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Promoting the Landscape Approach in Asia-Pacific Developing Countries: Key Concepts and Ways Forward

Main Messages

-  Many countries in the Asia-Pacific region have enjoyed rapid economic growth over recent decades, but at the expense of the natural environment and ecosystem services. This reflects failings in the dominant public sector approach to managing natural resources, which is to divide management responsibilities according to sectors of interest, such as agriculture, water, energy, public works, forestry, industry, and mining, etc.
-  More holistic, integrated strategies are needed to respond to the growing demands their economies are placing on the land and its natural resources.
-  This policy brief advocates a landscape approach to implement more integrated strategies, which are necessary for achieving the UN sustainable development goals.
-  This approach is guided by a set of normative principles that serve as a conceptual framework for integrating sectoral interests at a scale at which ecosystems can be effectively managed. The landscape approach enables development while protecting and enhancing ecosystems and their services. The approach is evidence-based and engages key landscape stakeholders in planning, implementation and monitoring, increasing the prospects for sustainable outcomes.
-  There are significant challenges that need to be overcome to implement the landscape approach, but there are also positive trends in natural resource management, such as decentralisation and the creation of spaces for wider stakeholder participation, that are helping construct the necessary foundations for landscape management.

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- 📶 In promoting landscape initiatives, effective use should be made of the growing number of relevant guidance and tools for stakeholder mapping, landscape management facilitation, participatory mapping and land use planning, institutional analysis at the landscape level, scenario analysis and modelling, risk assessment, and landscape monitoring and evaluation.
- 📶 Landscape initiatives require multidisciplinary expertise. Research teams, which may bring together researchers from within and outside a country, can play an important role in generating knowledge and building local capacities for landscape approaches.
- 📶 Financing for landscape initiatives from multiple sources is ideal, including leveraged funding from development agencies, governments and the private sector, as well as new financial instruments developed specifically to support landscape initiatives.

I Introduction

Developing countries in the Asia-Pacific region have made tremendous progress over recent decades in growing their economies. This growth is believed to have lifted more than half a billion people out of poverty. However, rapid economic growth in the

region has been achieved at great environmental cost (Box 1), meaning that unless effective ways to integrate environmental values into economic growth strategies are found, these economic gains will not be sustainable.

Box 1. Environmental consequences of economic growth patterns in developing Asia-Pacific countries – selected facts and figures

- **Pristine forests rapidly disappearing and land increasingly degraded:** Southeast Asia holds only 5 per cent of the world's forest yet experienced 25 per cent of global forest loss between 2000 and 2010 (Blaser, 2010). Roughly a third of the world's total degraded land lies in Asia, with one FAO study suggesting that this area could exceed 2,500 million hectares (Gibbs & Salmon, 2015).
- **Biodiversity under threat:** According to the IUCN Red List, Asia-Pacific now has over 13,000 threatened species, with on average each country having over 230 threatened species (IUCN, 2016).
- **Inland water bodies amongst the world's most polluted:** Water pollution in almost all Asian rivers has worsened in recent decades, mainly as a result of the discharge of untreated wastewater and unsustainable land management practices (WWAP, 2016). Eighty per cent are in poor health (ADB, 2013).
- **Growing vulnerability:** From 2000-2009, almost 85 per cent of global deaths from natural disasters occurred in the Asia-Pacific region (ESCAP & UNISDR, 2010). The degradation and loss of ecosystems that can be observed across the region further increases the exposure and sensitivity of communities to natural hazards.

The problems described in Box 1 reflect failings in the dominant public sector approach to managing natural resources, which is to divide management responsibilities according to sectors of interest, such as agriculture, water, energy, public works, forestry, industry, and mining, etc. Sectoral approaches invariably result in competition between government agencies over land and natural resources, and it is the more powerful sectors, such as mining, industry and agriculture, that tend to have their way over the less influential sectors, especially the environment.

