SEPLS: Socio-Ecological Production Landscapes and Seascapes

Experiences overcoming barriers from around the world

Introduction

The GEF-Satoyama Project has been working to realize society in harmony with nature by mainstreaming conservation and sustainable use of biodiversity in production landscapes and seascapes. This issue brief is a compilation of lessons learned on biodiversity in production landscapes and seascapes from ten demonstration projects from around the world.

Key Messages

- Socio-ecological production landscapes and seascapes (SEPLS) provide a wide array of **values** to people. Collaborative research on threatened species in SEPLS, and local entrepreneurship harnessing core values of SEPLS – particularly food – help people better recognize these values.
- **Traditional knowledge** is an integral part of SEPLS, enabling people to sustainably use and manage various resources, but is in decline. Effective measures to address this decline include creating community schools to facilitate mutual learning between elders and youths, reinforcing traditional ecological production, and integrating traditional knowledge into science and policies.
- **Governance** in SEPLS is strengthened through effective collaborative management schemes, involving local communities in the decision-making process regarding SEPLS management, based on effective communication between all the stakeholders, financial support and policies that promote local governance systems.
- It is key for the sustainability of SEPLS to develop public policies that are **coherent** among the different sectors and levels of government, and to **integrate** the local values, traditional and local knowledge, customary rights and community institutions with the management of SEPLS.

What are SEPLS?

With the increasing human population and footprint, global conservation of biodiversity can only be achieved with the sustainable management of areas in which people and nature interact. Production landscapes and seascapes, spaces in which activities of the primary industry (agriculture, forestry and fisheries) take place, are important as buffers and provide vital connection between protected areas. They are also important for the conservation and sustainable use of biodiversity in their own right. Those that integrate the values of biodiversity and social aspects harmoniously with production activities, such that production activities support biodiversity and vice versa, are termed the socio-ecological production landscapes and seascapes (SEPLS). They are called "Satoyama" in Japan, where their values have been recognized and made into an international initiative.

We have identified key barriers that many SEPLS face globally.

Challenges:

- Insufficient recognition of SEPLS values
- Disappearing traditional knowledge
- Weak governance.

We provide solutions to these from the analysis of the information collected through the GEF-Satoyama Project.

Landscape (Peru) ©CI/Devon Dublin

Restored mariculture (Mauritius) ©CI/Yoji Natori

Question: How can we get the values of SEPLS recognized?

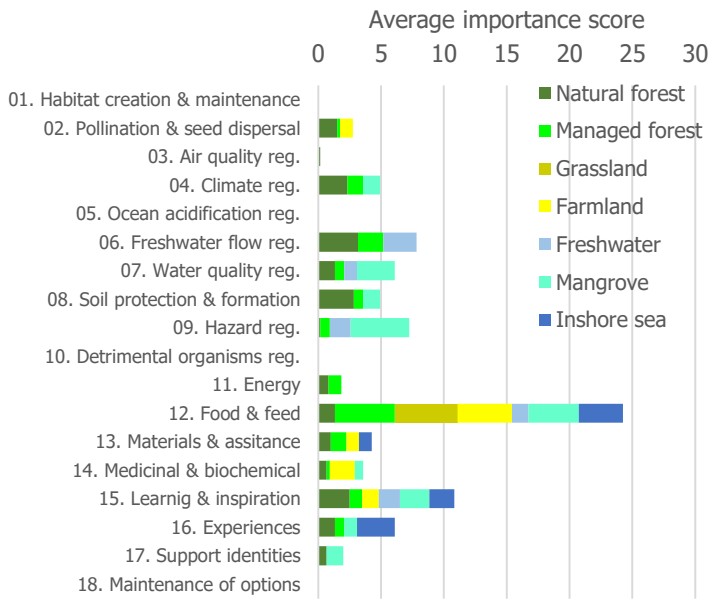
Answer 1: Look at landscapes and seascapes from multiple angles

People recognize the values of SEPLS in many different ways through many different ways of interaction with them in their own perspectives, but the totality of the value set is not recognized. These areas fall under different ownership and management schemes in which various stakeholders are involved. Many producers prioritise short-term production gains over long-term biodiversity. Yet, the GEF-Satoyama Project has demonstrated that SEPLS serve as vital habitats for several globally threatened species. Other species are valuable to the local people for food, medicine, eco-tourism, pollination and seed dispersal. In some cases, wild species support the cultural and ethnic identity. These utilitarian and intrinsic values of species constitute biodiversity that is unique to each SEPLS. Values are recognized from individual perspectives, but the holistic values that emerge from collective whole are not. It is thus important to comprehensively capture the vital and unique values of SEPLS and share these with all key stakeholders, so that they can take collective action harnessing these values.

