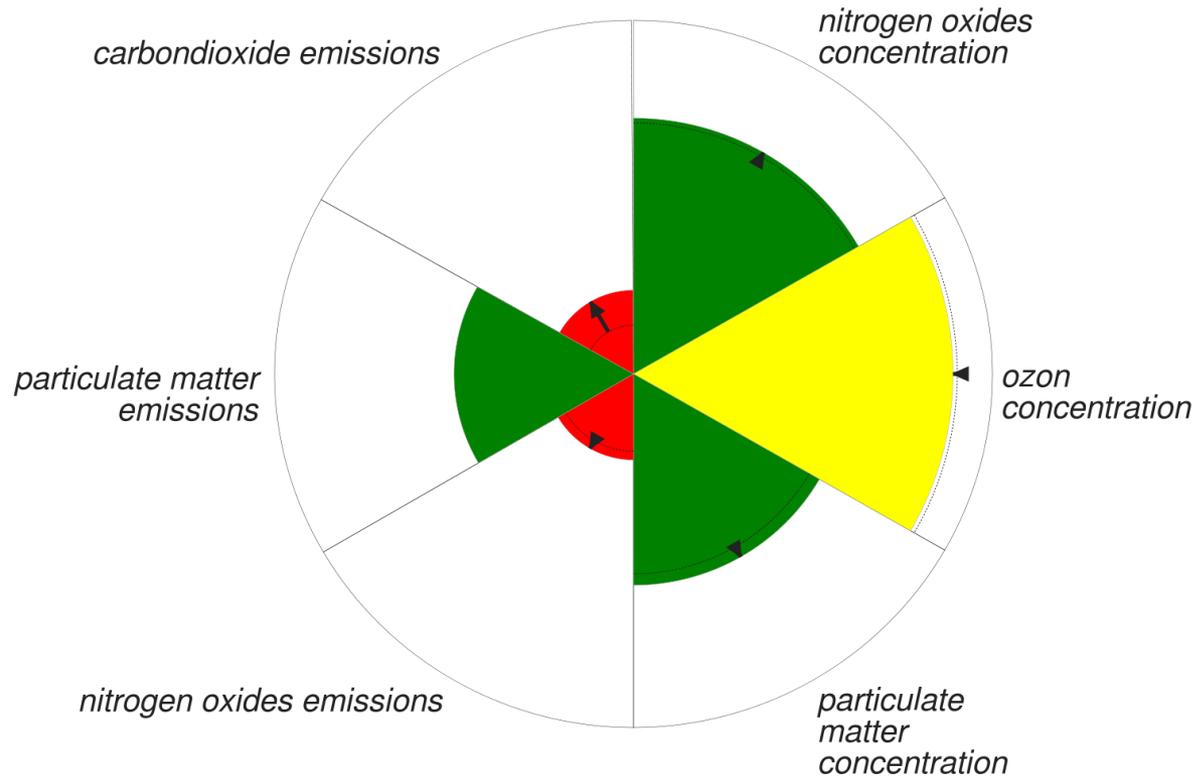
The air is clean

- nitrogen oxides concentration
- ozone concentration
- particulate matter concentration
- nitrogen oxides emissions
- particulate matter emissions