There is growing recognition that more holistic and

integrated responses are required to address the loss of natural capital and ecosystem services that can be observed across the region. This is where the landscape approach has much to offer, particularly in biodiversity rich areas where stakeholders expect the landscape to contribute to food production, employment generation, business opportunities, and conservation. The strength of the landscape approach is that it provides a conceptual framework for integrating sectoral interests at a scale at which ecosystems can be effectively managed. The integration of sectoral interests takes place through land users, managers and other stakeholders in the landscape working together to forge

solutions to sustainability challenges. Collaborative planning and action at the landscape scale provides a means to manage trade-offs and take advantage of synergies across sectors, as well as to harmonise planning, implementation and monitoring processes. This is not to imply in any way that the landscape approach is easy. To the contrary, there are many challenges and long-term investment and commitment are required, but there are also a number of positive trends affecting natural resource management, such as decentralisation processes, that landscape initiatives can build from.

Landscape initiatives are not new. A recent review by the Landscapes for People, Food and Nature Initiative covered 357 integrated landscape initiatives in Africa,

Latin America-Caribbean and Asia (Deneir et al. 2015). The backdrop to these is growing global understanding of the importance of the landscape approach to international goals for sustainable development, biodiversity conservation and climate change mitigation and adaptation. However, within the Asia-Pacific region few people whose decisions impact land and their resources understand what the landscape approach entails and how it can be tailored to reflect context specificities. This policy brief takes up these issues by setting out definitions and normative principles for the landscape approach, and providing examples of how the movement towards sustainable landscape management is evolving and can be supported in the region.

2 What is a landscape?

While the term landscape is familiar to many – we may comment on how beautiful the ‘landscape’ is and we may take and share photos of the ‘landscape’ – there is no commonly accepted definition of a landscape. Conservationists talk of ‘conservation landscapes,’ social scientists of ‘cultural landscapes’ and so on. With a view to landscapes serving multiple functions, we define a landscape as *a geographically bounded area where ecological, social and economic processes interact to produce a distinct mosaic of ecosystems, with its boundaries defined by management objectives*. What does this definition

emphasise? First, a landscape covers an area where there are strong interrelationships between different types of ecosystems, which may be natural or heavily-modified by human activities. Second, people and their institutions are not separate from the landscape, but rather are an integral part of it. Third, the decision as to where the spatial boundaries of the landscape lie depends on ecosystems and their interrelationships as well as the objectives that are set for landscape management. Together, these points mean that a landscape can be distinguished by its spatial patterns and its governance (Deneir et al., 2015).

3 The ‘what’ and ‘why’ of the landscape approach

The landscape approach builds on lessons learned from early conservation initiatives, particularly that areas with high biodiversity values cannot be protected without meeting the needs of surrounding communities, as well as integrated water resource management and landcare initiatives. In recent years significant progress has been made in elaborating the concept of the landscape approach. Important reference works include the “Bowral Checklist,” a checklist framework for ecological management developed by landscape ecologists and conservation biologists at a meeting in Bowral, New South Wales, Australia in March 2006; the “Ten Principles for a

Landscape Approach” (Sayer et al. 2013), developed through a series of workshops and extensive consultations and published in 2012; and the “Elements of Integrated Landscape Management,” developed by several international environmental non-governmental organisations and published in 2015 (Deneir et al. 2015).

Definition and principles of the landscape approach

We define the landscape approach as *a governance framework for natural resource management at a landscape scale that mediates and integrates the diverse interests that different stakeholder groups*

have in the landscape. We have elaborated this definition as a set of seven interrelated normative principles (Box 2). Strong foundations for these principles can be found in the growing literature that is promoting more holistic, integrated approaches to land and natural resource management.

The seven principles should be understood as guiding principles for the design and implementation of landscape approaches. How they are applied will depend on contextual factors as well as the availability of financial and technical resources. We have intentionally aimed to limit the number of principles for it to be practical to introduce these to stakeholders.