SEPLS can take various forms:

- customary protected forests
- production agroforests
- croplands
- terrestrial waters
- inshore seas where artisanal fisheries are practiced.

SEPLS provides numerous ecosystem goods and services, particularly food, providing grounds for education and cultural transmission, regulation of climate, water and soils, protection against natural disasters, which underpin the livelihoods, security and development of people living in these areas.



Above: The importance of different ecosystem goods and services as recognized in 7 ecosystem types across GEF-Satoyama Project's 10 project sites. In the analysis, 18 ecosystem goods and services categories were identified (categorization per IPBES (2017). The importance score for each ecosystem type ranges from zero (0) (non-existent) to five (5) (very important).

Many threatened species are dependent on SEPLS:

Above: Ecuadorian White-fronted Capuchin (*Cebus aequatorialis*), CR (Ecuador) ©FIDES/Ramón Cedeño

Above: Livingstone's fruit bat (*Pteropus Livingstonii*), CR (Comoros) @Dahari

Above: Blyth's Tragopa (*Tragopan blythii*), VU (India) ©TERI/Siddharth Edake

Above: Indri (*Indri indri*), CR (Madagascar) © CI/Russell A. Mittermeier

Above: Scalloped hammerhead (*Sphyrna lewini*), EN (Seychelles) © CI/Edgardo Ochoa

Answer 2: Integrate biodiversity into production activities. Local entrepreneurship that fully takes into account local context is key to their success

Collaborative research on threatened species by researchers and local people unveiled the importance of maintaining SEPLS as habitats to protect the species; i.e., empowering local people to become environmental stewards. Many projects that reinforced ecosystem goods and services in SEPLS focused on supporting local food and livelihood security. The food examples include sustainable cocoa and organic quinoa production, and the promotion of indigenous Karen cuisine using endemic rice and herbs from rotational farming. Other examples are ecotourism enterprises, mangrove crab aquaculture, and mangroves as fisheries and coastal shields.

Left: Collaboration with fishers to investigate threatened species in artisanal fish catch (Seychelles)

Left: Ecotourism in mangroves (Ecuador)

Question: How can we capture and use traditional knowledge in SEPLS?

Answer: Integrate traditional and local knowledge with modern science, mainstream education and government policies

Traditional knowledge enables communities to sustainably use and manage their natural resources. This knowledge includes the use of animals and plants for food, medicines, and other necessities. People sometimes use indicator species, such as a frog species whose presence indicates clean water. Such knowledge is often embedded in resource management systems and social institutions; e.g., customary rules on tree and non-timber forest product harvest, fishing restrictions and rotational farming.

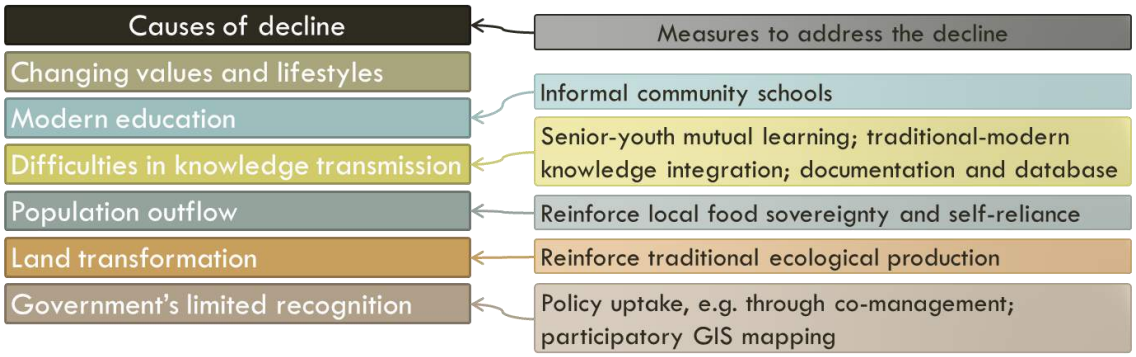
In addition, indigenous peoples often hold an animistic worldview on nature, such as beliefs in nature spirits and taboos, that influences how they treat the natural environment. But it is in decline. Major causes of the decline include changing values and lifestyles, modern education, difficulties in knowledge transmission, population outflow from rural to urban areas, land transformation for commercial monoculture, and its limited recognition by governments.

