

ICSU Programme on Ecosystem Change and Society (PECS)

Services that earth's ecosystems provide to people are being transformed at the most rapid rate in human history. Most ecosystem services are degrading, including those that underpin food, water, human health and climate regulation. Human populations and consumption are rising and drivers of degradation are intensifying, thereby increasing the risk of even greater losses of ecosystem services in coming years. Existing policy responses do not recognise the effects of decisions on the full portfolio of ecosystem services and human well-being, including the unintended adverse consequences of actions taken to improve a particular ecosystem service.

We need a transformation in policies and practices to manage the full endowment of ecosystem services, including the interactions and tradeoffs. This transformation requires input from both the natural and social sciences. What is needed is a broad international partnership among the disciplines for research to examine the relationships of governance, ecosystem services, and human well-being at global and local scales. PECS, the ICSU Programme on Ecosystem Change and Society, is a new research endeavour that integrates social and natural science and aims to provide the understanding needed for wise stewardship of landscapes and seascapes.

How do policies and practices affect resilience of the portfolio of ecosystem services that support human well-being and allow for adaptation to a changing environment? This overarching question must be addressed simultaneously by natural and social sciences and therefore requires trans-disciplinary research. The programme must address interactions at different spatial extents, engage multiple stakeholders, address all interconnections of ecosystem services—including their physical, biological, and social aspects—develop analytical approaches to evaluate outcomes of policies and practices, design responsive monitoring strategies, and provide transparent access to information.

Components of the programme include

- Comparative analyses of the effects of policies and practices on the full portfolio of ecosystem services and their implications for human well-being, conducted in specific regions that are undergoing rapid change.
- Development of integrated modelling tools to assess the portfolio of ecosystem services at a range of spatial and temporal scales, and to evaluate effects of changing drivers, policies and practices on the ecosystem services and human well-being.

Explanation of key terms

Ecosystem services are benefits that people receive from nature, such as provision of food and water, regulation of water flows and quality, and cultural values. Practices that increase one ecosystem service may decrease others; e.g. maximization of food production may impair water supplies.

Governance involves systems of management of resources and people and can be undertaken by governments, communities, international bodies or other institutions.

Human well-being is a state comprising material needs for life, freedom and choice, health, social relations, security, peace of mind and spiritual experience.

Policy is a course of action adopted or approved by a governing body.

Practice is the action or process of implementing a policy.

Resilience is the capacity of social-ecological systems to persist, adapt or transform when necessary.

- Development of adaptive strategies to monitor changes in the portfolio of ecosystem services and their effects on human well-being based on multiple sources of information including narrative, qualitative and quantitative data and historical records in addition to more traditional monitoring and remote sensing.
- Building capacity to develop the scientific communities, public outreach, stakeholder engagement and institutions needed for resilient ecosystem services and human well-being.
- Evaluate effectiveness of governance, policies and practices that aim to manage the portfolio of ecosystem services for improved human well being, at a range of spatial scales.

PECS will develop the analytical tools and evidence base that enable improved human wellbeing through wise stewardship of earth's full portfolio of ecosystem services. The program will provide information useful at multiple levels of governance including international conventions, national and local policymakers, and communities. PECS will add to the basic knowledge needed to manage long-term resilience of ecosystem services and to maintain options for future human access to ecosystem services. Thus PECS will facilitate adaptive change in ecosystem stewardship at a time when ecosystem services are themselves undergoing transformation.

More information is available at: http://www.icsu.org/1_icsuinscience/ENVI_PECS_1.html