Box 2. Seven principles of the landscape approach

1. **Ecosystem-based:** Natural resource management decisions should be informed by the full array of interactions within and between ecosystems.
2. **Appropriate and multiple geographical scales:** Reflecting ecosystems and management objectives, landscapes should be managed at appropriate scales. Smaller landscape management units may be nested within larger units.
3. **Multiple functions:** The landscape should be managed for multiple functions. Conversion of land use to any one single system of production, such as agriculture, should be avoided.
4. **Resilience:** Changes in landscapes that would increase vulnerability to threats should be avoided and capacities to mitigate and recover from shocks and stresses should be maintained and enhanced.
5. **Participatory processes:** Processes should be established for stakeholders to participate in all aspects of landscape management, including generating knowledge on landscape issues, decision-making on landscape management, implementing and monitoring landscape management activities, and evaluating landscape management performance. Capacity building and other support should be provided to marginalised groups to ensure they can effectively participate in landscape management.
6. **Use of knowledge from multiple sources and continual generation of knowledge:** Landscape management should be evidence-based and informed by scientific knowledge as well as local and traditional knowledge. New knowledge should be generated through piloting, action-research, trial and error, and monitoring and evaluation.
7. **Adaptive management:** Inflexible administrative arrangements and plans should be eschewed in favour of an adaptive approach that incorporates new knowledge and lessons to strengthen management of the landscape.

The concept of the landscape approach is illustrated in Figure 1. “Ecosystems-based”, “resilience”, “appropriate scales” and “multiple functions” are depicted as inter-related principles that comprise the core elements of the landscape approach. “Participatory processes”, “use of knowledge from multiple sources and continual generation of knowledge” and “adaptive management” are presented as process-related principles that aim to ensure the core elements are realised.

Beyond this, there is no set-by-step recipe-type strategy for implementing the landscape approach; rather, these principles have to be interpreted according to the specifics of each context in which a landscape approach is being promoted. In addition to employing these principles, there is a growing number of useful tools supportive of or designed specifically for landscape initiatives. Effective use should be made of these. They include tools and

guides for stakeholder mapping, landscape management facilitation, participatory mapping and land use planning, institutional analysis at the landscape level, scenario analysis and modelling, risk assessment, and landscape monitoring and evaluation (see Deneir et al. 2015).

Distinctiveness of the landscape approach

How then is the landscape approach different from conventional approaches to development? Development initiatives have typically focused on improving the performance of one sector and/or resource manager to achieve sectoral goals, such as employment generation, conservation, watershed protection, etc., one at a time. These sectoral approaches fail to deal with the problems that can arise when the actions in one sector undermine the objectives of another, such as when forests are cleared for agriculture with insufficient consideration of what this could mean for disaster risk, water security,



Figure 1. Conceptual diagram of the landscape approach

climate change and biodiversity. Conventional approaches to development have also focused on building state institutions to manage natural resources, and have paid less attention to stakeholder engagement in policy processes. The consequences of this can be seen in heated local conflicts across the region that have risen when governments have sought to enforce policies that favour those of large investors and were not designed with inputs from local communities. In contrast, the landscape approach emphasises the importance of coordination between government departments and between different levels of government, and the engagement of stakeholders in all stages of natural resource management, from planning through to evaluation. This co-operation or coordination among stakeholders offers greater prospects for ensuring that landscapes serve multiple functions while maintaining their natural capital.

There are of course other integrated approaches relevant to the field of natural resource management. Each has their place. Integrated water resource management (IWRM), for example, has been strongly promoted in the region and the concept is familiar to the government agencies responsible for managing watersheds and inland water bodies (ADB, 2013). IWRM is a type of landscape management, where the spatial management unit is usually the watershed. The landscape approach can complement IWRM by

establishing management frameworks for ecosystems that cross watershed boundaries.

The “nexus approach”, which considers the interactions between water, energy and food (FAO, 2014), is another complementary approach, but it does not have an explicit spatial dimension. The landscape approach is concerned with managing land uses and their interrelationships at the landscape scale. Decentralised spatial planning is thus always an important element of the landscape approach. In contrast, the nexus approach is a more loosely defined concept that can be applied at any level or geographic area to identify and act on potential trade-offs and synergies related to water, energy and food issues.