Below: Trend of traditional and local knowledge systems in relation to the use and management of biodiversity and ecosystems as seen in the GEF-Satoyama Project: Trend of traditional and local knowledge: ↗ increasing; → no substantial change; ↘ declining.

	KNOWLEDGE*	MANAGEMENT SYSTEMS*	SOCIAL INSTITUTIONS*	WORLDVIEW ON NATURE*
Protected & managed forests	↗ Animals and plants ↘ High value species; medicinal plants; primate taxonomy, ecology & roles	↘ Harvest NTFPs; grow & use high-value trees; rotational farming, lunar calendar	↘ Customary forest law	↘ Folklores & lycanthropy; taboos on animal killing
Farmland	→ Crop soil & climatic requirements; ↘ Local crop varieties;	↗ Organic farming; → Manage pests; ↘ Rotational farming		→ Karen's spirituality on rotational farming; ↘ Rituals to beg forgiveness for killed animals & plants
Freshwater	→ Predict water flow changes ↘ Clean water indicator frog	↘ Restrict fishing during spawning season		→ Myths related to water hazards
Mangrove	↘ High value species; fish reproduction in mangroves			
Inshore sea	↘ Fish taxonomy, habitat and movements	→ Species-specific fishing methods		

Measures to address the decline of traditional knowledge have been demonstrated under the GEF-Satoyama Project

Modern education usually uses the national standard language and curriculum. One way to overcome challenges in knowledge transmission could be informal community schools where community elders teach indigenous language, culture and practices, and elders learn modern technologies from youth. Other methods include the integration of traditional knowledge into modern science and expert knowledge for agroecosystem management, as well as the systematic documentation and development of a database of traditional knowledge. To halt population outflow, some projects have taken steps to enhance local food sovereignty and self-reliance through integrating traditional knowledge and innovative techniques for increased production. Against land transformation, traditional knowledge and practices reinforce ecological production; e.g., organic quinoa and cocoa production, as well as rotational farming of upland rice and intercrops.



Some projects have progressed in integrating traditional and local knowledge and practices in government policies, e.g. integrating customary land use systems into district land use plans through participatory mapping using geographical information system (GIS), creating no-take zones around fish spawning banks in a lake, as well as the adoption of minimum catch size and gear restrictions for artisanal fisheries in a collaborative fisheries management plan.

In Thailand, several Karen communities decided that the preservation of their cultural heritage required institutional learning coupled with informal opportunities to facilitate inter-generational exchange. They worked with Karen school teachers to develop a curriculum that uses indigenous poems, stories, practices and proverbs which is now being taught in the Karen language. On the other hand, the youth groups in these communities, organized camps which brought elders to teach the young people about traditional agriculture and cooking methods which they then used to produce value-added products for online promotion.

Above: Mutual learning between elders and youth (Thailand)

Above: A nursery of medicinal plants by the open classroom (Madagascar)

