RESEARCH PROGRAM ON
Water, Land and Ecosystems

CGIAR

Led by:

IWMI
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Water Management
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Highlights

Rural landscapes are more resilient when:

- Ecosystems are protected, restored and/or sustainably managed

- There is a variety of land use, including low-use and wild areas

- Collective action, knowledge exchange and support exists in the wider community through social institutions, networks and cooperatives

- Agricultural biodiversity and sustainable farming practices are used on farm

Measuring resilience in socio-ecological production landscapes

Overview of an ecosystem service approach

Socio-ecological production landscapes are those that have been shaped sustainably over centuries through interactions between humans and nature. In order to understand what makes these landscapes resilient and to help communities continue to adapt to new changes, a set of indicators were developed, as a collaborative effort under the Satoyama Initiative, to assess and identify steps needed to strengthen resilience in any given landscape through the use and conservation of biodiversity and ecosystem services.

Based on a review of 172 case studies and project reports from around the world, Mijatovic et al. (2013) developed a set of social-ecological indicators to determine the resilience baseline of a landscape and identify weak points and strengths of a system. UNDP's Community Development and Knowledge Management for the Satoyama Initiative

(COMDEKS), has already used the indicators in 10 countries to help develop project work plans and interventions. Feedback from practical testing of the indicators has allowed researchers to further refine them, and a user-friendly toolkit is being developed for communities, researchers and development organizations.
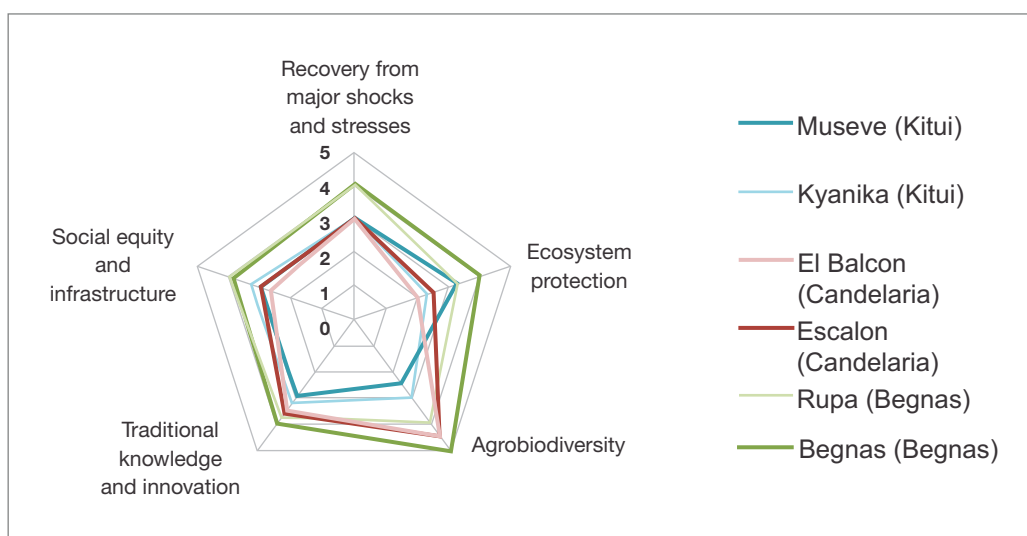
Findings: Resilience in the Begnas landscape, Nepal

Bioversity International and partners field-tested the indicators in three different landscapes: the Andean highlands of Bolivia, the sub-tropical lake watersheds of Nepal and the tropical drylands of Kenya. Of these, Nepal's Rupa and Begnas landscapes were overall found to be the most resilient to change.

Based on 15 years of data and surveys with over 300 households, the area was found to have the highest capacity to absorb stresses due to diverse production systems and strong social organization. Reforestation and sustainable management of forest resources, for example, play a strong role in ensuring the delivery of important ecosystem services, such as soil erosion control, food and firewood. Diverse land use and livelihoods has allowed community members to spread risk and adapt to changing times and climate. Strong collective action and knowledge exchange in the communities has led to more sustainable farming practices throughout the landscape; and strong seed networks have allowed farmers to have access to a wide range of agricultural diversity.
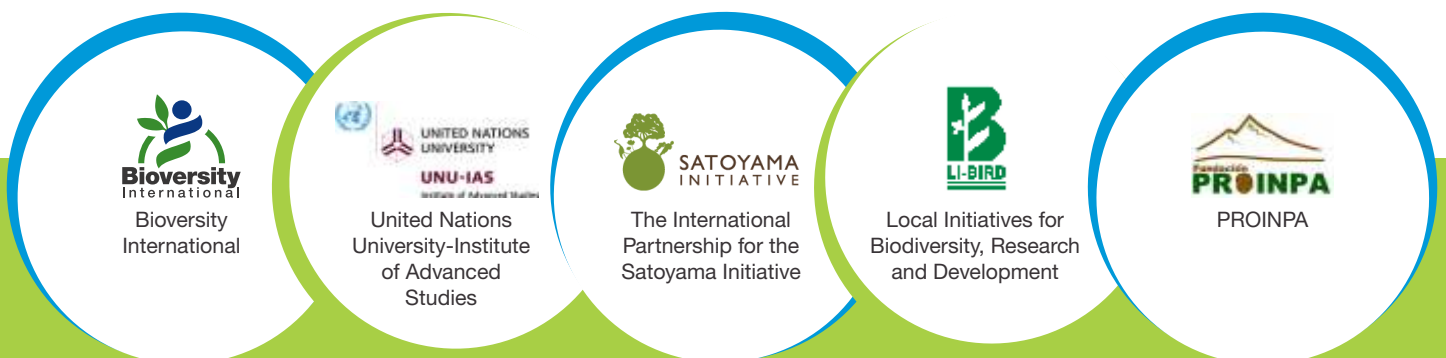
Much of the adaptive capacity of the Begnas landscape can also be attributed to strong local institutions and NGOs such as LI-BIRD that have supported community-based biodiversity management over time through diversity fairs, diversifying household livelihood assets (such as integration of goats), traditional knowledge documentation and participatory plant breeding programmes.

The indicators for resilience in socio-ecological production landscapes intend to provide a common language for scientists and rural communities to determine what strategies need to be developed to strengthen resilience through the sustainable use of agricultural biodiversity.

Adapted from Mijatovic et al. (to be published)

Main partners

Bioversity International

United Nations University-Institute of Advanced Studies

The International Partnership for the Satoyama Initiative

Local Initiatives for Biodiversity, Research and Development

PROINPA

References and links
Mijatović, D., Van Oudenhoven, F., Eyzaguirre, P., and Hodgkin, T. (2013) The role of agricultural biodiversity in strengthening resilience to climate change: towards an analytical framework. International Journal of Agricultural Sustainability 11(2): pp. 95-107

Mijatovic, D., Gruberg, H., Sthapit, S., Morimoto, Y., Udas, R., Pudasaini, R., Gonzales, R., Cadima, X., Maundu, P., Bergamini, N. and Eyzaguirre, P. Landscape approaches to agrobiodiversity conservation for greater resilience to climate change – a comparative analysis of case studies from Bolivia, Kenya and Nepal. To be published.

http://www.ias.unu.edu/resource_centre/Indicators-of-resilience-in-sepls_ev.pdf