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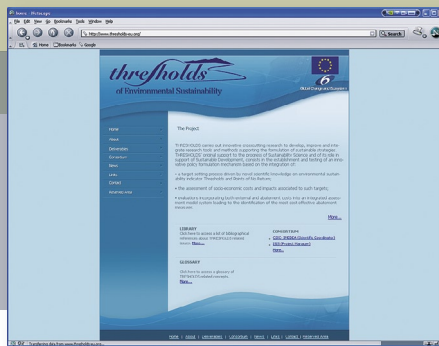
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WEB SITE

For additional information, see the THRESHOLDS www-pages at
<http://www.thresholds-eu.org>



PARTNERS

The project is led and coordinated by CSIC (Spain). The project office and management are hosted at ISIS (Italy).

The 23 THRESHOLDS partners come from more than 10 EU Member States, representing different types of organisations and a wide range of expertise (see website).

Photos Seppo Knuutila

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an Integrated Project
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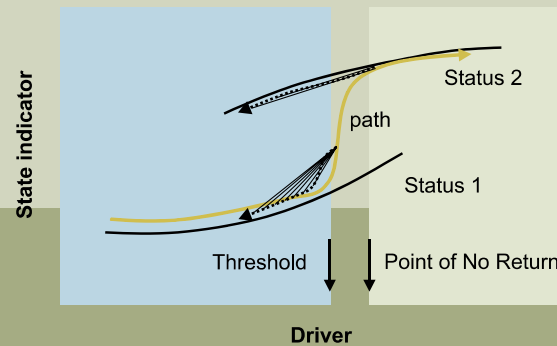
thresholds





SUSTAINABILITY AND POINTS OF NO RETURN

Research on **sustainable use of coastal ecosystems** aims at influencing strategies for sustainable management of coastal zones, including their aquatic and terrestrial natural resources. **Thresholds** and non-linear changes are central to resource management.



Ecological thresholds refer to the forcing that a driver can maximally exert on a given resource while maintaining acceptable levels of environmental quality. When such thresholds are exceeded, the resources, services or functions may suddenly shift status. Examples include excessive algal growth, reproductive failures of organisms and depleted fish stocks. These new states cannot easily be reverted to acceptable levels. In some cases the changes are practically irreversible.

Points of no return are critical for sustainable policies. Such points of no return have been observed in shifts from macrophyte- to plankton-dominated coastal ecosystems, and in shifts from oxic to anoxic conditions following increased organic inputs to coastal sediments.

THE THRESHOLDS INTEGRATED PROJECT

The project THRESHOLDS emphasizes the formulation of a generic theory of thresholds in nature, encompassing the understanding of alternative stable states and regime shifts in ecosystems, non-linear and cascading responses in ecosystems. It brings together leading researchers in an attempt to develop integrated approaches to coastal zone management.

Thresholds will contribute to the development of **Sustainability Science** by developing, improving and integrating tools and methods that can deal with complex behaviour of ecosystems. The tools developed will be applied to several case studies in the European coastal zone.

THRESHOLDS CASE STUDIES

- Marine fish farming in Europe
- The island of Mallorca
- Ringkjoebing Fjord, Denmark
- North Sea - Seine, Somme and Scheldt watersheds
- Coastal zones of north western Black Sea
- Coastal zones of north western Europe

The output of THRESHOLDS will support policy discussions on strategies for the sustainable use of coastal waters and river basins. Integrated coastal zone management, the implementation of the water framework directive, land-use planning and integrated pollution prevention and control can benefit from the results.

THRESHOLDS will also develop target-setting procedures for environmental and socio-economic aspects. It will also more generally provide an input to sustainable development policies, increase environmental awareness and identify priorities for further research.

PROJECT STREAMS

Thresholds is organised in seven work streams focusing on different aspects of coastal ecosystems and their management.

Stream 1 *Theoretical Formulation of Externality Valuation and Non-linear Cost-Pressure Relationships*

Provides theoretical foundations for externality valuation in the presence of threshold effects, makes estimates of the value of impacts, and examines policy interventions related to thresholds.

Stream 2 *Thresholds and Points of no return: Threshold definition, theory and identification*

Provides the theoretical foundations for defining thresholds and points of no return of environmental sustainability and develops modelling approaches.

Stream 3 *Nutrient-driven thresholds of environmental sustainability*

Analyses nutrient-driven thresholds that are connected to the anthropogenic pressures contributing to nutrient emissions for use in case studies and integrated assessment models.

Stream 4 *Thresholds and drivers of contaminants*

Analyses, compares and assesses the effects of contaminants in coastal ecosystems from the threshold perspective.

Stream 5 *Definition of thresholds of key indicators of biodiversity and ecosystem function*

Identifies and verifies quantifiable indicators of ecosystem quality, representing both structural and functional properties of ecosystems, to support analyses of driver thresholds and externalities

Stream 6 *Integration and application of thresholds methodologies on case studies*

Test and applies the THRESHOLDS methodologies, tools and models on different cases by an integrated approach, and identifies plausible strategies aimed at avoiding the trespassing of thresholds.

Stream 7 *Synthesis and Integration*

Ensures that the findings of the entire project are presented to and discussed with stakeholders in order to assess the feasibility and acceptability of proposed strategies from a policy point of view.