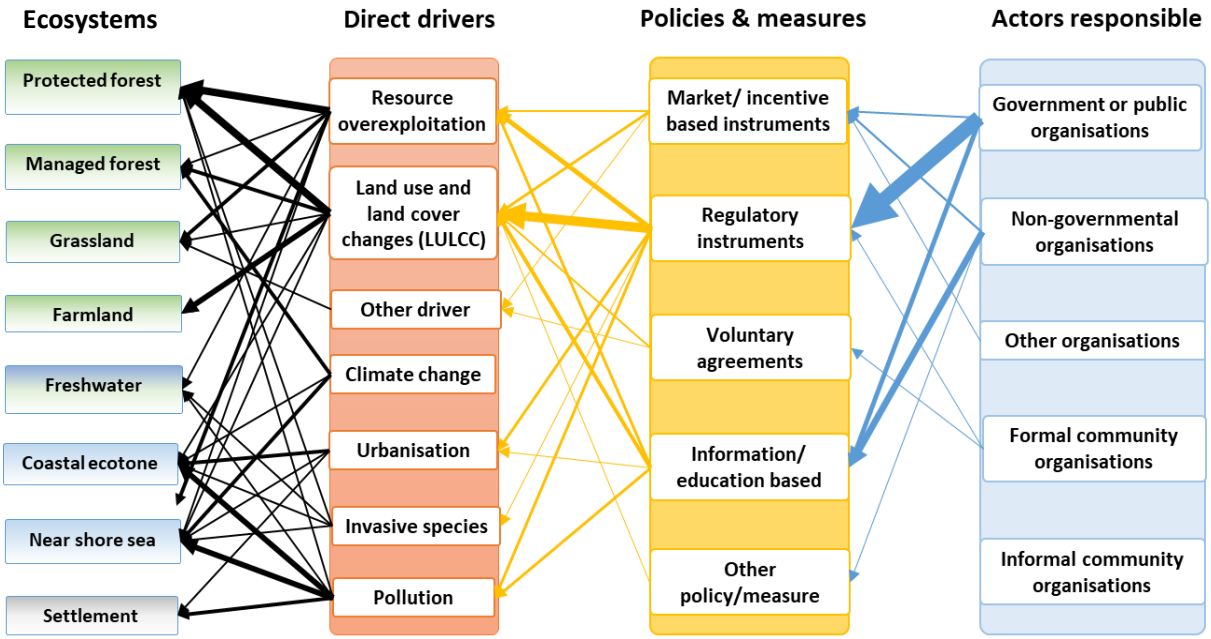
In Madagascar, the knowledge on medicinal plants was at risk of being lost. An open classroom was established for the youth to gain the knowledge of these plants in a fun environment. They created and maintained nurseries of these important plants and took the seedlings home to be planted on family farms. This youth-led initiative has resulted in renewed interest of important plant species and a revitalization of producing herbal medicines.

Question: How can we improve the governance of SEPLS?

Answer: Create a multi-stakeholder platform and empower local communities

Governance in SEPLS refers to the whole of public and private interactions to solve problems affecting the SEPLS, to create opportunities through the formulation and implementation of innovative policies and measures.

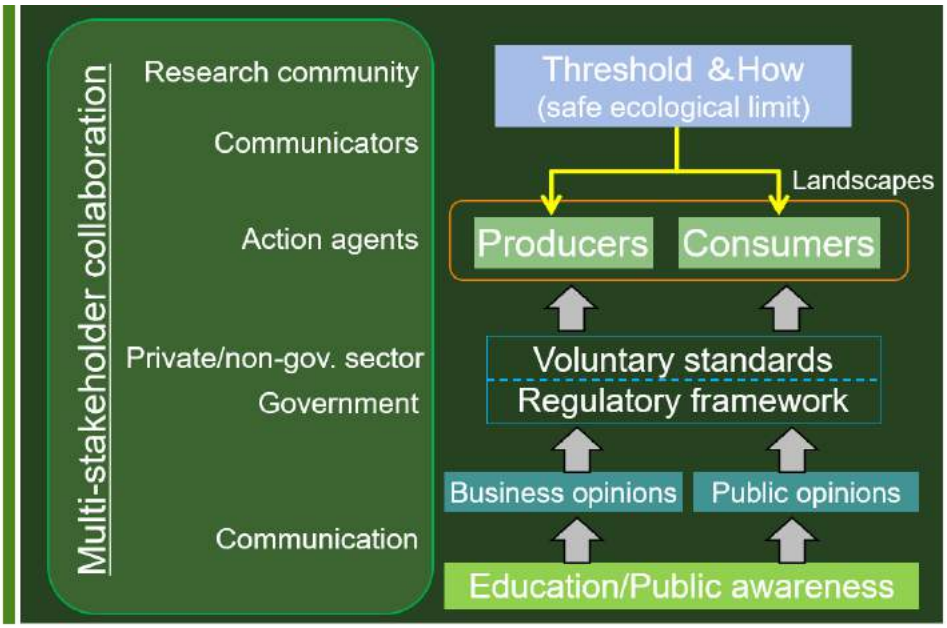
As the review of ten site-based projects under the GEF-Satoyama Project demonstrates, there are a variety of actors involved in addressing the drivers that affect biodiversity and ecosystem services.