The Wadden Region is climate neutral

- carbon dioxide emissions

Air quality



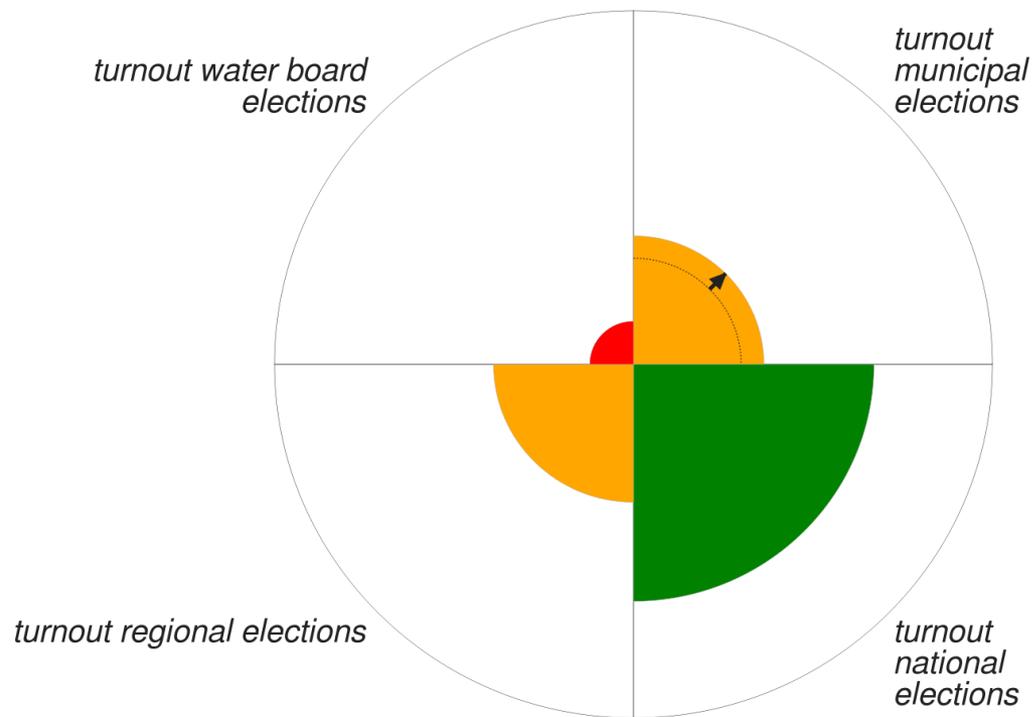
Political participation

Each citizen has the right to participate in political decision making and makes use of it.

- turnout municipal elections
- turnout national elections
- turnout regional elections
- turnout water board elections

