



**balt adapt**

A climate change adaptation strategy and  
an action plan for the BSR – A tool for  
reducing the region's vulnerability to climate  
change

Susanne Altvater /Ecologic Institute  
with  
Katrin Kiefer/ German Federal Ministry for the Environment  
Franziska Stuke/ Ecologic Institute



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[www.baltadapt.eu](http://www.baltadapt.eu)



**Baltic Sea Region**  
Programme 2007-2013

Part-financed by the European Union  
(European Regional Development Fund)

# Background



## The Baltic Sea and its coastlines face challenges due to climate change...

- Changes in precipitation amounts and patterns
- Increase in terrestrial and sea temperatures
- Rise in sea level
- Decrease in ice cover
- Intensified eutrophication and algal blooms, increased runoff and pollution

**...it is time to adapt now!**

# Policy gaps in the BSR

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- Lack of national/regional adaptation strategies
- Insufficient policies addressing economic losses by flooding/risks to infrastructure/harbour adaptation
- Need of more integrative policies addressing planning and building regulations
- Need of monitoring and early warning systems for extreme weather events
- Insufficient use of spatial planning as integrated management approach
- Lack of involvement of the private sector/general public

**And: lack of knowledge, lack of participation and coordination**

# What is Baltadapt doing?

- Preparation of a Baltic Sea Region-wide climate change adaptation strategy and action plan *with focus on the sea and coastal areas*
- Involving political decision makers and other stakeholders on the transnational, national and regional level in the process in order to lay the ground for political endorsement
- Part of EUBSR Horizontal action “Sustainability” coordinated by CBSS; fully fledged **Baltic21 Lighthouse Project**; 12 partners
- Project duration: 2010-2013; final conference, Riga 2-4 Sept.



Farming



Tourism

- BALTADAPT Report #1: Gap-fit Analysis on Adaptation to Climate Change Research and Policy Design. Synthesis Report
- BALTADAPT Report #3: Climate Change Impacts on Marine Biodiversity and Habitats in the Baltic Sea – and Possible Human Adaptations
- BALTADAPT Report #4: Climate Change Impacts on the Baltic Sea Fish Stocks and Fisheries. Review with a Focus on Central Baltic Herring, Sprat and Cod
- BALTADAPT Report #5: Climate Change Impacts on Infrastructure in the Baltic Sea Region
- BALTADAPT Report #7: Conceptualization of Vulnerability and Review of Assessments around the Baltic Sea Region
- BALTADAPT Report #11: Review of Stakeholder Dialogues in Climate Adaptation Related Projects in the Baltic Sea Region




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# Baltadapt Climate Info

## Baltadapt Climate Info – The Baltic Sea in a future climate (WP 4, Develop a knowledge base)

- #1 Air temperature
- #2 Precipitation
- #3 Wind
- #4 Sea level
- #5 Oxygen content
- #6 Salinity
- #7 Water temperature
- #8 Biodiversity and habitats
- #9 Biological production
- #10 Wind-generated waves
- #11 River discharge
- #12 Nutrient loads
- #13 Eutrophication
- #14 Sea ice

Available at [www.baltadapt.eu](http://www.baltadapt.eu)



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**Climate Change in the Baltic Sea Region: Oxygen**

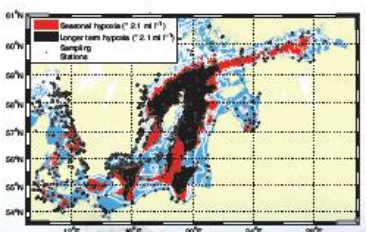
**BALTADAPT CLIMATE INFO # 5**

**The Baltic Sea oxygen content**

**Waves under a changing climate**

The Baltic Sea is nearly a closed basin, then is controlled primarily by the local wind and large-scale atmospheric circulation in the p... wind speed and wind direction over the changing (Lehmann et al., 2011).