Importance of the landscape approach to conservation, sustainable development, climate change mitigation and adaptation, and disaster risk reduction

While landscape interventions are not new, there is growing global recognition of their importance, as can be seen in a number of recent initiatives that have sought to raise awareness and share experiences (e.g. the Global Landscapes Forum – <http://www.landscapes.org/>). As shown in Figure 1, the landscape approach is foreseen as highly relevant to a number of international agreements related to the environment and sustainable development, including the UN Convention on Biological Diversity

(CBD), the Sustainable Development Goals (SDGs), the Paris Agreement on Climate Change, the Sendai Framework for Disaster Risk Reduction and the UN Convention to Combat Desertification (UNCCD).

A challenge for the 17 SDGs is to avoid potential competition between individual goals, which are indivisible and should be tackled in an integrated fashion. The importance of coordinating efforts across these international agreements is also widely understood.

This is where the landscape approach can help. The landscape approach supports development that is

informed by existing ecosystems and their dynamics and is based on processes that mediate stakeholder interests. So managed, through both development and conservation initiatives, a landscape can be expected to serve multiple functions, such as contributing to food, energy and water security, as well as the generation of employment and public revenues, and, by maintaining and enhancing ecosystem services, to adaptation and disaster risk reduction.

There is growing evidence that the landscape approach can deliver these results. Two examples are presented in Box 3 and Box 4.

Box 3. Kailash Sacred Landscape Conservation and Development Initiative

The Kailash Sacred Landscape Conservation and Development Initiative is an initiative involving China, India and Nepal to promote a holistic approach to the conservation and development of the Mount Kailash landscape. The initiative stemmed from problems the region was experiencing, particularly the loss of traditional livelihoods based on agriculture and the harvesting of wood products due to changing rainfall patterns as well as the degradation of natural resources, and the recognition that the rich ecological and cultural assets of the region needed to be protected. In 2005, China, India and Nepal agreed to take an integrated approach to managing the Mount Kailash landscape. The Kailash Sacred Landscape, which covers 32,000 km² of land in Tibetan Autonomous Region, China, Nepal and India, was subsequently defined on the basis of ecological criteria, watershed boundaries, livelihoods and administrative units. Facilitated discussion among stakeholders led to the design of a regional co-operation framework, a conservation and development strategy, and a regional communication and knowledge management strategy. Positive outcomes that have been observed include improved regional cooperation and coordination among stakeholders. As a result of the initiative, tour operators in China, India and Nepal are working together to ensure sustainable tourism in the Kailash Sacred Landscape.

Source: Deneir et al. (2015).

Box 4. Agricultural landscape restoration in the Tigray highlands of Ethiopia

A movement towards agricultural landscape restoration is underway in the Tigray highlands of Ethiopia. The area experienced land degradation, poverty and hunger as a result of population pressure, droughts and poor land management practices. Reliance on food aid and uncoordinated individual land management efforts were not providing sustainable solutions, leading the government, the World Food Programme, NGOs and communities to launch a collaborative programme in 2002 to restore watersheds and agriculture. Efforts focused on securing land rights for landless groups, erosion control, soil rehabilitation, tree planting and water management. Spatial coordination of these activities was an important element of the initiative. The initiative stabilised the natural resource base, which made diverse agricultural activities possible. The benefits of this initiative include the rehabilitation of 400,000 ha of degraded land, a 200-400% increase in crop production and an increase in the income of almost two-thirds of chronically poor households.

Source: Deneir et al. (2015).

4 How can the landscape approach be promoted?

There are significant challenges that need to be overcome to implement the landscape approach. Scientific understanding of ecosystems and how they interact, the value of the services they provide, and how they are impacted by development is far from complete. Capacities and resources, particularly for land use and spatial planning, are often lacking at local levels. Coordinated policy, planning and interventions across government departments is difficult to achieve when different departments are competing for budgets and have different mindsets towards land and natural resources, and when few incentives for inter-departmental coordination exist. Effective multi-stakeholder processes are challenging to implement when actors distrust each other and some are more powerful, influential and better able to represent their interests than others.

