

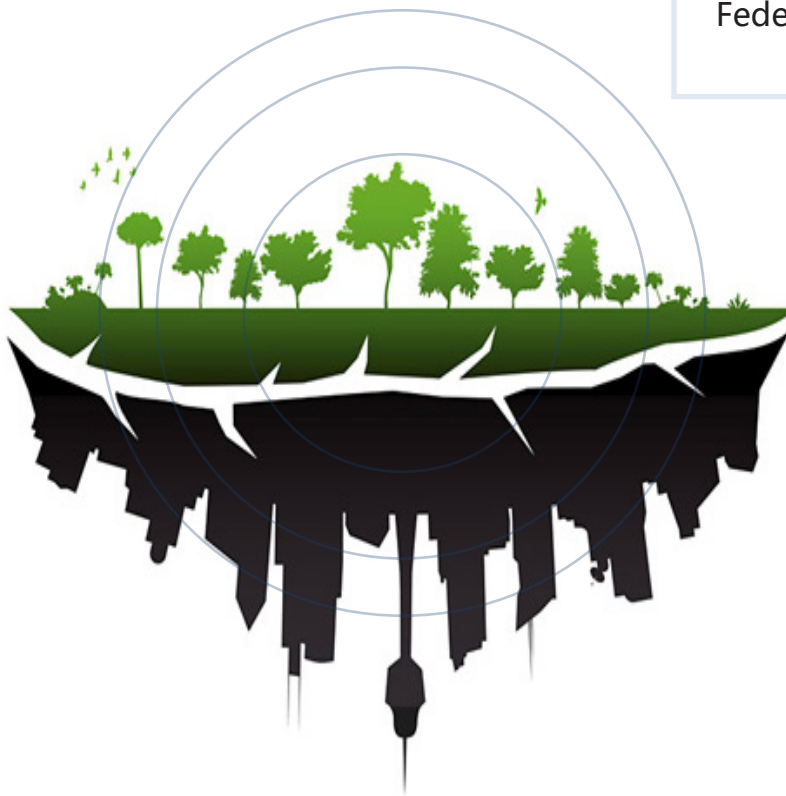


IGES Issue Brief

# Socio-Ecological Production Landscapes and Seascapes as Regional/Local Circulating and Ecological Spheres

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2019



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Suggested Citation: Scheyvens, H., A. Mader, F. Lopez-Casero and Y. Takahashi. 2019. Socio-ecological production landscapes and seascapes as regional/local circulating and ecological spheres. IGES Issue Brief. Institute for Global Environmental Strategies, Hayama, Japan.






## Summary

Socio-ecological production landscapes and seascapes (SEPLS) can contribute to global goals for biodiversity conservation and dealing with climate change, while also contributing locally to human security and wellbeing. SEPLS are, however, under threat around the world. SEPLS have been promoted under the Satoyama Initiative by the International Partnership for the Satoyama Initiative (IPSI). The concept of “regional/local circulating and ecological spheres” (regional/local CES) acknowledges the contributions of SEPLS to the green economy and resilience at multiple scales. Regional/local CES provides a conceptual framework that can be used to design policies and mobilise resources to conserve and enrich SEPLs globally. The successor to the IPSI Plan of Action: 2013-2020 can promote SEPLS by understanding them as local CES nested within increasingly coarser-scale CES.





## Socio-ecological production landscapes and seascapes

Socio-ecological production landscapes and seascapes (SEPLS) have been described as “dynamic mosaics of habitats and land uses where the harmonious interaction between people and nature maintains biodiversity while providing humans with the goods and services needed for their livelihoods, survival and wellbeing in a sustainable manner” (IPSI Secretariat n.d.). SEPLS are found around the world and are known by various names, such as *satoyama* (landscapes) and *satoumi* (seascapes) in Japan, *Dehesa* in Spain, and *Ahupua'a* in Hawaii.



SEPLS are rich in biocultural diversity. Over generations, local communities have established norms for their sustainable management and use of “nature’s blessings” based on accumulated knowledge and wisdom. SEPLS typically exhibit mosaics of closely inter-related land uses, including smallholder agriculture, livestock production and artisanal fisheries. Traditional conservation practices ensure that SEPLS provide a sustainable flow of products to local communities and the wider economy, while also providing a wide array of ecosystem services that are important both locally and globally. These include high levels of crop genetic diversity and biodiversity in general, non-timber forest products, moder-



ation of river flows, stabilisation of hillslopes, and the sequestration and storage of carbon.

