Stockholm Resilience Centre

Research for Governance of Social-Ecological Systems

Stockholm University







www.stockholmresilience.su.se

A centre with:

SEI Stockholm Environment Institute

The Beijer Institute of Ecological Economics

Stockholm Resilience Centre develops innovative approaches on how to govern ecosystem services and build resilience for long-term sustainability. The Centre aims to understand the complexity and interdependence between people and nature and to enhance our capacity to deal with change.

Photo: J. Lokrantz/Azote

About Stockholm Resilience Centre

Stockholm Resilience Centre is a leading research centre on the dynamics and interdependencies between social-ecological systems.

The insight that nature and humans are closely interconnected and that surprise and abrupt change are part of the norm, forms the basis for all research at Stockholm Resilience Centre. The Centre places particular emphasis on resilience, which is the capacity of a system – be it an individual, a forest, a city or an economy – to deal with change and continue to develop. The resilience approach provides a new framework for analysing social-ecological systems in a world facing many uncertainties and global challenges.

Humans dominant driver of change

The human pressure on earth has reached a scale where it is increasingly acknowledged that humans constitute the dominant driver of change to the whole Earth system. These changes are outpacing the capacity of governments and institutions to deal with them and transformational changes of governance are urgently required.

Stockholm Resilience Centre applies a resilience framework to identify the complex social and ecological challenges that humanity is facing, from local ecosystem degradation to global environmental change. Resilience is about turning crisis into opportunity. It is about social learning and sustainable innovation. Research at Stockholm Resilience Centre builds upon this combination.

A joint initiative

Stockholm Resilience Centre is a collaboration between Stockholm University, the Stockholm Environment Institute and the Beijer Institute of Ecological Economics at the Royal Swedish Academy of Sciences. The Centre is funded by the Foundation for Strategic Environmental Research, Mistra.

Through its project 'Resilience and Sustainability: Integrated Research on Social-Ecological Systems', funded by the Swedish Research Council Formas, the Centre is also acknowledged as a Swedish Centre of Excellence.

Improving Baltic Sea management
Together with Baltic Nest Institute, Centre researchers help improve practices for fisheries management.

Urbanism is the new green
Stockholm Resilience Centre has contributed to a vision proposal for the world's first resilient university campus.

Turning back from the brink
Centre researchers have developed early warning indicators that can help avert critical and undesirable regime shifts.

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Tipping towards the unknown
Centre researchers have helped identify critical planetary boundaries that humans must respect in order to continue to develop in the future.

Photo: T. H. Snickars/Azote

Managing biodiversity in urban areas
Resilience researchers argue that big cities are hubs for knowledge and innovation, both crucial for biodiversity conservation.

Photo: Jakob Lundberg

Tropical forest regeneration in Madagascar
Centre researchers have shown how local communities can contribute to the regeneration of a crucial forest region in the world.

Our research

All research at Stockholm Resilience Centre uses a resilience lens to study the dynamic interplay between humans and nature.

Resilience is about the capacity to withstand shocks and disturbances such as climate change or financial crisis and to use such events to catalyse renewal, novelty and innovation. It is about taking stock in diversity and spreading the risks.

Loss of resilience tends to lead to more vulnerable systems and possible undesirable shifts in how ecosystems provide humans with crucial goods and services such as fish, crops, flood control and water purification. Clear lakes risk turning into murky, oxygen-depleted pools, grasslands into shrub deserts and coral reefs into algae-covered rubble.

With increasing urbanisation, it is becoming equally essential to maintain healthy biodiversity in order to secure ecosystem services that are crucial for humans.

Why resilience?

We have seen it during financial crises and we are beginning to see it in ecosystems: if brittle systems fail, they can do so abruptly and in the worst case have catastrophic effects.

Despite growing evidence that surprise, abrupt change, thresholds and regime shifts constitute normality in ecosystems, we still govern and manage forests, water resources, agricultural land and other natural resources as if they follow linear, predictable pathways.

Resilience thinking helps us avoid the trap of simply rebuilding and repairing flawed structures of the past – be it financial strategies, city development plans or fisheries management. Resilience encourages us to anticipate, adapt, learn and transform human actions according to changes that take place.

Research themes

Research at Stockholm Resilience Centre is organised in six overarching themes. These themes interact with each other and act as platforms for transdisciplinary collaboration and innovation.

The insights and findings generated by research at the Centre are further developed to provide input into policy, practice and academic training.

Regime shifts and implications in social-ecological systems is a major research niche within the Centre. It studies the dynamics of ecological regime shifts, the social, ecological and financial impacts and ultimately how undesirable regime shifts can be averted.

