

Integrated Coastal Zone Management & retrospective analysis of existing ICZM best practise case studies

Marija Kataržytė, Ramūnas Povilanskas
Klaipėda University (Lithuania)



**A Systems Approach Framework
for Coastal Research and Management
in the Baltic**



- Introduction
- Coastal zone issues in European Union
- Integrated Coastal Zone Management and Systems Approach Framework
- Case study: Cross-border Management of the Vistula Lagoon, the Curonian Lagoon and their Catchment Areas
- Case study: Finnish and Lithuanian perspectives on ICZM: A comparative analysis
- Conclusions



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Among the main objectives of the BaltCoast project –

is to develop a **coherent and systematic approach** to Integrated Coastal Zone Management in the Baltic Sea, which covers multiple impacts in a spatially varied context

by using Systems Approach Framework as a tool to solve complex development issues in the coastal zone



For this aim we shall discuss:

1. what are those complex development issues in the coastal zone?
2. what is Integrated Coastal Zone Management (ICZM)?
3. How Systems Approach Framework can contribute to develop a **coherent and systematic approach** to ICZM covering multiple impacts in a spatially varied context?

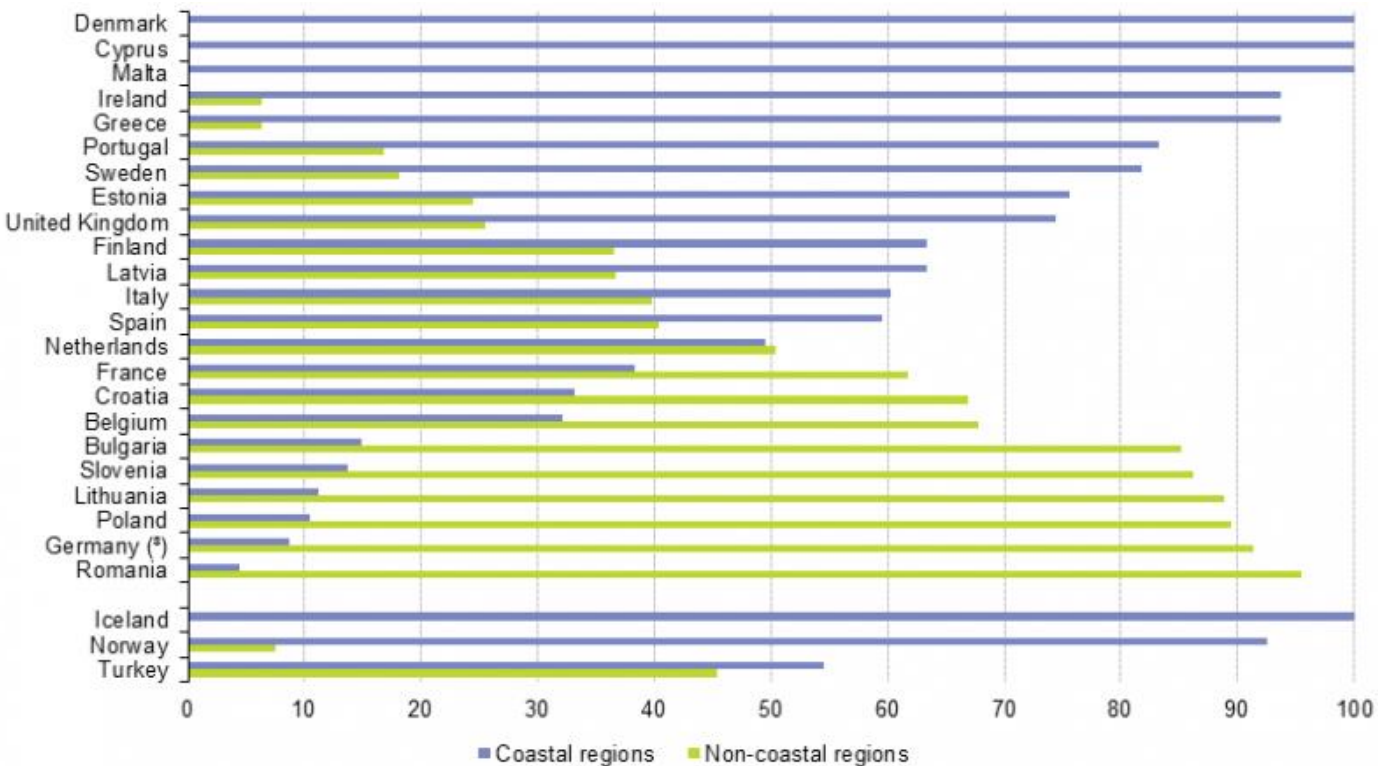
The need of SAF in ICZM will be illustrated by case studies