While the challenges facing the landscape approach are considerable, a number of positive trends can be observed across many developing countries that are building important foundations for this approach. Countries are gaining experience with and confidence in multi-stakeholder processes through various initiatives that bring stakeholders together, including for the development of voluntary forest certification standards, national timber legality verification schemes and national REDD+¹ strategies. Decentralisation processes, while still a “work in progress” in many countries, have brought administration closer to the landscape scale and opened spaces for community participation in natural resource management. Technical advances in the fields of remote sensing and geographic information systems (GIS), as well as new web-based services and freely available software and satellite imagery, are aiding local governments with their spatial planning. There is also growing recognition of the advantages of drawing on knowledge from multiple sources, including indigenous and local knowledge (ILK) for understanding ecosystems and how they

can best be managed, as can be seen in the work of the Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES). The challenges to the landscape approach described above should thus not be off-putting; rather, they highlight where efforts need to be concentrated.

The way in which the landscape approach is promoted will depend upon the context in specific geographic areas and the availability of resources. For example, when trust relationships between stakeholders have not been established, as a starting point, support could be provided to initiate informal processes to share perspectives among stakeholders on land and natural resource management. Efforts to develop a common understanding of the problems and how to move forward might then be initiated. In contrast, in a context where stakeholders are already working together in some manner, energies might be devoted to generating new information on threats to and opportunities for the protection and enhancement of ecosystem services that stakeholders can deliberate and act upon.

Three existing projects are briefly introduced below to highlight the importance of tailoring support for the landscape approach according to local contexts and available resources. They provide ideas on how outside actors can identify useful points of entry to support governments and stakeholders at various levels to implement or move towards sustainable landscape management.

4.1 Promoting participatory watershed land-use management for climate-sensitive local government planning in the Philippines

In the Philippines, local government units are required to develop a body of plans to manage development in the area under their jurisdiction. One of these plans is the comprehensive land use plan (CLUP), which is a plan for the long-term management of the local territory. The CLUP identifies areas where

¹ Reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries.

development can and cannot take place, and directs public and private investment in land development. While land use planning, including zoning, is essential to effective land management, a weakness of this approach is that the CLUPs are based on jurisdictional boundaries and there is no formal requirement for local governments to coordinate their CLUPs. Because of this, problems can arise when jurisdictional boundaries cut across individual or inter-related ecosystems, as the land development of one local government can diminish the ecosystem services enjoyed by another.

This is precisely what has happened in the Silang-Sta. Rosa sub-watershed (Endo et al. 2015), which is located 40 km south of Manila, adjacent to Lake Laguna, the largest lake in the country. In a decentralised fashion, four local governments manage separate parts of the territory in the Silang-Sta. Rosa sub-watershed. Despite sharing the same watershed, the development taking place in each of the local government units is not coordinated. Intensive land development, driven by industrialisation and urbanisation, has taken place in the upper parts of the watershed and this has reduced the natural capacity of the watershed to retain water, resulting in serious flooding (Image 1) as well as water pollution and water scarcity in the downstream areas.



Image 1. Flooding in Santa Rosa city, the Philippines in 2013 (© Santa Rosa City DRRM Office)

The four local governments have acknowledged this problem and attempted to take steps towards addressing it. In December 2014, they established the Integrated Watershed Management Council for the Silang-Sta. Rosa sub-watershed to promote a

coordinated response to water management across the sub-watershed. In establishing the Integrated Watershed Management Council, they recognised the sub-watershed as an *appropriate* (and necessary) *scale* for effective land management, and in doing so adhered to one of the principles of the landscape approach outlined in this brief.