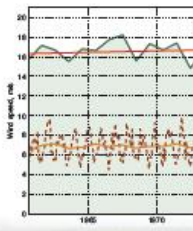
The largest changes are to be expected in wind speed and wave height. The number o... speed events and following storms is incre... (Weisse & Günther, 2007). This will ha... ship routes and fisheries in the Baltic Sea R... sult in damages to the coastal line, causing:



**Figure 1. Extent of seasonal hypoxia (left) and longer-term hypoxia (right) during 2003–2006. Measuring stations are indicated by small dots. (From HELCOM, 2008)**


**Current situation**

The oxygen situation in the Baltic Proper may be illustrated by Figure 1 showing areas with seasonal and long-term hypoxia (oxygen concentrations less than 2 mg/l). The figure is based on measurements carried out during the years 2005–recent (2010) surveys of the B... show a similar pattern.



**Figure 2. Mean annual (average solid line) and (dotted). The red line represents the winter extreme.**

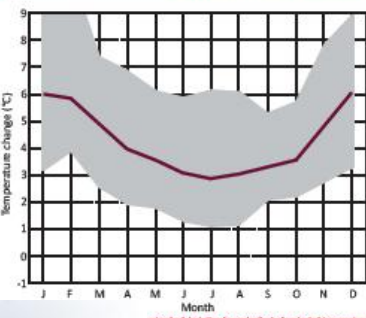
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**Climate Change in the Baltic Sea Region: Air Temperature**

**BALTADAPT CLIMATE INFO # 1**




**Standard deviation (grey shading) of projected temperature change based on 20 CMIP5 scenarios under the RCP4.5 scenario. Average of monthly mean data have been compared against mean global warming for these simulations is slightly**

**Identified climate change signal**

climate model projections, temperatures in the Baltic expected to increase with time, and the increase is... than the corresponding increase in global mean... The increase grows with time and after around... here is a marked difference between different emis... with high-emission scenarios leading to exceed... temperatures. The strong increase in the region is... be a result of a strong wintertime temperature in... e-1), which is in turn a result of the feedback mech... reflecting snow and sea ice cover. These lead to... temperatures through an increased absorption of... night and larger heat fluxes between the surface and... and in absence of an insulating snow cover.

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**Climate Change in the Baltic Sea Region: Water Temperature**

**BALTADAPT CLIMATE INFO # 7**


**The Baltic Sea water temperature**

The sea surface temperature (SST) in the Baltic Sea shows large seasonal variations, from temperatures over 20 °C in summer to freezing conditions in winter. In spring the surface water warms up and a shallow thermocline (layer where the temperature changes rapidly with depth) is created which deepens during the summer down to 30m in the central parts of the Baltic Sea.

Between the thermocline and the halocline (layer where the salinity changes rapidly with depth, in the Baltic Proper at around 60m)

the four simulations where a large value indicates a larger uncertainty. (Note that other climate scenarios may give different results.)

More information about the scenario simulations is given on the back of this bulletin.





[www.baltadapt.eu](http://www.baltadapt.eu)