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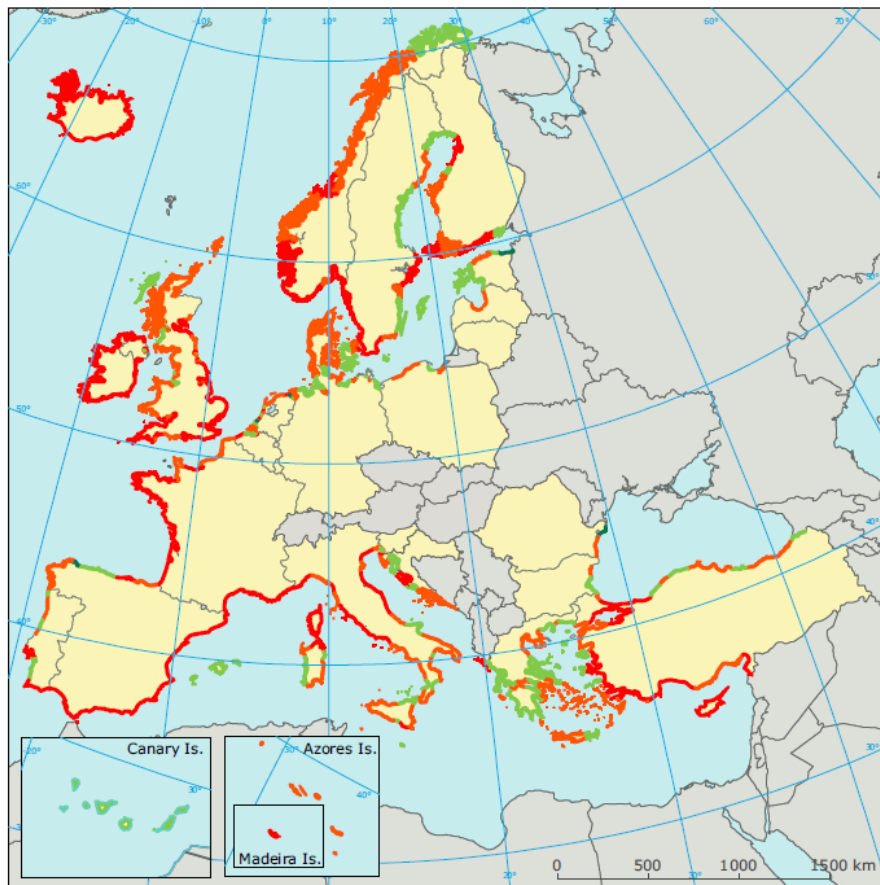


- The coastal zone concept reflects the **coexistence and interaction of two margins** on both sides of the coastline: terrestrial and offshore
- The terrestrial part of the European coastal zone occupies 4% to 13% of the land mass
- It covers 619'000km² in the 23 coastal EU Member States
- The extension of the offshore part of the coastal zone is arbitrary (could extend up to the 200nm limit of EEZ)



206.2 million people live in EU coastal NUTS-3 regions = **41% of total population** (Eurostat, 2013)

All population of Denmark, Cyprus, Malta and Iceland **lives in coastal regions**