In 2014, IGES launched a pilot project to support this initiative of the local governments. The pilot project aimed to generate knowledge on future flood risks, set out strategies to address these risks, and support the revision and harmonisation of the CLUPs. Researchers from IGES and the University of the Philippines Los Banos joined forces to work with the local governments on these issues. With available resources, the project focused its attention on the landscape approach principles of *knowledge generation from multiple sources* and *participatory processes*, as a knowledge gap and the need to engage stakeholders were recognised as keys for integrated resource management in the sub-watershed. The project employed GIS, remote sensing and hydrological modelling techniques to generate scientific knowledge on the exposure of the local population to future flood risk using climate change projections (Figure 2). The project also conducted focus group discussions and participatory mapping with local government officers to develop countermeasures, such as more effective land use zoning across the entire sub-watershed, based on knowledge from local experiences. Some of this information has been incorporated into the revised CLUPs. The project now intends to scale up the approach and involve other sub-watersheds, with a view to flood mitigation and enhancing ecosystem services in the Lake Laguna basin.

4.2 Moving towards the landscape approach to forest management in Indonesia

Like the Philippines, Indonesia has experienced a major decentralisation of government functions over recent decades. In the forestry sector, this initially led to rampant deforestation due to many of the local governors using their new powers to grant land development rights. The national government

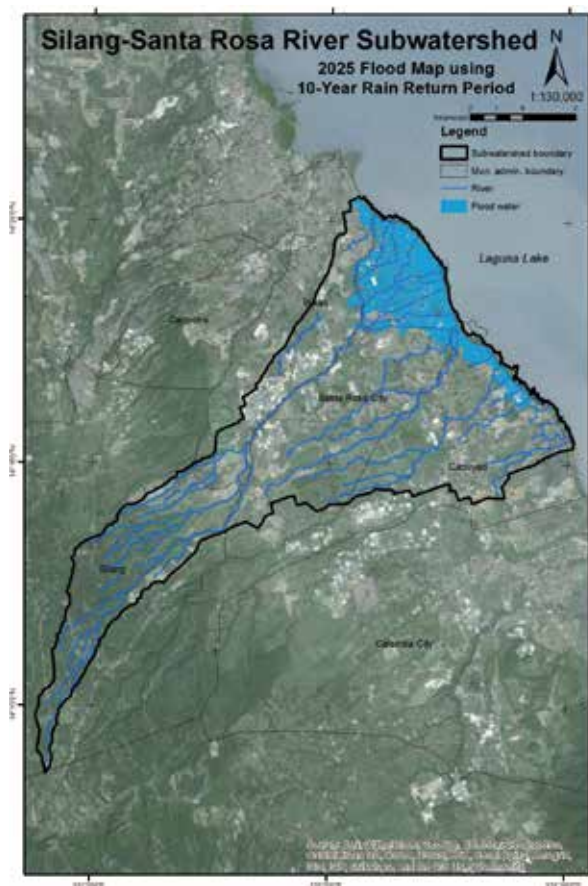


Figure 2. Flood-hazard map of the Silang-Sta. Rosa sub-watershed projected for 2025

Note: Areas vulnerable to flooding indicated in light blue. (Source: IGES)

recognised that there was a need to have teams of professional foresters stationed at the site level to effectively and efficiently manage the national forest estate. To strengthen the management of forests at the site level, it set out and unfolded a process to establish forest management units (FMU) as decentralised spatial entities for forest management, with the aim that the entire forest estate would eventually be divided into FMUs and managed by FMU teams.

Some of the seven principles of landscape approach are evident in Indonesia’s FMU concept. The development of each FMU is to begin with the demarcation of its spatial boundaries. The landscape principles of *ecosystem-based* and *appropriate scale* are applied to some extent in the demarcation process, with it being possible for FMU boundaries to cross local government jurisdictions. The principle

of *multiple functions* is evident in that FMUs are expected to generate economic, ecological and social benefits from forest management. The FMU approach supports *participatory processes*, with each FMU required to work closely with local communities to contribute to local livelihood development. *Continual knowledge generation* can be expected from having professional teams conducting monitoring at the site level. The principle of *resilience* is reflected in the FMU concept, with one of its main objectives being to maintain and enhance watershed functions. Forest cover and quality are maintained and even enhanced, reducing exposure to risks of landslides and flooding.