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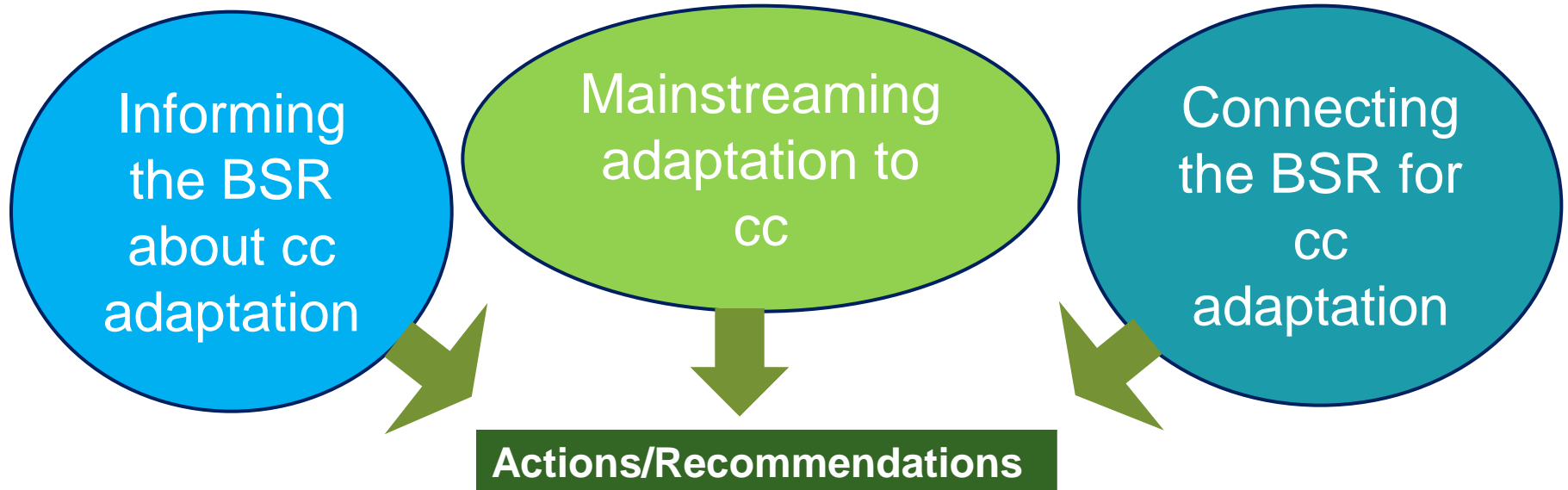
# What is the Action Plan there for?

***WHAT?***      Adaptation Strategy

***HOW?***      Action Plan

**Provides the operational basis for implementing the strategy by specifying priority activities for the macro-region in the field of cc adaptation**

The implementation and sustainability of the Strategy and its Action Plan depend on subsequent political endorsement, which exceeds the mandate of the BALTADAPT project.



Adapting to four sectors (Actions):  
Infrastructure, Tourism, Food supply, Biodiversity

Financing climate change adaptation in the BSR



- Recommended actions
- Background information
- Info Boxes
- Good practice examples

## Box 12 - Info: Existing NAS

Denmark, Finland, Germany and Lithuania have developed and adopted NAS, all with a focus on specific sectors. At the same time, integration and mainstreaming adaptation within existing national programmes is central to these NAS. Action Plans are supporting the implementation of the NAS in Denmark, Finland and Germany. Two of them are mentioning cross-border initiatives (DE, DK).

**BSR countries in the process of developing NAS:**  
Estonia, Latvia and Poland

## Box 8 - Good Practice: BalticClimate Toolkit

The project BalticClimate developed a Toolkit, as an empowering knowledge transfer instrument for actors on the local and regional level related to the implementation of climate change mitigation and adaptation measures.

• [www.toolkit.balticclimate.org](http://www.toolkit.balticclimate.org)

## Some recommendations

## Increase knowledge base

- Support research needs on climate change impacts and vulnerabilities (e.g. Impact of changing freshwater and nutrient supply to aquatic ecosystems)
- Impact assessments for sectors
- promotion of multi- and interdisciplinary to proceed from studying impacts towards adaptation research
- economic assessments of costs and benefits of climate adaptation (vs costs of inaction)
- social context of adaptation responses

- Good practice examples for national initiatives

**Germany:**

Non-sectoral

- KLIMZUG develops innovative regional strategies for adaptation to CC and related weather extremes [www.klimzug.de](http://www.klimzug.de)
- Social Dimensions of climate protection and CC, 12 projects