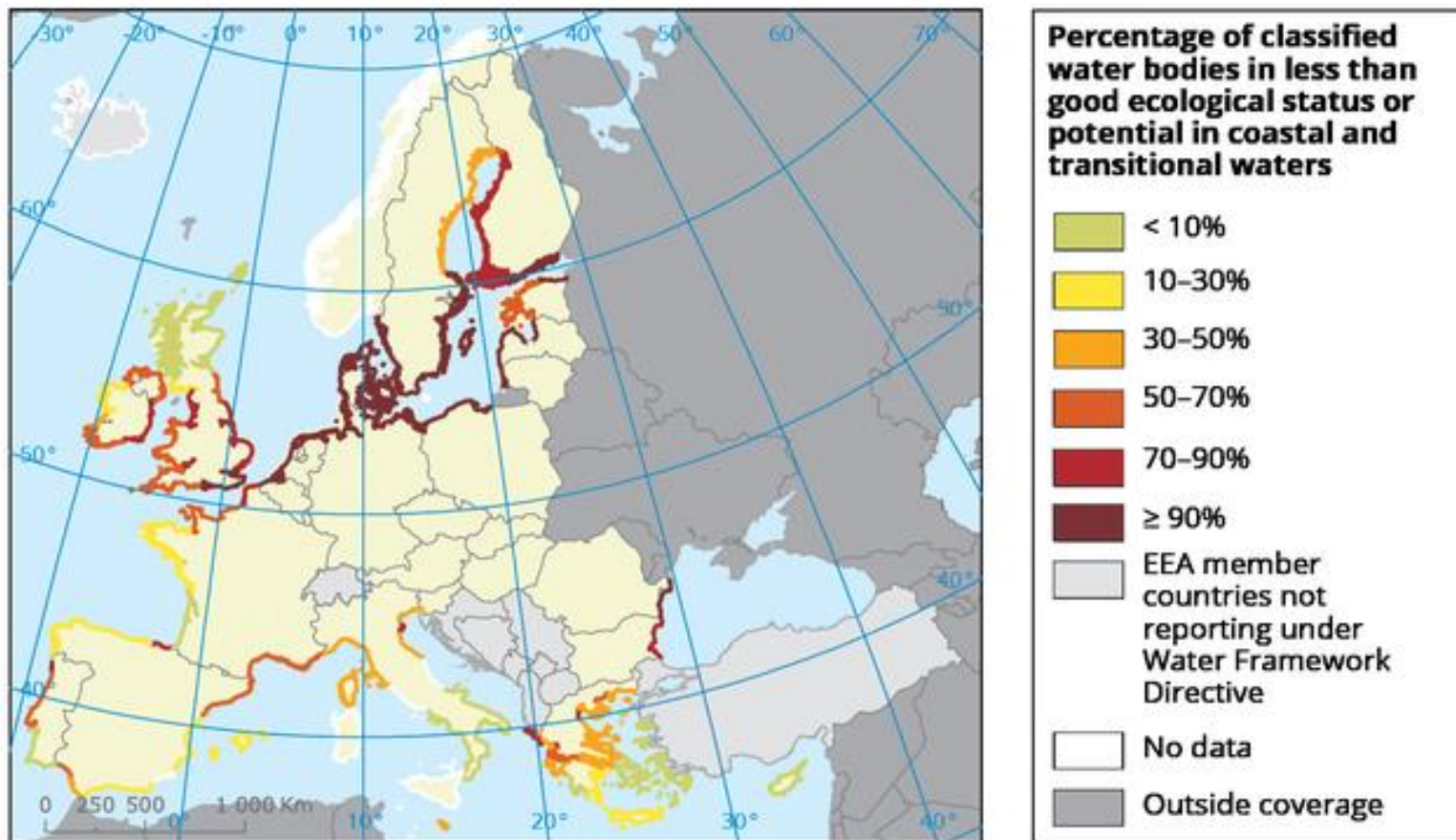


Population trends in European coastal regions, 2001–2012

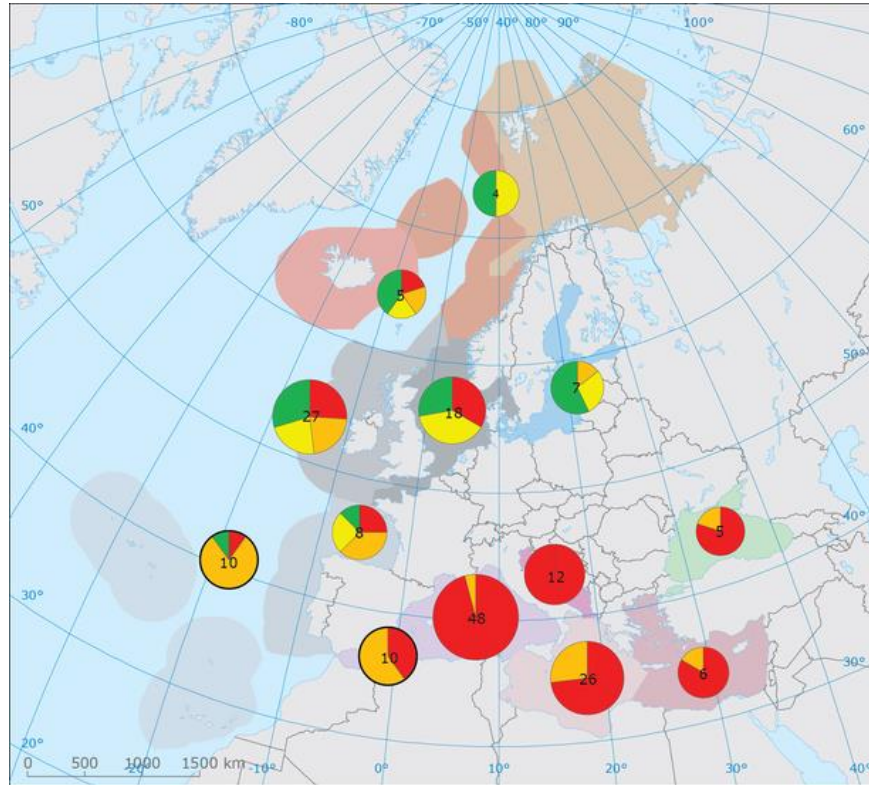
- (%)
- < -5 (High decrease)
 - -5 to 0 (Low decrease)
 - 0 to 5 (Low increase)
 - > 5 (High increase)
 - Outside coverage

Population trends in European coastal regions 2001–2012
(EEA, 2013)

Source: ETC/SIA, population data by coastal region (NUTS 3) from Eurostat.

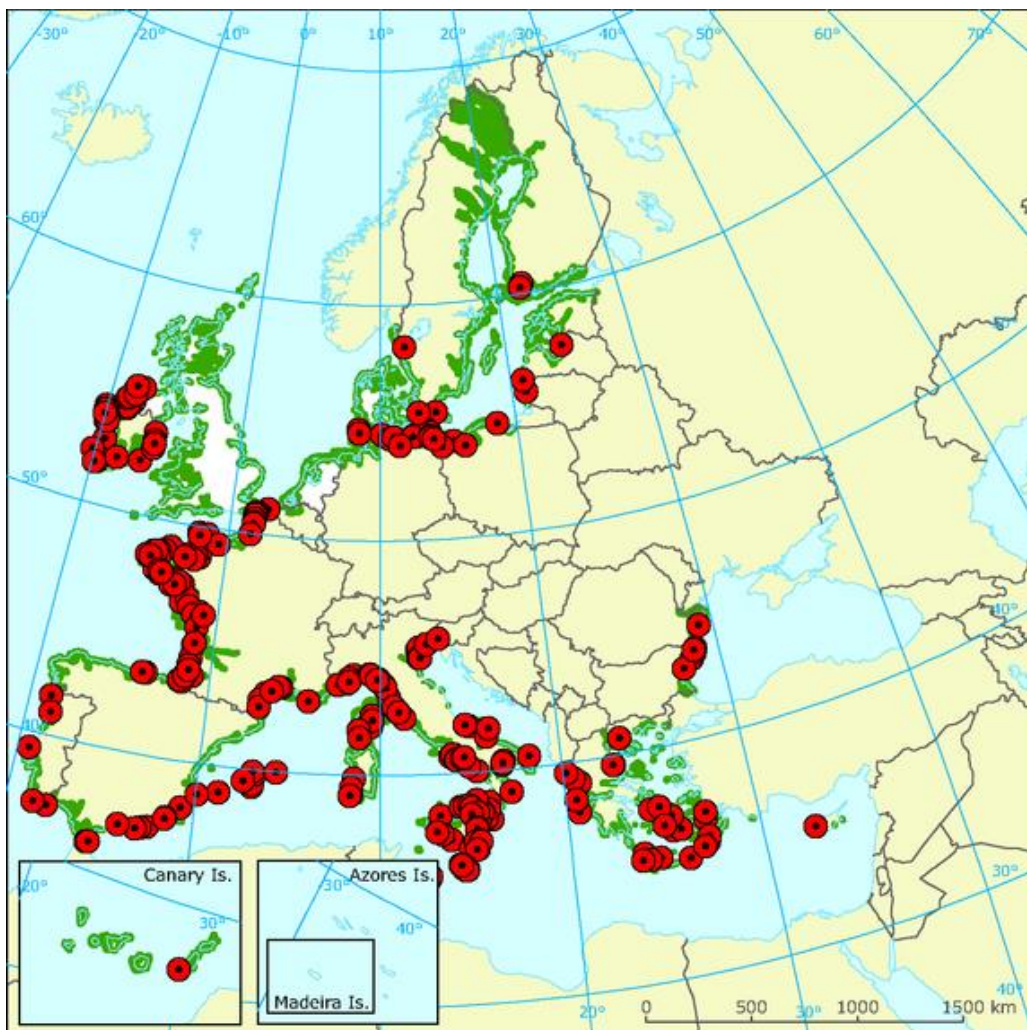


Ecological status of classified coastal and transitional waters






- ✓ 58% of the assessed commercial stocks are not in Good Environmental Status
- ✓ **Only 12% are in Good Environmental Status** for both the level of fishing mortality and reproductive capacity