Global and cross-scale dynamics of social-ecological systems focuses on identifying the governance challenges facing the world in its management of planetary boundaries and ecosystem services.

Coastal and marine social-ecological systems studies the social-ecological impacts of how fisheries, coral reefs and aquacultures are governed, from coastal areas to global levels.

Multilevel adaptive governance, learning and transformations of social-ecological systems is an increasingly relevant research area which analyses how stakeholders on different levels collaborate and interact in the management of landscapes and seascapes.

Water, food and ecosystem services in social-ecological landscapes connects work on poverty alleviation and ecosystem services management with research on ecological regime shifts and how humans and ecosystems interact and influence each other locally, nationally and globally.

Urban social-ecological systems connects research on urban planning with sustainable management of natural resources and ecosystem services.

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Using the internet to curb disasters and diseases
The internet can be used as an early warning system for potential ecological disasters and outbreaks of infectious diseases.

Photo: M. Rust/Azote

Abrupt changes require new governance
With unexpected epidemics and abrupt catastrophic shifts in natural systems, resilience researchers suggest more innovative governance.

Photo: J. Lokrantz/Azote

Better water management for better living
The world is facing a water crisis, but researchers show how improved management help cope with future risks and uncertainties.

Photo: B. Christensen /Azote

Navigating the coral reef crisis
Centre researchers put theory into practice and have presented solutions to minimise all future climate-related impacts on the Great Barrier Reef.

Photo: J. Lokrantz/Azote

Conveying world-leading research
Stockholm Resilience Centre holds regular seminars on sustainable development and resilience theory, led by world-leading scientists.

Photo: Steve Lansing

Applying resilience to UNESCO sites
The Centre has initiated an international collaboration to better manage World Heritage cultural landscape sites in Indonesia.

Policy & Communication

A key strategy behind our work is to generate new insights and develop these into advancements in policy, practice and academic training.

Resilience research is under rapid development and the Centre has become an increasingly important knowledge support for the Swedish government, UNEP and the European Union. The Centre communicates among others its work through high-level seminars, news updates and videos on the centre website, YouTube and various social media.

The Centre also hosts several international institutes and programme offices:

Baltic Nest Institute

Baltic Nest Institute is an independent research institute which has developed a decision support system, the Nest model, aimed at facilitating adaptive management of the Baltic Sea drainage basin.

The Swedish International Biodiversity Programme (SwedBio)

The Swedish International Biodiversity Programme (SwedBio) is a knowledge interface on biodiversity and ecosystem services for local livelihoods and poverty alleviation. It also contributes financial support to international development initiatives.

BalticSTERN secretariat

The BalticSTERN secretariat is an international research network providing cost-benefit analysis on the environmental problems of the Baltic Sea.

International Programme Offices

The Centre also hosts several international programme offices initiated by the International Council for Science (ICSU). It host the newly established Programme on Ecosystem Change and Society (PECS) which will make the Centre a key partner in the establishment of the new Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES).

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Studying resilience

Stockholm Resilience Centre offers interdisciplinary courses on undergraduate, Master's and postgraduate levels.

Undergraduate courses

The undergraduate evening course Världens eko (Perspectives on the World) is an introductory course on sustainable development (in Swedish). The course features some of Sweden's most qualified researchers and debaters. The centre also co-coordinate a programme on Hållbar Samhällsutveckling (Sustainable Development).

Master's programme

The 2-year Master's programme Social-Ecological Resilience for Sustainable Development aims to show how resilience thinking can be applied to solve real-life problems within complex social-ecological systems.
The Master's programme includes one year of courses and an internship, and one year spent preparing a Master's thesis. Students' theses are mainly incorporated in on-going research projects and are all related to one of the research themes at the Centre.

Resilience Research School

PhD students from all over the world are enrolled in the Centre's Research School which offers PhD courses, seminar series and workshops to students who want to enhance their knowledge on resilience in social-ecological systems. The training includes understanding of ecosystem dynamics as well as management, multilevel governance, and the capacity of interdependent social and ecological systems to adapt to and transform in the face of change.

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Understanding resilience
Stockholm Resilience Centre offers courses on resilience thinking, featuring some of the most qualified researchers and debaters internationally.

New perspectives on green learning
Centre research reveals how students experience and respond to environmental learning.

From grim to green
Centre students have been crucial in determining why the West African Sahel has gone from a drought-prone region to a green, rainy region.

Graphic design: Christine Clifstock

Can super cities really be sustainable and help support biodiversity?

What management changes are needed to rescue the world's oceans from overfishing and pollution?

How can human wellbeing continue to develop without transgressing crucial planetary boundaries?

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