Urban and regional planning of coastal areas

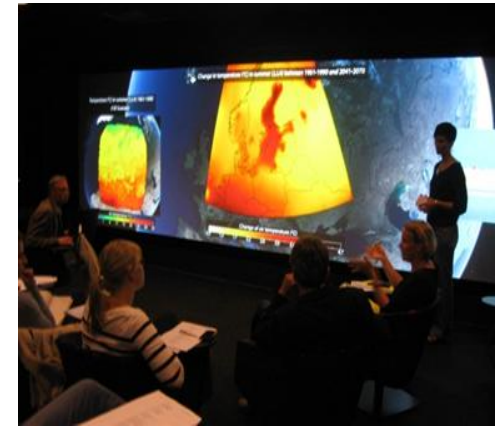
- planB:altic:CC and regional planning – adaptation strategies in coastal urban areas in the BSR  
[https://www.hcu-hamburg.de/research/forschungsprojekte/koordinierte-projekte/planbaltic/vorstellung/\(de\)](https://www.hcu-hamburg.de/research/forschungsprojekte/koordinierte-projekte/planbaltic/vorstellung/(de))

Biodiversity

- 27 projects about biodiversity and CC; development of adaptation strategies by the Federal Ministry for the Environment to minimize loss of climate sensitive fauna and flora and provide recommendations for an adapted management in Natura 2000 areas.

## Provide and exchange information

- Use ClimateAdapt platform
- Integrate the Baltic Window
- Use other platforms (web and “human”) to facilitate exchange of knowledge about policy/science/”best practices” (e.g. Geodome)



# Mainstreaming adaptation

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- Identify key instruments for integrating adaptation
    - Use cross-cutting issue of spatial planning (SEA for plans/programmes and EIA for projects; pilot plans for trans-boundary MSP)
  - Include adaptation requirements in relevant legal provisions or establish new instruments
  - Integration in other policy processes (National Sustainability Strategies, National Biodiversity Strategies, MSFD etc)
  - Further cooperation of the BSR countries, CBSS etc. with HELCOM to include cc into marine policy
  - Mainstreaming of the private sector (e.g. Insurance)
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# Cooperation and Participation

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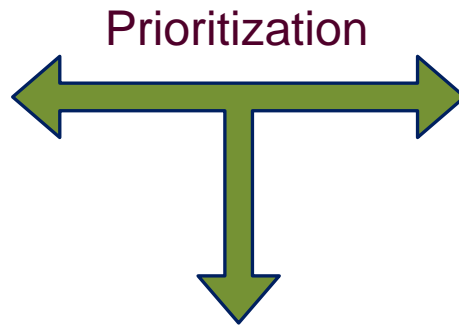
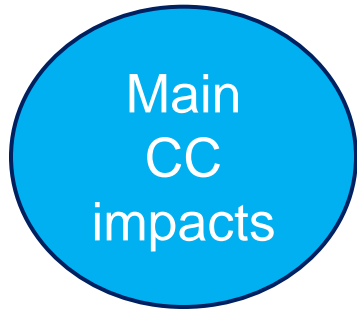
- Increase trans-national cooperation
  - ✓ macro-regional e.g. by a transnational steering group on cc adaptation
  - ✓ Cluster existing activities in working groups or platforms
  - ✓ Interlink work of macro-regional and intergovernmental organisation
  - ✓ On national level: coordinate measures/focal points?
  - ✓ Involvement on Non-EU countries (e.g. Russia - EU External Action Programme; Norway)
- Support and facilitate cross-sectoral cooperation
- Increase participation on national/local level (stakeholder platforms/coordination council on national level)
- Improvement of Science-Policy cooperation (e.g. ECRA - European Climate Research Alliance )

- Good practice:
  - ✓ Baltic Green Belt, <http://www.balticgreenbelt.uni-kiel.de/>
  - ✓ Project Waterpraxis (cross-border management plans, WFD), <http://www.waterpraxis.net>
  - ✓ South Baltic Sea programme (to strengthen sustainability), <http://en.southbaltic.eu>





# Actions in the four sectors



## Criteria

- Importance/Effectiveness
- Urgency
- Flexibility
- No-regret characteristic
- Side-effects
- Cost-efficiency
- Feasibility