Above: Direct drivers affecting the different ecosystem domains, policies and measures addressing these drivers, and actors in charge, as identified by the subgrant projects in their SEPLS.

Biodiversity conservation and livelihood can co-exist. The debate is not to pursue either conservation or development, but how to pursue both in mutually supporting ways. SEPLS is a system people have created through long interactions with their surrounding environment that provide a model for solutions. A comparison to protected areas helps understand the issue of governance of SEPLS. There is a single entity, or a set of well-defined entities, that manages protected areas, but such is not the case in many SEPLS. This is so because SEPLS are not designed to be what they are, but rather they have emerged to be what they are as a result of synergies and trade-offs among multiple interests and objectives. Good governance based on meaningful participation of all relevant stakeholders and productive interaction between these is particularly important in SEPLS.

Landscape management is a multi-stakeholder undertaking. In many countries the institutional framework to manage the natural resources in the SEPLS has been designed to work in a sectorial vision (agriculture, forests, mining, conservation, etc), or in silos, without an integrated landscape management approach, which generates contradicting policies, plans and investments. The types of actors, forms of interaction and networking vary from site to site, but there is a common need for collaborative forms of ecosystem management in the SEPLS as building blocks of participatory and effective governance systems at the landscape or seascape level. Given these factors, a multi-stakeholder platform is needed to facilitate effective governance.



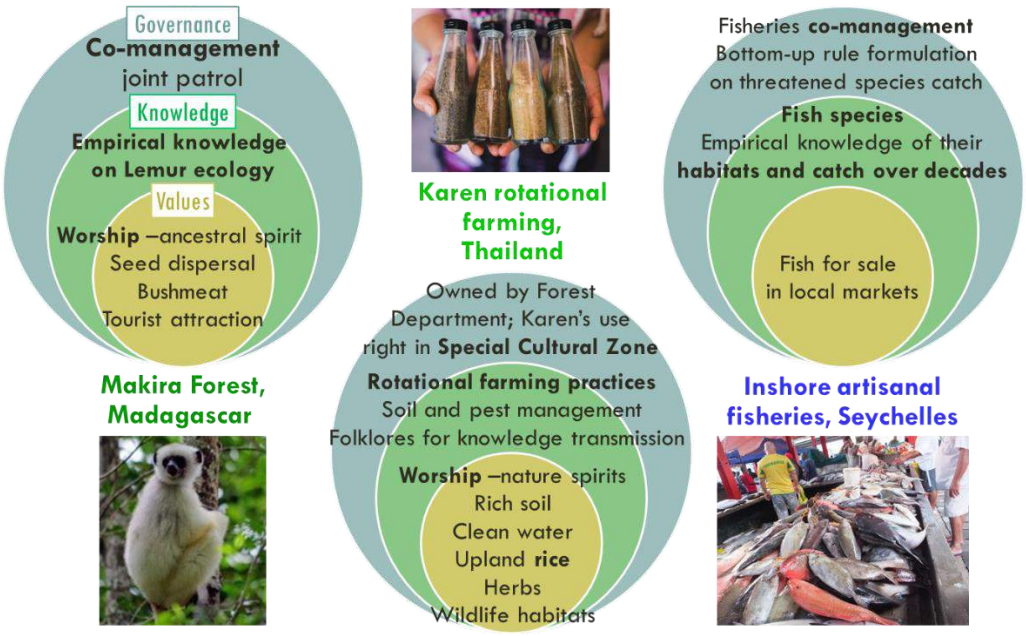
Above: Multi-stakeholder nature of SEPLS management. Production activities, and to some extent consumption, too, are tied to the landscape. The threshold to the level of activities and how to stay within the threshold may need to be determined by the scientific community (or shared within the community as traditional knowledge), but communicators need to deliver such information to practitioners on the ground. Government agencies, non-governmental entities or private sector actors may need to implement regulatory schemes or voluntary standards to ensure that production (and consumption) activities stay within the appropriate level. For such schemes or standards to be accepted in society, education to raise public awareness may be necessary. (diagram based on the discussion at IPSI-3 in 2012).