SEPLS are, however, globally facing growing threats. In Japan, for example, the population is ageing and once well-managed land in SEPLS is being abandoned. This has resulted in the loss of natural capital, especially where woodlots managed by many successive generations to supply local communities and industries are no longer tended. In some developing countries the trend is in the opposite direction – increasing population is exerting pressure on SEPLS and resulting in a loss of natural capital. Land use is intensifying and traditional controls on land are breaking down, leading to overexploitation of natural resources. In many areas SEPLS are being converted to chemical intensive monocropping, which generates higher yields and greater income.



Recognising that SEPLS are facing threats globally, the Conference of the Parties to the Convention on Biological Diversity (CBD) adopted the Satoyama Initiative at its 10th meeting in October 2010. The Satoyama Initiative aims to increase global recognition of the value and importance of SEPLS and to mainstream biodiversity conservation in production activities. These activities are intended to contribute to the global biodiversity vision towards 2050 to achieve “societies in harmony with nature” (ibid.). The International Partnership for the

Satoyama Initiative (IPSI) was established in 2010 to undertake and facilitate a broad range of activities to implement the concepts of the Satoyama Initiative. IPSI facilitates collective learning among its members under the IPSI Plan of Action 2013-2020 (IPSI Secretariat, n.d.). From a beginning of 51 members in 2010, IPSI has gathered considerable momentum, with its membership increasing to 240. Its activities include organising global and regional conferences and workshops, developing case studies on SEPLS, researching SEPLS’ indicators, and managing the Satoyama Development Mechanism, which provides seed funding for SEPLS’ support initiatives around the world.<sup>1</sup>

As the IPSI Plan of Action 2013-2020 is drawing to a close, thought should be given to how international support for SEPLS can be maintained and enhanced. The recently developed concept of “regional/local circulating and ecological spheres”, or “regional/local CES”, could play an important role in directing this support, as it recognises both the values of SEPLS locally as well as how SEPLS can contribute to the wider “green economy” and to societal and ecological resilience.

## **R**egional/local circulating and ecological spheres

Regional/local CES is a concept of local and regional development and



revitalisation set out and promoted in the 5<sup>th</sup> Basic Environment Plan of the Government of Japan. A regional CES is said to exist when “each region demonstrates its strengths by utilising its unique characteristics, thereby building a self-reliant and decentralized society where different resources are circulated within each region, leading to symbiosis and exchange with neighbouring regions according to the unique characteristics of each region” (Cabinet decision 17 April 2018). Regional/local CES are considered compatible with existing efforts to tackle a number of persistent domestic problems in Japan. These include uneven regional development, regional economic decline, lack of resource security, under-management of natural resources, increasing disaster risks, and risks associated with climate change.

The regional/local CES concept mirrors that of socio-ecological systems (SES), about which there is substantial literature. A SES is “a coherent system of biophysical and social factors that interact in a resilient and sustained manner” (Redman, Grove, and Kuby 2004, 163). SES are considered to exist at several spatial, temporal and organisational scales that can be hierarchically linked. They contain a set of critical resources (natural, socio-economic, and cultural) whose flow and use are regulated by ecological and social systems; and are perpetually dynamic, complex and continually adapting (Redman,

Grove, and Kuby 2004).

Regional/local CES are expected to aid in realising a *sound material society*, a *low-carbon society*, and *society in harmony with nature*. These are considered essential elements of a “sustainable society”, as laid out in Japan’s second “Fundamental Plan for Establishing a Sound Material-Cycle Society” (Cabinet decision 25 May 2008).<sup>2</sup>

Regional/local CES are socio-ecological systems beginning at the smallest scales at which resources are located, and building out from these. They are, thus, socio-ecological systems that are hierarchically linked. Regional/local CES is concerned with the development, enrichment and conservation of socio-ecological systems that contribute to sustainable societies.