The ambitious scale of the FMU programme and the need to generate knowledge, build capacities at all levels and secure sufficient financial resources for it to succeed creates many entry points for outside actors to support this movement towards the landscape approach in Indonesia. With funding from the Australian government and through the Responsible Asia Forestry and Trade (RAFT) partnership, an initiative of several leading conservation organisations collaborating to promote sustainable forestry, IGES is undertaking one such initiative. The focus of this initiative is on building the capacities of the FMU management teams. Specifically, IGES is designing tools to aid FMUs in Kalimantan and Sumatra in supervising and monitoring the implementation of Indonesia’s national timber legality verification scheme (SVLK) and sustainability certification.

In addition to capacity building support for the FMUs, support could also be provided for the full integration of FMU management areas into local government spatial plans. The FMU concept is applied only to areas designated as forest lands, which means that as a standalone concept, the FMU does not fully capture the important biophysical and socio-economic relationships that usually exist between forests and surrounding ecosystems. This could be overcome through support to ensure that the spatial plans local governments are authorised by the Spatial Planning Law (No. 26/2007) to draft incorporate FMUs and are aligned at the landscape scale.

4.3 Conserving and enhancing socio-economic production landscapes and seascapes

Socio-economic production landscapes and seascapes (SEPLS), which are areas traditionally managed by local people to provide for their food, fuel, water and other material needs as well as to generate income (<http://satoyama-initiative.org/>), are found in many countries. They reflect many of the principles of the landscape approach outlined in this brief. The boundaries of SEPLS are often determined by informal understanding that exists between neighbouring communities. The spatial patterns within these boundaries reflect dynamic mosaics of habitats and land uses that are closely interrelated. Local communities manage the landscape employing local knowledge and practices they have developed over many generations. These traditional landscape management systems are known by different names in different countries: *Satoyama* (and *Satoumi* in the case of seascapes) in Japan, *Dehesa* in Spain; *Ahupua'a* in Hawaii, etc.

Image 2 shows one type of SEPLS common in the uplands of many countries in the Asia-Pacific region. The area shown lies in northern Thailand. A mosaic pattern of inter-related ecosystems can be observed, consisting of patches of cultivated land, land in fallow covered by vegetation, and undisturbed natural forests, as is typical of traditional rotational farming. The land is mostly managed by the Mae Um Pai community, an indigenous Karen community. Their traditional system of landscape management provides the Mae Um Pai community with a rich diet, fuel, herbs that they use for medicinal purposes and stable supplies of potable water, and enables them to generate some income from the sale of agricultural and non-timber forest products.

Threats to SEPLS have been increasing in recent years for a number of reasons. In some countries, traditional landscape management systems are recognised and supported by the government, as is the case of *Satoyama* in Japan, while in others they are not well-understood by national governments, who may even view them as harmful to the environment. For example, some governments view traditional rotational farming systems of the type that can be



Image 2. “Landscape” of Karen Mae Um Pai community, Thailand (© Jintana Kawasaki)

seen in Image 2 as a major cause of deforestation, and are trying to encourage local communities to replace rotational farming with chemical intensive monocrop agriculture. However, while rotational farming can result in deforestation when rural populations in the uplands are expanding and there are no other livelihood alternatives, when population numbers are fairly stable, rotational farming may be limited to the areas that local communities have traditionally farmed and is not a cause of deforestation (Kawasaki, Takahashi & Scheyvens, 2016).

When there is misunderstanding of SEPLS, empirical research can generate scientific knowledge to inform official views and policies. In 2015, IGES conducted a survey of three Karen communities engaged in traditional rotational farming in northern Thailand to deepen understanding of the trade-offs that take place when areas under rotational farming are converted to permanent agricultural fields. The study observed that rotational farming was not encroaching into natural forests, that high land productivity without dependence on chemical fertilisers was maintained because of the practice of resting the soil, that the rotational farming areas were ‘reservoirs’ for indigenous plant species (more than 60 types of native plants were found in them), and that their per hectare carbon stocks were much higher than those of the permanent fields (*ibid.*).