Citizens trust the government and social institutions

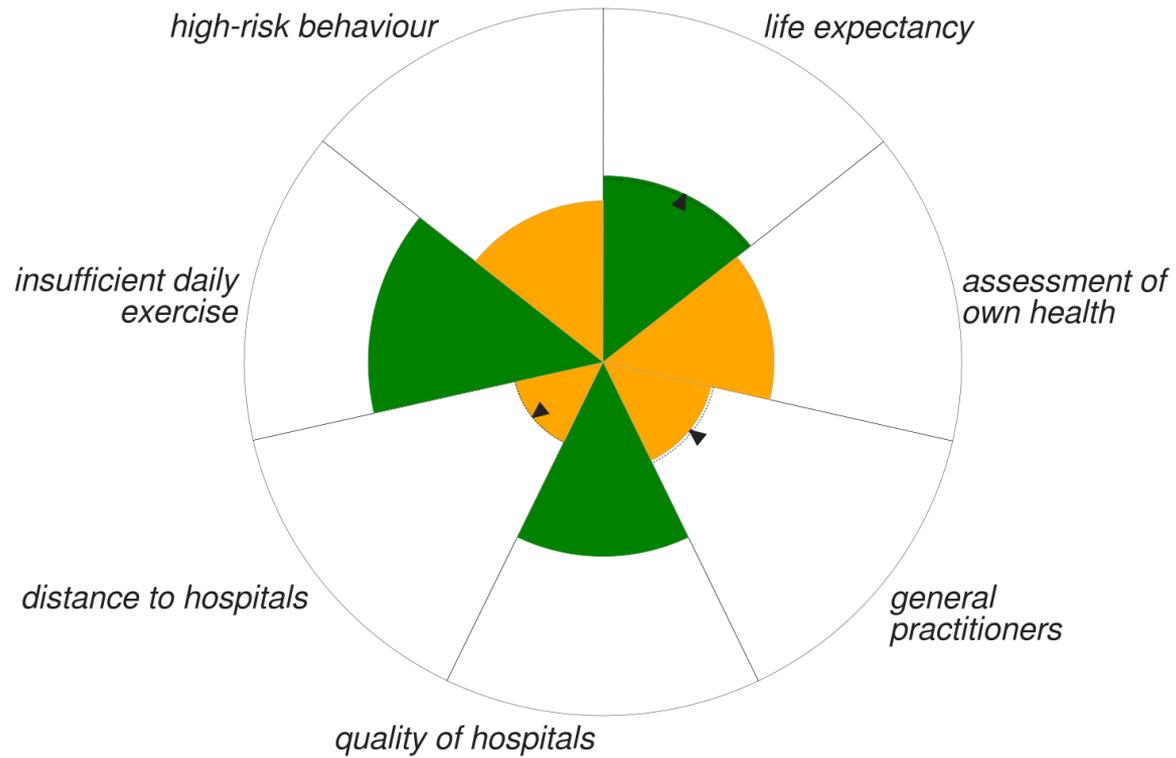
Political participation



Health

The population is physical and mental healthy	<ul style="list-style-type: none">• life expectancy
The population feels itself healthy	<ul style="list-style-type: none">• assessment of own health
The health care system is of good quality and accessible for everybody	<ul style="list-style-type: none">• general practitioners• quality of hospitals• distance to hospitals
Everyone has their own responsibility for a healthy lifestyle	<ul style="list-style-type: none">• insufficient daily exercise• high-risk behavior

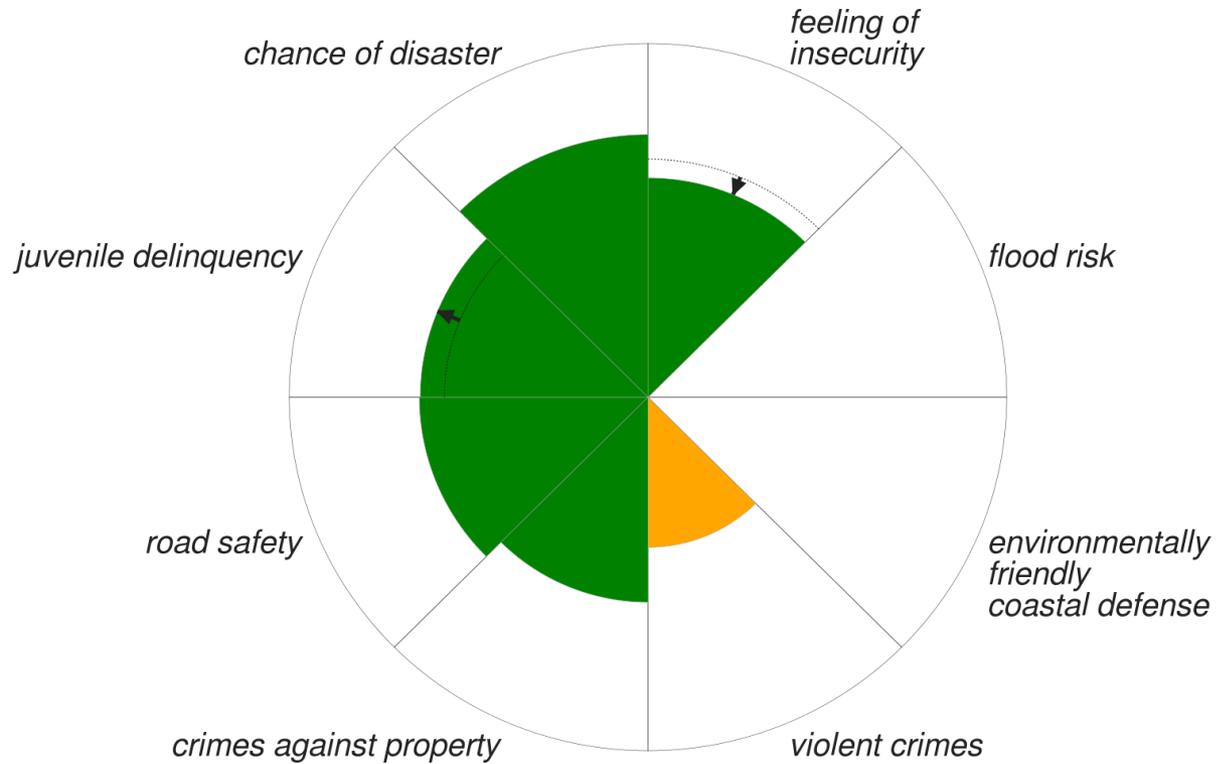
Health



Safety

Everyone feels safe in the Waddenregion	<ul style="list-style-type: none">• feelings of insecurity
The Wadden Islands and the coast of the mainland are protected against sea level rise and storms	<ul style="list-style-type: none">• flood risk• environmentally friendly coastal defense
The chance of becoming a victim of a disaster, crime, violence or traffic accidents is negligible	<ul style="list-style-type: none">• violent crimes• crimes against property• road safety• juvenile delinquency• chance of disaster