Fish stocks in relation to Good Environmental Status (EEA, 2015)



Impact of coastal erosion on Natura 2000 sites, 2009

-  Erosion
-  Coastal Natura 2000
-  No impacts data reported

Impact of coastal erosion on Natura 2000 sites (EEA, 2010)



Human activities	Coastal degradation problems	Socioeconomic problems
Urbanization	Loss of habitats and species diversity	Unemployment and social instability
Agriculture	Coastal erosion	Competition between users for resources
Tourism, recreation	Water pollution	Destruction of cultural heritage
Industry	Public health	Decay of the social fabric
Energy production	Eutrophication	Loss of property
Commercial fisheries	Overfishing	Decreasing development options
Aquaculture	Litter and oil	Decline of durable employment
Military activities	Alien species	Social marginalization
Transport infrastructure	Visual pollution	Depopulation
Cables and pipelines	Siltation	Overpopulation



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Integrated management principles for the coastal zone in the European Union ([2002/413/EC](#)):

- a broad thematic and geographic perspective
- a long-term perspective
- adaptive management during a gradual process
- reflect local specificity and the great diversity of European coastal zones
- work with natural processes



Integration of coastal zone management means:

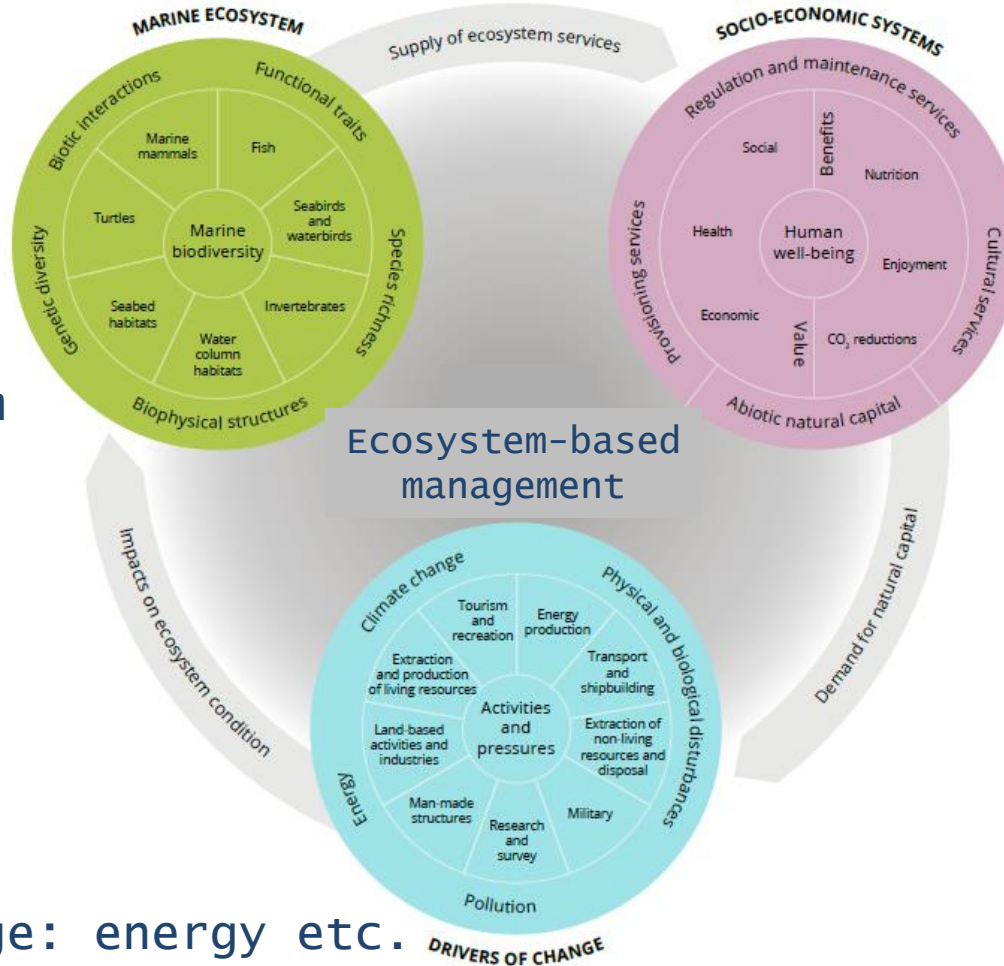
- involving **all the parties concerned** (economic and social partners, coastal zone residents, NGOs and the business sector) in the management process
- support and **involvement of relevant administrative bodies** at national, regional and local level
- **use of a combination of instruments** to facilitate coherence between sectoral policy objectives and between planning and management



- Ecosystem-based management is an integrated approach to management considering whole ecosystems including humans
- The goal is to maintain ecosystems in a healthy, clean, productive, and resilient condition, so that they can continue to provide humans with the services and benefits

It is based on integrated spatial approach which:

- 1) acknowledges connections,
- 2) considers cumulative impacts and
- 3) addresses multiple objectives rather than sectoral approaches or individual national interests



Marine ecosystem

Socio-economic systems

Drivers of change: energy etc.