In order for such a system to work efficiently, local communities in the landscapes and seascapes need to be sufficiently empowered so that they can take actions that they see necessary. While many SEPLS governance schemes involve several stakeholders including government, NGOs and community organisations, there is a need to strengthen the existing structures and processes. Many current governance schemes are not fully inclusive, with a weak role of community organizations. Governments at all levels need to actively involve community organizations, transferring management rights so that community organizations can undertake the management more effectively, and allocating sufficient public resources for these organizations to work efficiently.

It is also important to promote equal representation of both genders and different social (and if applicable ethnic) groups at the community level. All actors responsible for the public or communal management of ecosystems need to be accountable and transparent to their constituencies. The related decision making processes benefit from consensus-building, agreements and democratic decisions between the different interests within and among the different organizations. It is key to develop and implement policies and programs that contribute to change environmentally harmful practices, and to address the existing problems or drivers.

Conclusion

A strong link between values, knowledge and governance can potentially enhance biodiversity and production in SEPLS. The recognition of many terrestrial ecosystem services (and values) by local communities is typically linked with extensive traditional knowledge held by communities, not only on their geo-ecological features (e.g. lemur ecology in the case of the Makira Forest, Madagascar), but also on their management and use, and their role in traditional beliefs (such as worship of the ancestral spirits of lemur species). These values are recognized and often integrated into governance schemes with specific roles in co-management schemes (e.g. joint patrols with rangers such as in the case of Makira Forest). However, there are cases where the knowledge held by local communities is not sufficiently recognised and exchanged with government agencies. This results in less capacity building for community organisations, and protected areas where locals are largely excluded from.



Above: In any landscapes or seascapes, values, knowledge and governance are inter-related

The values of coastal ecosystems for local communities (particularly the provision of food sources and regulation of extreme events), is closely linked to the knowledge held by local communities of the habitats (e.g. coral reef and seagrass beds as fish feeding, reproduction and foraging grounds in Seychelles) and artisanal fishery practices. The values for and knowledge held by local communities as key stakeholder should be reflected in the governance system, as in the case of the co-management of Seychelles, where the nearshore sea is managed by various entities and overseen by the central government, and the fishing regulation is being developed as part of a bottom-up process.

It is obvious from the demonstration projects that local champions play crucial role in mobilizing the communities, being the window of communication to and from the communities, and sustaining the initiatives after the project terms.

Though we looked at these from the SEPLS perspectives, the findings presented here may be applicable more generally to other systems, such as protected areas.

About the GEF-Satoyama Project

Funded by the Global Environment Facility (GEF) since 2015, the "GEF-Satoyama Project" for "Mainstreaming Biodiversity Conservation and Sustainable Management in Priority Socio-ecological Production Landscapes and Seascapes" intends to address the barriers that SEPLS face globally, and contribute to the achievement of multiple Aichi Biodiversity Targets and Sustainable Development Goals. Under its main component, "on-the-ground demonstration", the GEF-Satoyama Project invests in ten demonstration projects in Indo-Burma, Tropical Andes and Madagascar and Indian Ocean Islands Biodiversity Hotspots to enhance livelihoods, conservation and sustainable use of biodiversity and ecosystem services. The intended outcome includes effective conservation management, improved conservation status of globally threatened species and promotion of traditional knowledge.

Indo-Burma

Madagascar
& the Indian Ocean Islands

Tropical Andes

Demonstration project proponents

① THAILAND: Inter-Mountain Peoples' Education and Culture in Thailand Association (IMPECT)
② MYANMAR: Fauna & Flora International (FFI)
③ INDIA: The Energy and Resources Institute (TERI)
④ MAURITIUS: Environmental Protection & Conservation Organisation (EPCO)
⑤ SEYCHELLES: Green Island Foundation (GIF)
⑥ MADAGASCAR: Wildlife Conservation Society (WCS)
⑦ COMOROS: Dahari
⑧ COLOMBIA: Universidad Industrial de Santander (UIS)
⑨ ECUADOR: Fundación para la Investigación y Desarrollo Social (FIDES)
⑩ PERU: Asociación Amazónicos por la Amazonía (AMPA)

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Endorsed Collaborative Activity

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