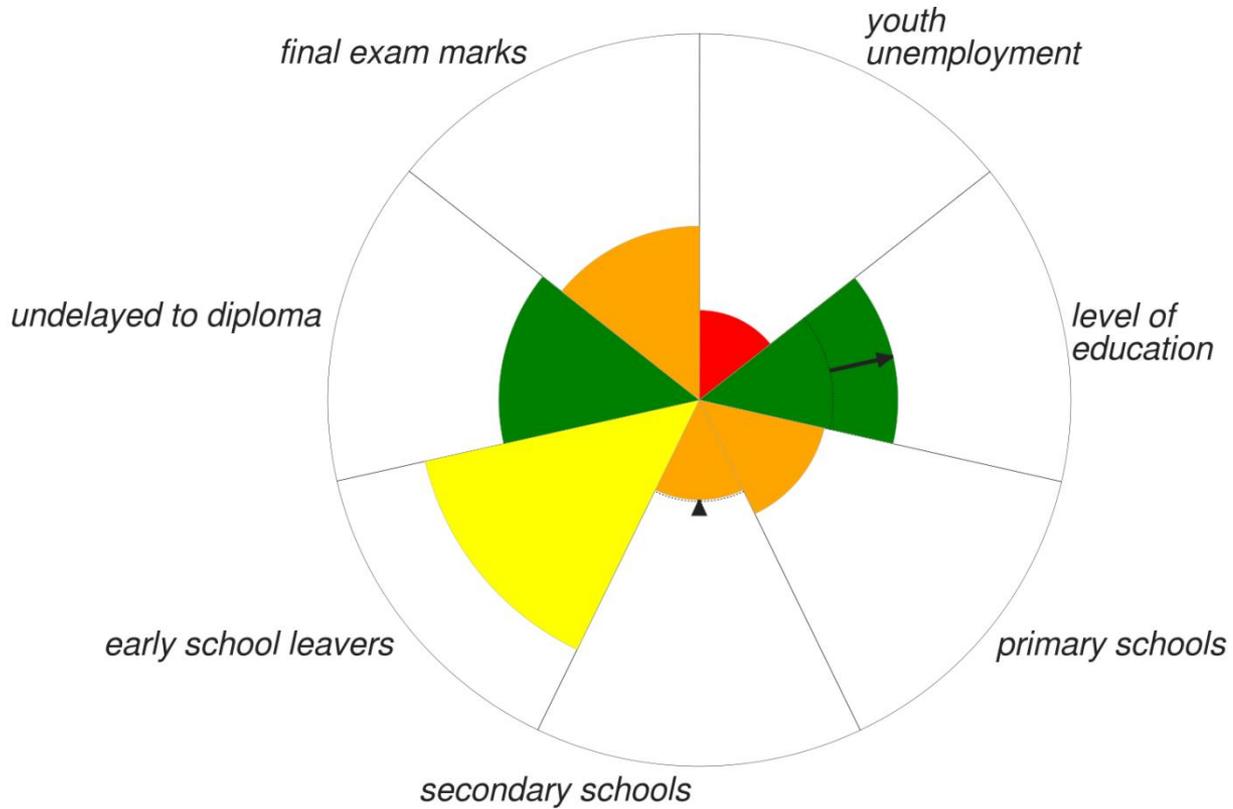
Safety



Education

The education system meets the needs of society	<ul style="list-style-type: none">• youth unemployment• level of education
There are sufficient schools	<ul style="list-style-type: none">• primary schools• secondary schools
The education is of good quality	<ul style="list-style-type: none">• early school leavers• undelayed to diploma• final exam marks

Education



Economic structure (2)

The agricultural sector has succeeded in maintaining and strengthening its position by innovation and broadening its activities. The production is sustainable

- broadening of agricultural activities
- turnover agricultural sector
- share of saline agriculture in total agricultural sector
- productivity agricultural sector
- Employment in key sector agro & food
- biological agriculture
- employment in agriculture

The fisheries sector has succeeded in maintaining its economic position and has become more sustainable (fishing techniques, energy use)