The concept of regional/local CES emphasises the role of the natural environment in achieving a sustainable society and argues that resources should be circulated at appropriate scales and optimised with a combination of overlapping spheres according to the resources to be circulated. The regional/local CES concept acknowledges that regions do not exist in isolation in a highly integrated economy, and stresses the importance of building mutually supportive linkages between each regional/local CES.

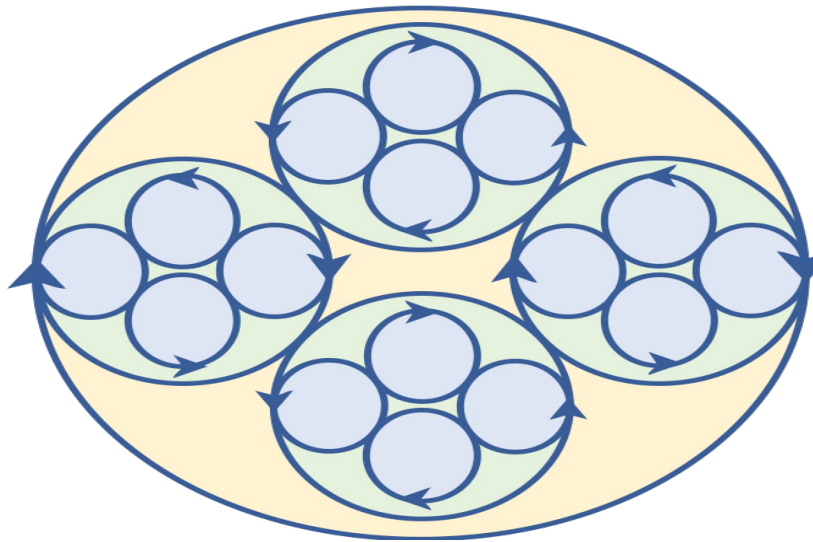
## SEPLS as “local CES within regional CES”

SEPLS may be regarded as local CES that are linked with other local CES and nested within regional CES at increasingly coarse scales (Figure 1). This view of SEPLS – as local circulating and ecological spheres located within and contributing to broader systems – is useful for regional planning, as well as for development and revitalisation. Decisions taken at a coarser scale can have significant impacts for SEPLS and their untapped potential to contribute to broader regional development through their material cycles. At the same time, regional/local CES are characteristically

decentralised. A level of decentralisation can be beneficial and efficient in tailoring governance or management of local CES, such as SEPLS, according to their unique characteristics.

## Regional/local CES in a global context

The concept and goals of regional/local CES are widely applicable. The basic tenet of regional/local CES, that resource circulation should start at the lowest level and build outwards, is a useful general concept for guiding policy and planning. This is especially so for developing countries with large numbers of smallholders producing a



**Figure 1. Multi-level nested structure of regional/local CES and the flows of resources within and between them.** SEPLS would, typically but not necessarily, be represented by the smaller blue circles. The diagram is a representation only, therefore the number of levels in the hierarchy and the number at each level are purely arbitrary.





wide variety of agricultural products and delivering important ecosystem services, particularly within SEPLS, who are increasingly incorporated into national and international economies. In such localities, resource circulation starts at a fine scale (local CES), with households exchanging labour, services and commodities within their local communities. This local level of exchange is often critical to household self-reliance and wellbeing. For the household, resource circulation may expand from this local level to include, for example, sending some of their members to cities or even overseas for work, or producing commodities for international markets. So, while many families continue to work the land, their lifestyles have diversified and are increasingly characterised by mobility, multi-locality and market orientation (Hirsch 2012) with the centre of gravity moving away from anthropology and political science and towards a geographical focus. This is explained both by institutional factors, as a large international research programme based in (but not limited to). The concept of regional/local CES draws attention to the role of different levels of resource circulation to household and local economies.

By giving attention to the different levels of resource circulation, the concept of regional/local CES can help policymakers, planners and administrators better understand the importance of SEPLS. Much of the

production and transactions that take place within SEPLS may fall outside the formal economy, especially in developing countries, so governments may not be aware of their importance to household self-reliance and wellbeing. Moreover, governments may not always be well aware of the wide range of ecosystems services that SEPLS generate for other areas, the national economy and even the globe. On the contrary, in some countries policymakers see SEPLS as inefficient and seek to transform them to areas of high yield agriculture and other more “efficient” land uses (Kawasaki 2017). By sensitising policymakers, planners and administrators to the benefits of resource circulation within SEPLS and between SEPLS and other areas, the concept of regional/local CES can contribute to better policies and decisions on land use.