- Integrated management of coastal systems requires an iterative process using a **multidisciplinary approach** that integrates the three pillars of **sustainable development**: environmental protection, social progress and economic growth
- The Systems Approach Framework (SAF) provides a structure for an ICZM process with an **effective science-policy interface** that embraces the challenge of simulating complex systems and encapsulates **citizen involvement from the onset**



- Typically the main ICZM driver is ecology or economy
- Several ICZM elements as defined by the SAF are already standard within the Baltic Sea region
- However, in many cases, the omission of stakeholder and institutional mapping as instructed by the SAF leads to an unbalanced participation of stakeholders, or lack of involvement of stakeholders at the start of the process
- The duration of the ICZM processes might be prolonged due to disagreement and opposition early in the process



- Most of the ICZM processes at present fail to include an integrated, cross-sectorial assessment
- Lack of system thinking when defining the Policy Issue for the problem and when developing the conceptual model often leads to one-sectorial solutions, which are not sustainable
- Lack of manager experiences in conducting a stakeholder participatory process might also prolong the ICZM processes
- Due to its stringent structure the SAF is a suitable quality assurance tool for sustainable ICZM processes

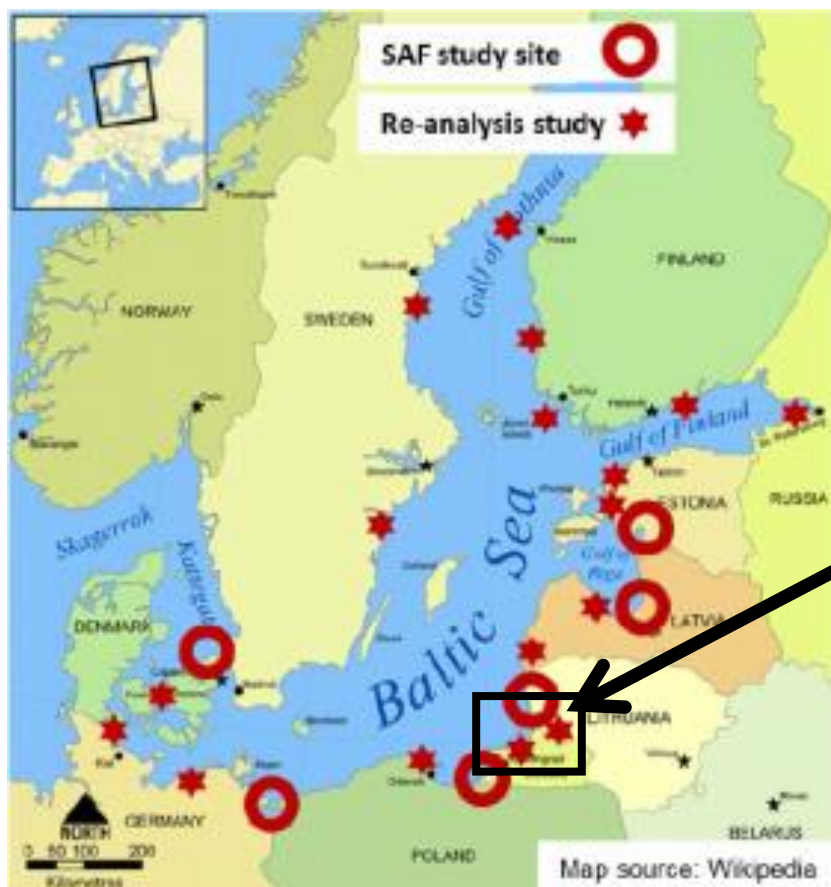


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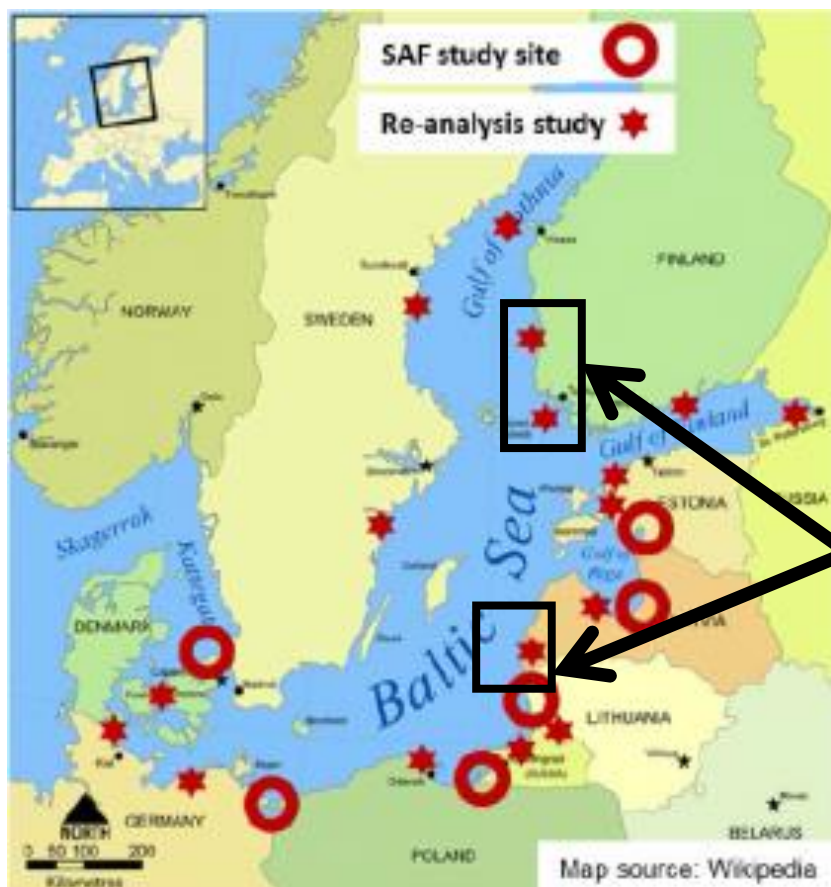
BaltCoast project WP4 case studies in the SE Baltic:

- Integrated shoreline management for a large harbour city and an adjacent seaside resort – LT
- Restoration of important habitats through sustainable agricultural practices, Rusne – LT
- Neman River Lower Course Catchment cross-border management integration – RU-LT
- Vistula Lagoon cross-border management integration – RU-PL