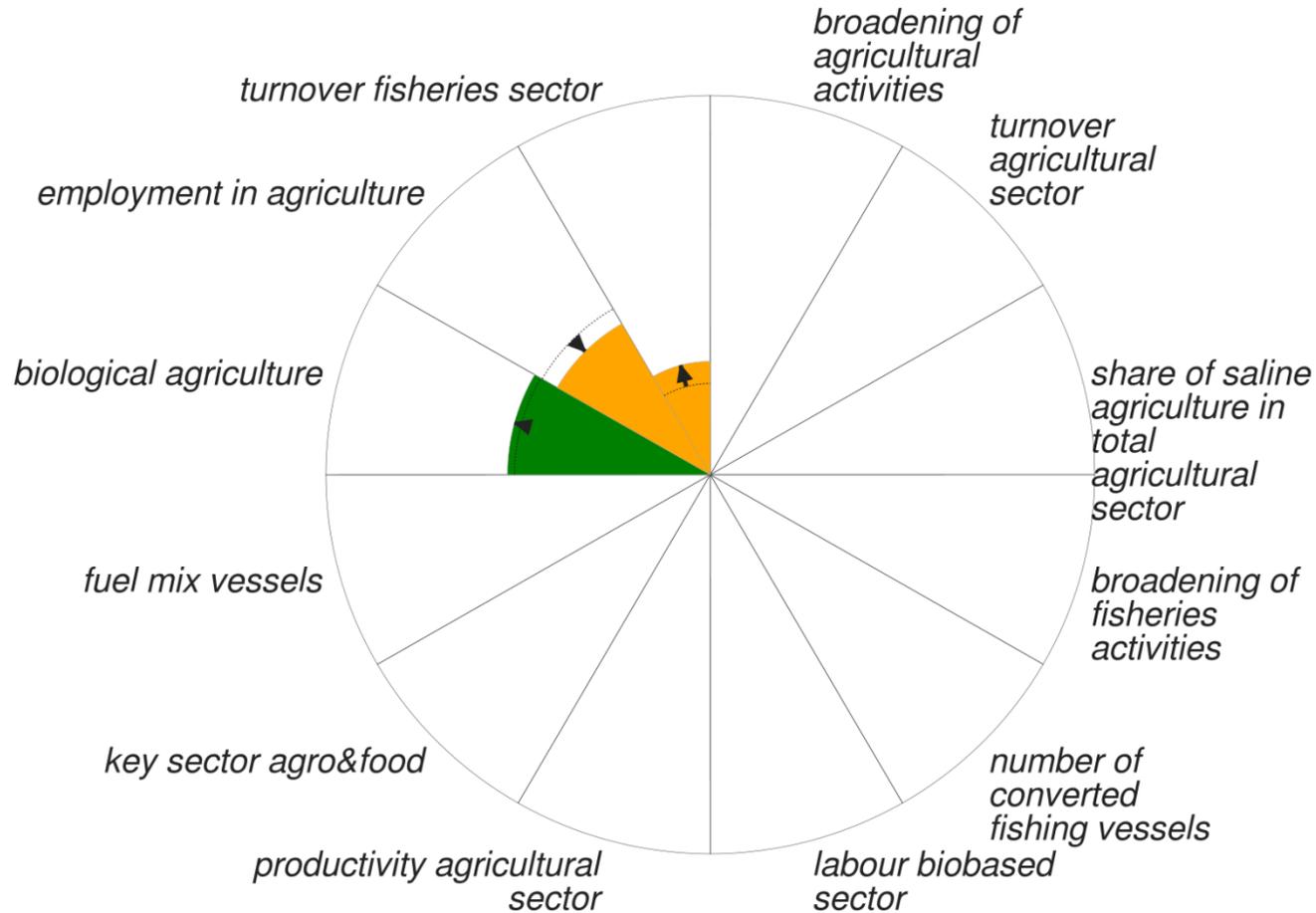
- turnover fisheries sector
- broadening of fisheries activities
- number of converted fishing vessels
- fuel mix vessels

The bio based economy has developed itself to a key sector in the regional economy