SEPLS possess unique resources that can be tapped to develop and support CES locally and at larger scales. These may include human resources, local institutions and natural resources. For example, a wide range of languages, cultures and production systems have evolved in SEPLS among upland communities of developing countries in the Asia-Pacific region. This diversity provides opportunities for developing services and new value-added product chains within sound material cycles unique to each locality.

The concept of regional/local CES



is also widely applicable because its broader goals – sound material society, low carbon society and society in harmony with nature – are global goals. They are particularly important for Asia Pacific developing countries, many of which have enjoyed rapid economic growth over recent decades, but need to move away from resource intensive growth pathways.<sup>3</sup> Regional/local CES can be integrated with existing government strategies to better manage the environment and sustainably utilise natural capital, such as the 3Rs (reduce, reuse, recycle), nationally determined contributions (NDCs), decentralised and renewable energy policies, etc.

The regional/local CES approach is timely. Many developing countries have implemented strategies to decentralise governance, especially the governance of natural resources.<sup>4</sup> The expectation is that decentralised governance will be more responsive to local needs and more effective in promoting inclusive economic growth and environmental management (Furtado 2001). Local governments are now in a position to promote the development of regional/local CES by engaging with local businesses, communities and other stakeholders, and taking advantage of the unique resources in their jurisdictions.

## Contribution of SEPLS to sustainable development

With the IPSI Plan of Action 2013-2020 coming to an end, it is timely to reflect on the values of SEPLS. SEPLS can contribute to global sustainable development goals as well as the goals laid out in Japan's 5<sup>th</sup> Basic Environment Plan.

### How SEPLS contribute to the SDGs

A review of projects funded by the Satoyama Development Mechanism (SDM) revealed that SEPLS are relevant to all three dimensions of sustainable development embedded in the SDGs – ecological, economic and social sustainability (Table 1).<sup>5</sup> The review found that SEPLS supported by the SDM are likely to be highly relevant to SDG 1 No poverty, SDG 2 Zero hunger, SDG 12 Responsible consumption and production, SDG 14 Life below water, and SDG 15 Life on land. SEPLS can also potentially make important contributions to SDG 3 Good health and wellbeing, SDG 4 Quality education, SDG 5 Gender equality, SDG 6 Clean water and sanitation, SDG 8 Decent work and economic growth, SDG 11 Sustainable cities and communities, SDG 12 Responsible consumption and production, SDG 13 Climate action, SDG 16 Peace, justice and strong institutions, and SDG 17 Partnerships for the goals. Promoting the generation



of renewable energy based on natural resources in SEPLS also makes them relevant to SDG 7 Affordable and clean energy. Table 1 lists the SDGs

and their targets to which SEPLS can potentially contribute.



*Ensuring “ownership and control over land and ... natural resources” (1.4), and “resilience of the poor” and reducing “vulnerability to climate-related extreme events and other economic, social and environmental shocks” (1.5)*

**Contribution:** SEPLS provide diverse livelihoods that reduce the risk of poverty. They also provide a wide array of ecosystem services, including natural resources, that act as a safety net in times of need.



*“Agricultural productivity ... of small-scale food producers” (2.3), “sustainable food production systems and ... resilient agricultural practices that ... maintain ecosystems [...]” (2.4), and “genetic diversity” (of cultivated, farmed, domesticated and related wild species) (2.5)*

**Contribution:** SEPLS agricultural systems are adapted to local biophysical conditions, provide dietary diversity and exhibit high genetic diversity. Agricultural practices maintain ecosystems and soil quality.



*“Deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination” (3.9), and strengthening the capacity “in particular [of] developing countries for ... risk reduction” (3.d)*

**Contribution:** SEPLS provide healthy living environments (clean air and water) and are characterised by ecologically-sound land-use practices.



*“All learners acquire the knowledge and skills needed to promote sustainable development ... and sustainable lifestyles” (4.7)*

**Contribution:** Knowledge and skill sharing on sustainable land use is a characteristic of SEPLS. Storytelling, rituals and other traditions are commonly used to transmit knowledge from old to young.