Of the four SE Baltic case studies three are closely linked to other BaltCoast WP study target areas:

- Rusne Island (LT, on the border with RU)
- Neman River Lower Course Catchment (RU-LT)
- Vistula Lagoon (RU-PL)

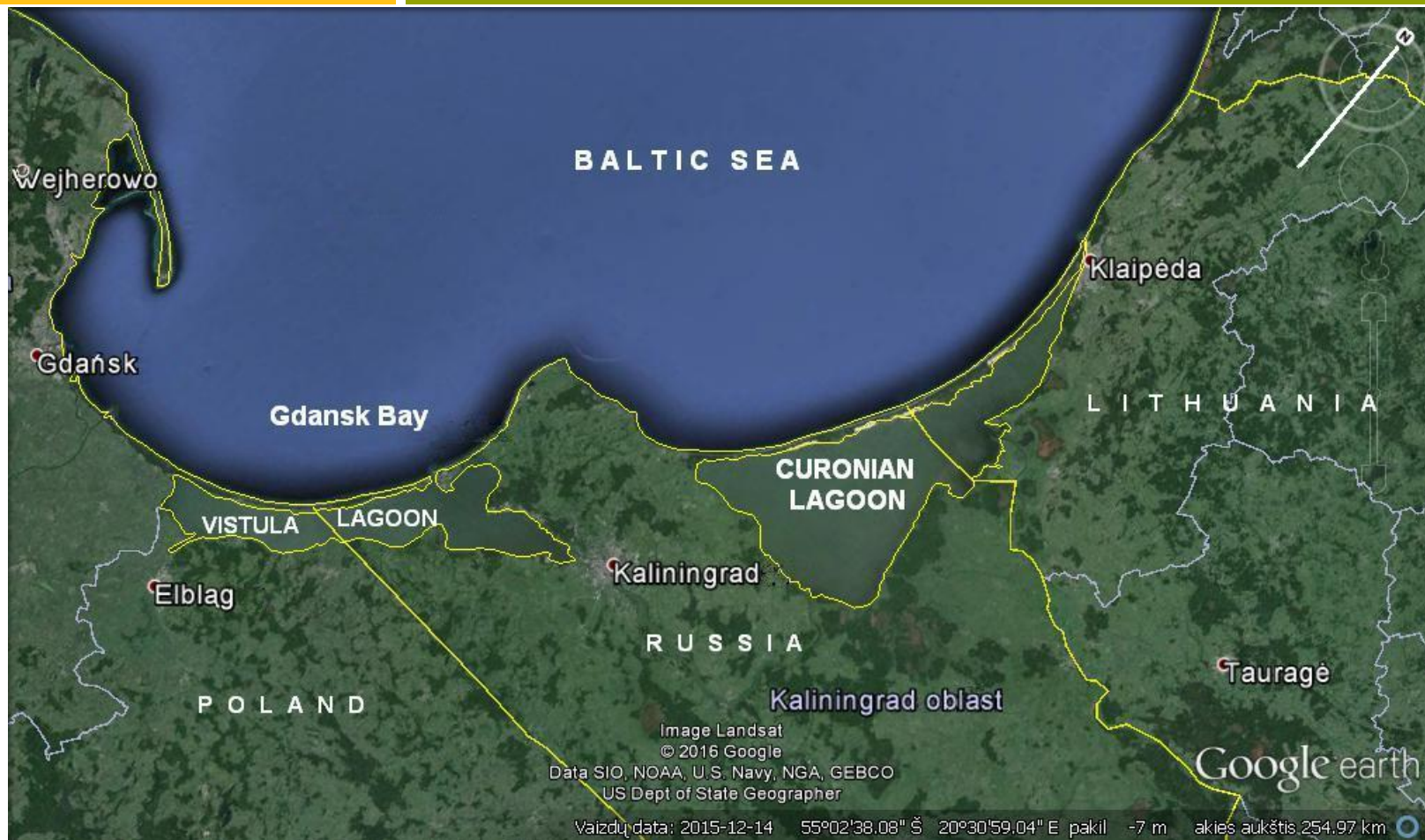


Another SE Baltic case study and two Northern Baltic case studies are particularly relevant for advancing SAF-based ICZM process

- Integrated shoreline management for a large harbour city and an adjacent seaside resort – LT
- Coastal management strategy for southwest Finland – FI
- Initiating ICZM at Selkämeri, western Finland – FI



- Kaliningrad Region (Oblast) is an exclave of Russian Federation sandwiched between two EU countries – Poland in the south and Lithuania in the north
- It shares two large coastal lagoons with its neighbours: Vistula Lagoon with Poland and the Curonian Lagoon with Lithuania
- ... also sharing the catchment of the Neman River – the largest tributary of the Curonian Lagoon



Vistula and Curonian lagoon catchment areas



- “Sharing of waters and river basins by countries with different system of environment legislation is, from one side, an obstacle for coherent management efforts,...
- ... but, from another side, it is an challenge for close cooperation cross political boundaries” (EU WFD)
- In the case of success, an effective cross-border cooperation might provide a true Systems Approach Framework for the management of the cross-border lagoons and their catchment areas



- Russia and Lithuania are sharing the catchment of the Neman River –
- the largest tributary of the Curonian Lagoon
- Both, Lithuanian and Russian parts of the Neman catchment are compatible in EU Water Framework Directive terms



- There is a permanent need for national environmental authorities of neighbouring countries to cooperate closely within the lagoon and river catchment management

The objective of our study – SAF-based assessment of the coherence of the cross-border cooperation –

- between Russian and Polish authorities in the management of the Vistula Lagoon ...
- ... and between Russian and Lithuanian authorities in the Curonian Lagoon and the Neman River Lower Course Catchment management



The main positive findings of our study:

- Management of water and living resources of both lagoons and their catchment areas by Russian, Polish and Lithuanian authorities is systematic in institutional and planning terms
- Sophisticated simulation models (MIKE 2D & 3D) are applied to validate management scenarios and identify optimal management solutions
- Close cross-border relations exist on personal level among the key persons in Russia, Poland and Lithuania



- A series of projects in various frameworks of regional cooperation and research collaboration since the early 1990s involving all three countries
- Some projects took efforts to integrate pollution control simulations in the lagoons and their direct catchment areas across the border
- First steps are made to build an effective cross-border GIS for the lagoons integrated with MIKE models on pollution impact simulation



The main negative findings of our study:

- Practical cross-border cooperation between Russian, Polish and Lithuanian authorities is limited to sharing environmental information and joint decision-taking on fishing quotas in both lagoons
- Existing bilateral agreements do not cover such key aspects of cross-border cooperation like coordinated control of pollution discharges from point and diffuse sources, strategic environmental impact assessment of anticipated development plans etc.



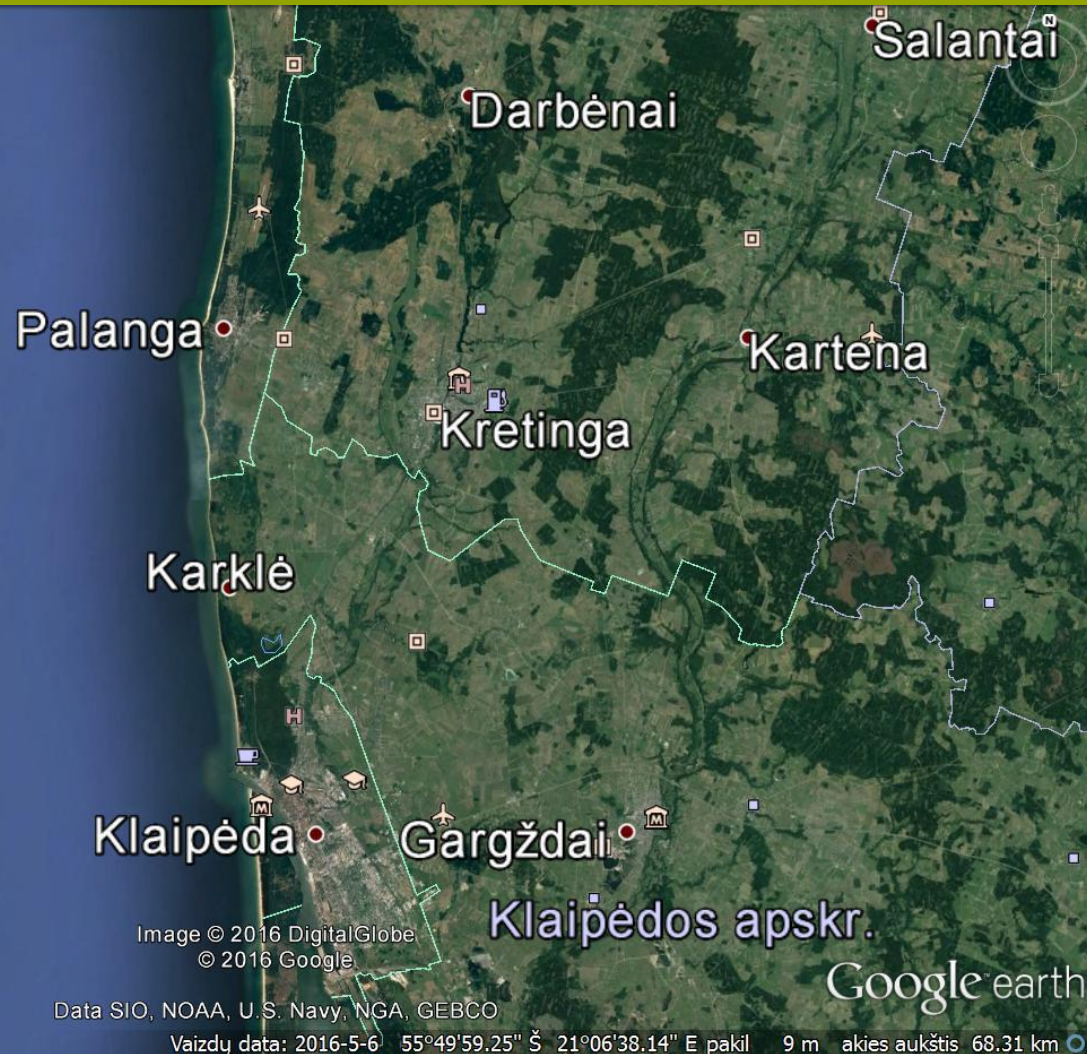
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- Lithuania has just 90 km of the Baltic Sea shoreline, which accommodates a UNESCO World Heritage landscape (Curonian Spit), a large seaport – Klaipėda, and a large seaside resort (Palanga-Šventoji)
- Hence a need for ICZM on a regional scale
- Advantage – short, 70 % protected coastline, within one planning region and just four municipalities
- Many conflicts between port development, nature conservation, and recreation



- Short coastline gives an advantage for meeting stakeholders' needs within a single plan
- Disadvantage – a challenge to ,squeeze' too many interests into a limited coastal area





In Finland the two case study areas coincide with the coastal administrative divisions between the two regions of the country:

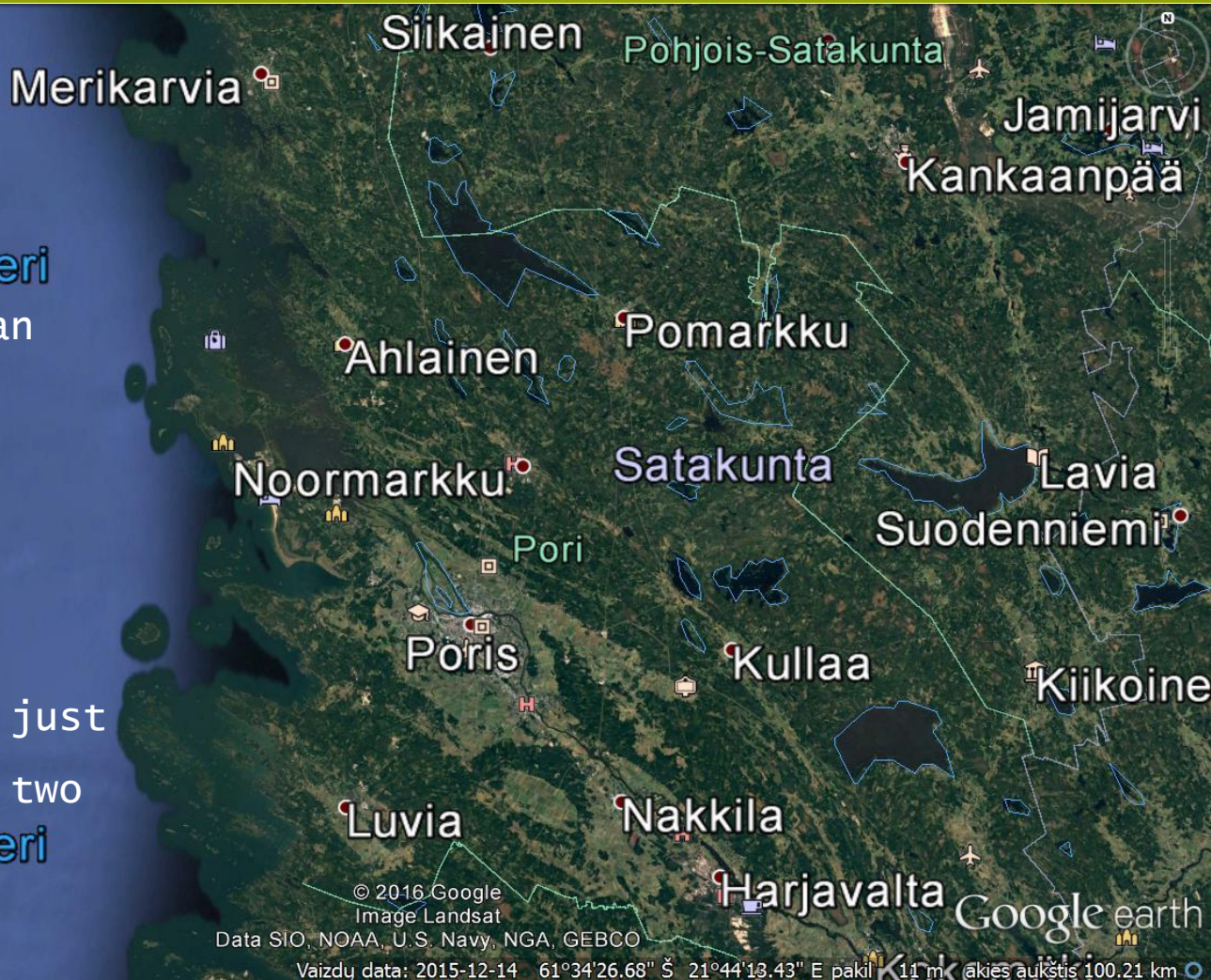
- Southwest Finland
- Western Finland (Satakunta)

Much less conflicts between port development, nature conservation and recreation, yet many other challenges for ICZM related to a vast area: depopulation, communication and infrastructure development





- Selkämeri**
- Long coastline gives an advantage for spatial segregation of stakeholders' needs
 - Disadvantage – an impossibility to have just one plan – a need for two ones





The objective of this case study –

SAF-based assessment and comparison of the coherence of the ICZM development in two different Baltic countries, ...

... which both focus their ICZM planning efforts on the regional scale, yet the decision-making is on different administrative levels:

- national and municipal level in Lithuania
- regional and municipal level in Finland



- Both in Lithuania and in Finland interest in the ICZM has grown by the end of the 20th century
- It follows a widespread international acknowledgement that the coastal zone, due to its exceptional dynamism and concentration of conflicting interests, requires different planning approaches than those traditionally applied to spatial planning
- However, the ICZM approaches in Finland and in Lithuania are rather different



- Unlike in Finland, where the Baltic Sea coastline is much longer than in Lithuania, the Lithuanian ICZM programme has been approved on the national level
- In Finland ICZM planning and implementation was left to the responsibility of the regions
- One level below, the implementation of the Lithuanian National ICZM Programme has been entrusted with the administration of the Klaipeda region, while in Finland it was largely a responsibility of local self-governments, coordinated by regional authorities



- Despite these differences, all three cases are positive as they have been successfully implemented in practice, and integrated into the spatial planning system
- However, in Finland, the development, approval, and implementation of ICZM programmes extensively included regional stakeholders and the general public,
- in Lithuania there was no active involvement of regional and/or local stakeholders into preparation and implementation of the ICZM programme
- Finnish case studies are more SAF-oriented



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1. It is necessary to integrate the management of both, the Vistula Lagoon and its catchment area, and the Curonian Lagoon, its direct catchment area, and the Neman River Lower Course catchment area
2. A SAF-based assessment of the coherence of the cross-border cooperation is needed as one of the principal efforts facilitating further progress in this direction
3. Existing bilateral agreements should be deepened and intensified in the aforementioned key aspects



4. Continuous funding and integration of an ICZM programme into an existing national and/or regional spatial planning and management system is critical for the success of the programme
5. Making the best use of up-to-date GIS information and aerial photos for a more detailed identification of conflict points in the area
6. Inclusion of regional stakeholders and the general public to ensure a shared understanding of ICZM is a key to a successful SAF-based coastal management approach

Thank you for your attention!
Any questions?