- Employment bio-based sector



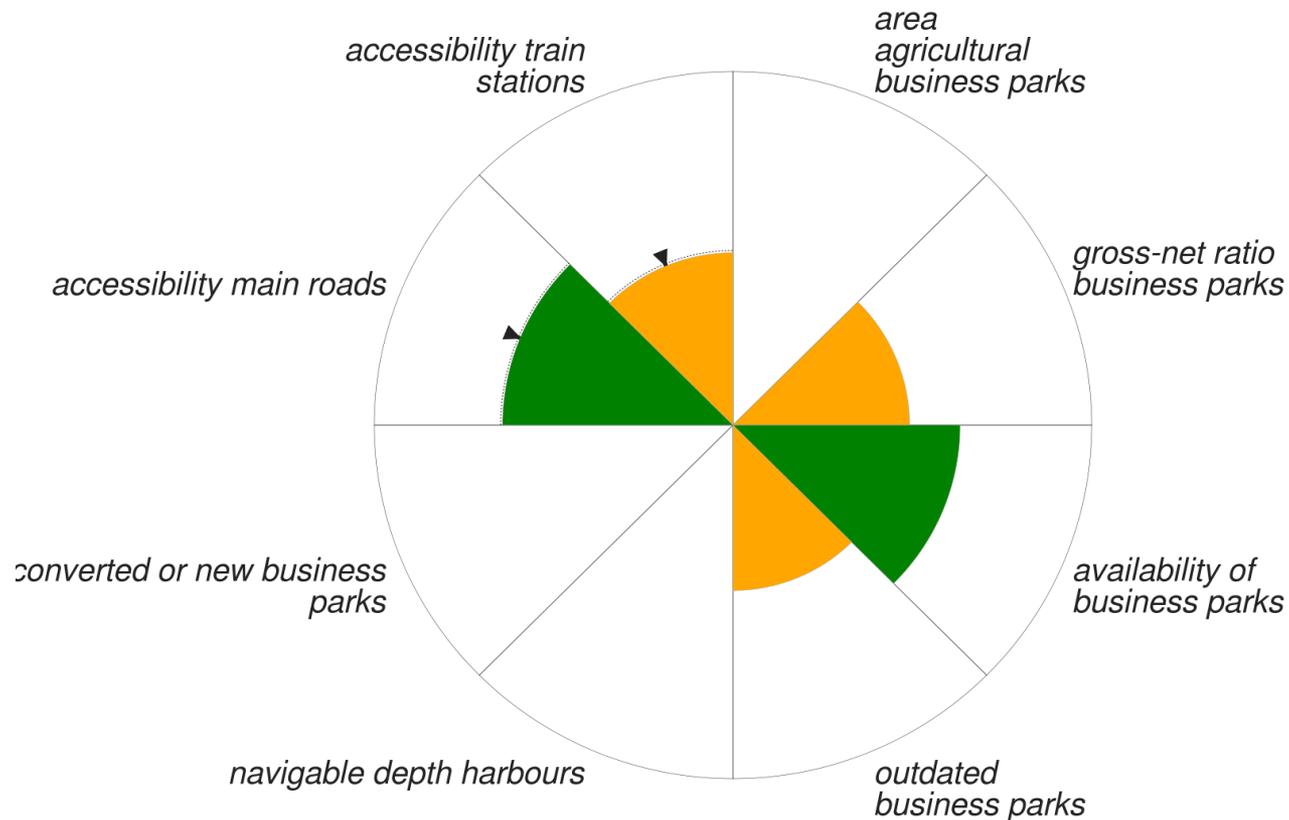
Economic structure (2)



Space, infrastructure and connectivity

There is enough space available for business development (industrial sites, commercial buildings)	<ul style="list-style-type: none">• availability of business parks
A number of agricultural business parks have been established	<ul style="list-style-type: none">• area agricultural business parks
The available space is managed with great care: economic, careful and efficient use of space and adjusted to today's demands	<ul style="list-style-type: none">• outdated business parks• gross-net ratio business parks• converted or new business parks
Islands, harbours, business, amenities and economic centres are good accessible by all modes of mobility	<ul style="list-style-type: none">• accessibility main roads• navigable depth harbors• accessibility train stations

Space, infrastructure and connectivity



Capital(goods)

Firms in the Waddenregion make sufficient profit to be able to invest	
Firms invest sufficiently so that continuation of their businesses is guaranteed.	
The regional production structure is permanently renewed	<ul style="list-style-type: none">• startups• ending of firms• fast-growing firms
The regional economy is generating enough income	<ul style="list-style-type: none">• GDP per capita• disposable income of households• economic growth• employment growth• growth of companies

Capital(goods)