	Categorie of instruments			Example of measures	Practice example	Sector				Aim of adaptation	Implementing stakeholder(s) , if necessary administrative level						
Instrument	Regulatory instruments (commands/prohibitions,	Planning Instruments	Economical Instruments (taxes, fees, licences)			Infrastructure	Biodiversity	Agriculture and Fisheries	Tourism		EU	national authority	Länder (in federal systems)	District/Region	Municipality	Businesses	NGOs

Example of measures	Practice example	Sectors				Aim of adaptation
		Infrastructure	Biodiversity	Agriculture and Fisheries	Tourism	
Intensification of river bank/coastal protection		x			x	Flood prevention
Development of new concepts for increased coastal resilience: coastal realignment, non-technical options, new techniques, vegetation and stabilisation of dunes, combination of hard and soft measures		x	x		x	Increased resilience for flooding

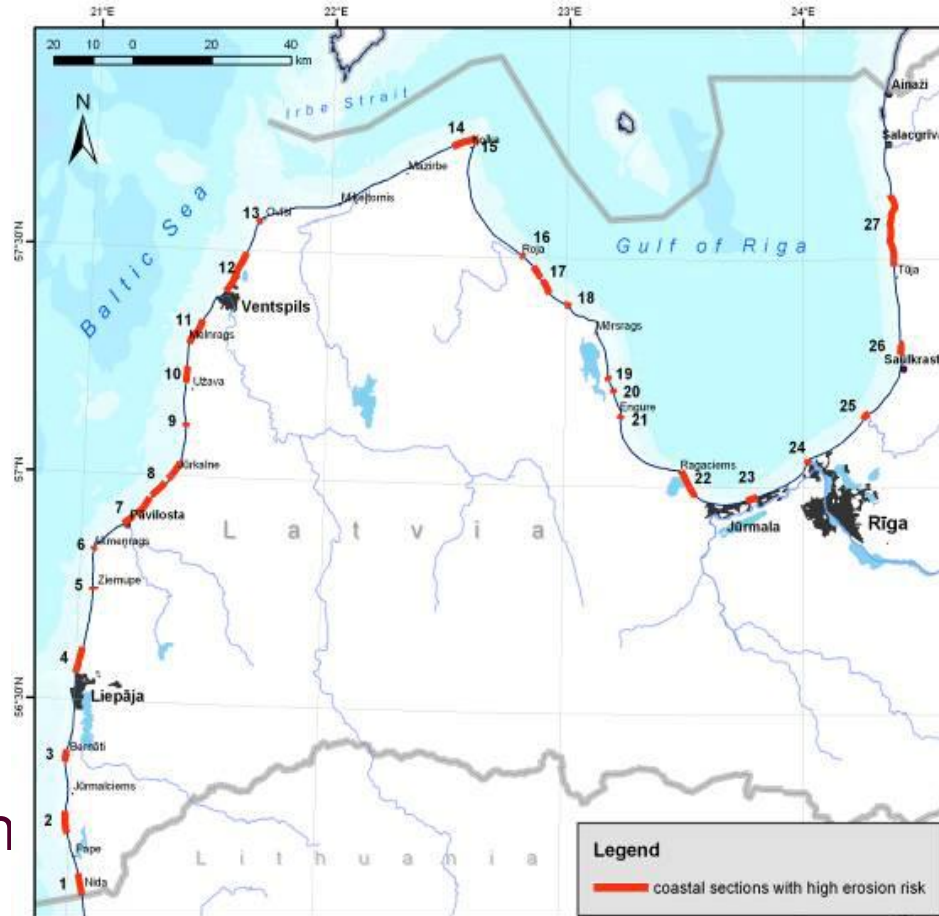


- Actions to the stakeholders with regard to area- / sector-specific financing
- Mainstreaming adaptation in programming
  - ✓ INTERREG V BSR
  - ✓ Horizon 2020
  - ✓ BONUS
  - ✓ Cohesion Fund:
    - ✓ Rural Development Programmes
    - ✓ EU LIFE+
    - ✓ EMFF