In addition to generating scientific knowledge on the values of SEPLS, there are many other ways to

promote them, as can be seen in the activities of the International Partnership for the Satoyama Initiative (IPSI) (<http://satoyama-initiative.org/>). These include sharing and extracting lessons from case studies, researching

policies to promote local wisdom, knowledge and practices, and exploring new forms of landscape co-management that engage governments and other actors while respecting communal land tenure.

5 Discussion and recommendations

The seven principles of the landscape approach provided earlier set out a normative framework that can help in designing, implementing and assessing landscape approaches. It is clear from the three examples above that these principles will have to be interpreted according to contextual specificities. These include types of ecosystems and their interrelationships, demographics, livelihoods, culture and traditions, existing land uses, tenure, stakeholder interests and relationships, policies, laws and administrative structures, etc. Support to initiate or strengthen existing landscape-related initiatives can consider beginning with an assessment of these local specificities, ideally engaging government and other stakeholders in the process.

The first two examples presented above demonstrate that some of the landscape approach principles are reflected in various efforts to reform or strengthen the management of natural resources that are underway in the region. Local governments in the Silang-Sta. Rosa sub-watershed of the Philippines have taken steps towards coordinating their land use planning to conserve and enhance watershed functions, while the government of Indonesia has introduced a new institution for forest management, the FMU, which is not restricted by jurisdictional boundaries and engages a variety of forest stakeholders. In such cases, outside actors should look for entry points to engage with governments and other stakeholders to support their landscape initiatives.

The example above of the Karen traditional rotational farming is somewhat different in that a traditional system of landscape management is in place that reflects most of the principles of the landscape approach. Where it falls short is not in the way that the Karen communities manage the

land, but in terms of government support, which is lacking because of its misunderstanding of the impacts of the Karen's rotational farming system on the environment. In this type of case, useful support that outside actors can provide includes generating scientific knowledge to correct misunderstandings and engaging government and stakeholders in constructive dialogue.

Experiences with these three projects also indicate the value of long-term partnerships between universities/research institutes and the landscape initiatives, as well as the need to secure financing for these initiatives. Landscape initiatives require multidisciplinary expertise; hence, research teams can play an important role in generating knowledge and building local capacities for landscape approaches. Adequate financial support is also critical, as to establish a fully-fledged landscape approach is a lengthy and ambitious endeavour that needs long-term financing. This may come from multiple sources, i.e. it may be useful to leverage funding from development agencies, governments and the private sector, as well as from new financial instruments developed specifically to support landscape approaches. As an example of the latter, one voluntary carbon scheme, the Verified Carbon Standard (VCS), has developed a landscape standard that supports the financing of social and environmental outcomes at the landscape (e.g. see <http://www.v-c-s.org/project/landscape-standard/>).

Reflecting on the above discussion, the following recommendations are provided to promote the landscape approach in the region:

- National and local governments and outside actors including development agencies, private sector actors, research bodies, non-governmental organisations and others, should promote the

landscape approach in biodiversity rich areas and other areas providing critical ecosystem services where increased demand on the land and its natural resources are resulting in degradation.

- Landscape initiatives should be informed by the principles outlined in this policy brief and other complementary guidance, and tailored to local contexts. Good use should also be made of the growing number of relevant tools supportive of or specifically designed for landscape initiatives.
- Through long-term partnerships, universities and research institutes should provide multidisciplinary

support to landscape initiatives, including conducting situational analyses, testing of improved land management practices, and modelling of scenarios to better understand the implications of alternative development pathways. They can also contribute to scientific understanding of the impacts of landscape initiatives by employing robust evaluation frameworks.

- All actors should work together in leveraging multiple and innovative financing for landscape initiatives.

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