- **Recommended area- / sector-specific financing opportunities:**
- INTERREG V BSR
- ✓ Transnational adaptation measures in the field of biodiversity -> projects addressing the thematic objective “Protecting the environment and promoting resource efficiency”. The same thematic objective may allow for some adaptive measures regarding fish stocks.
- Horizon 2020
- ✓ Transnational adaptation measures in the field of fisheries and biodiversity -> transnational projects under the headline “Food security, sustainable agriculture, marine and maritime research, and the bio-economy”.
- BONUS
- ✓ Research gaps in the field of biodiversity and fisheries -> thematic calls of the BONUS Programme.

- **Recommended area- / sector-specific financing opportunities:**
- EU Cohesion Fund
  - ✓ Provides good opportunities for large scale investments
  - ✓ Can build, like other Cohesion Policy programmes, on spatial and developmental planning
- Rural Development Programmes
  - ✓ Particular of interest for the inclusion of CC adaptation issues in the agricultural sector
- LIFE+
  - ✓ Research on adaptation, using synergies of CC and biodiversity as well as research activities on interdisciplinary aspects including coastal zone management.

- Proposals for projects:  
 Life+: Natura 2000 networks,  
 cross border corridors  
 BONUS: coastal protection  
 programme for the BS  
 Interreg: cross-border strategies  
 with infrastructural and non-  
 infrastructural (incentives,  
 regulations) measures for each  
 sector




**Source:** Baltadapt report #5, *Coastal sections with high erosion risk and recommendations for coastal protection measures in each section*






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# Thank you for your attention

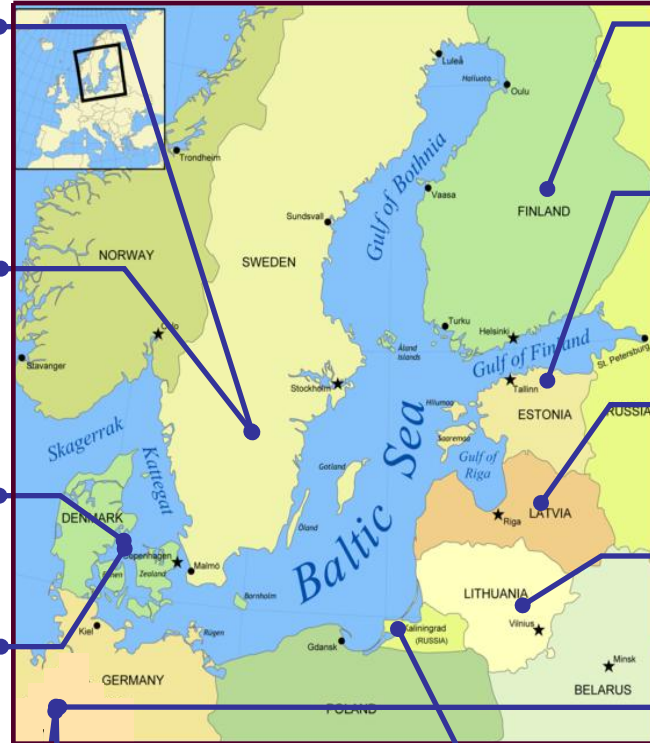
 The Secretariat of the Council of the Baltic Sea States (CBSS)/Baltic 21


 Swedish Meteorological and Hydrological Institute (SMHI)


 Danish Meteorological Institute (DMI; LP)

 National Environmental Research Institute, Aarhus, University (NERI)

 Federal Environment Agency (UBA)





 Finnish Environment Institute (SYKE)

 University of Tartu, Estonian Marine Institute (EMI)

 University of Latvia (LU)

 Baltic Environmental Forum (BEF), Lithuania

 Leibniz Institute for Baltic Sea Research Warnemünde (IOW)

 Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)

Associated partner: PP Shirshov Institute of Oceanology, Russia



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Ecologic Institute, [www.ecologic.institute.eu](http://www.ecologic.institute.eu)



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