*“Women’s full and equal opportunities for leadership at all levels of decision-making” (5.5), “women equal rights to economic resources, as well as access to ownership and control over land ... and natural resources” (5.a)*

**Contribution:** Women play important roles in SEPLS and hold unique knowledge associated with their roles. There is increasing recognition of the need to involve women equally in SEPLS management.



*“Improve water quality” (6.3), “increase water-use efficiency” (6.4), and “protect and restore water-related ecosystems” (6.6)*

**Contribution:** Freshwater ecosystems in SEPLS are managed locally and in an integrated manner to protect water quality.

Table 1 cont.

	<p><i>“ensure universal access to affordable, reliable and modern energy services” (7.1), and “increase substantially the share of renewable energy” (7.2)</i></p> <p><b>Contribution:</b> Biomass, water, wind and sun in SEPLS can be tapped to support decentralised energy systems.</p>
	<p><i>“Policies to promote sustainable tourism that creates jobs and promotes local culture and products” (8.9)</i></p> <p><b>Contribution:</b> SEPLS hold landscape and cultural attractions that provide opportunities for eco-tourism and the promotion of eco-friendly local products. These opportunities can be tapped to create new jobs for community members and revitalise local economies.</p>
	<p><i>“Efforts to protect and safeguard [ing] the world’s cultural and natural heritage” (11.4) and “integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters” (11.b)</i></p> <p><b>Contribution:</b> SEPLS leaders are aware of their rich cultural and natural heritage and are making efforts to preserve them.</p>
	<p><i>“Sustainable management and efficient use of natural resources” (12.2), and “Relevant information and awareness for sustainable development and lifestyles in harmony with nature (12.8.)</i></p> <p><b>Contribution:</b> In well-managed SEPLS, natural resources are used at sustainable levels, land-use practices allow for natural regeneration, and products are reused and recycled. Consumption of local produce is high, reducing “food miles”.</p>
	<p><i>“Strengthen the resilience and adaptive capacity to climate-related hazards and natural disasters” (13.1)</i></p> <p><b>Contribution:</b> SEPLS contribute to climate change mitigation by maintaining high carbon stocks. SEPLS also exhibit strong social structures, traditional knowledge and high biodiversity, all of which contribute to the adaptive capacity of local communities.</p>
	<p><i>“Sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism” (14.7) “sustainably manage and protect marine and coastal ecosystems” (14.2), to “conserve at least 10 percent of coastal and marine areas” (14.5)</i></p> <p><b>Contribution:</b> Socio-ecological production seascapes are characterised by traditional small-scale fisheries governed by customary controls, such as the conservation of fish breeding grounds and mangrove ecosystems.</p>
	<p><i>“Conservation [...] and sustainable use of terrestrial and inland freshwater ecosystems and their services” (15.1), “Sustainable management of [...] forests” (15.2), “combat[ing] desertification” (15.3), “the conservation of mountain ecosystems” (15.4), “reduc[ing] the degradation of natural habitats and halt[ing] the loss of biodiversity” (15.5)</i></p> <p><b>Contribution:</b> SEPLS hold high genetic, species and ecosystem diversity. Local communities possess traditional and local knowledge on how to conserve their biodiversity-rich landscapes</p>

*Table 1 cont.*



*“Develop effective, accountable and transparent institutions” (16.6) and “ensure responsive, inclusive, participatory and representative decision-making” (16.7)*

**Contribution:** Communities in SEPLS may have strong traditional leadership and their own agreed mechanisms for justice.



*“Multi-stakeholder partnerships that mobilise and share knowledge, expertise, technology and financial resources to support the achievement of the Sustainable Development Goals, in particular [in] developing countries” (17.16)*

**Contribution:** Projects enhancing the sustainable management of SEPLS often build on experiences and resourcing strategies of partnerships, such as IPSI.

**Table 1. Potential SEPLS’ contributions to the SDGs**



**Mosaic of forests, farmlands and settlements along Taiwanese eastern coastline**  
Copyright: KC Lee

**Ifugao rice terraces landscape in the Philippines**  
Copyright: JV Serrano



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## How SEPLS contribute to Japan's environmental and developmental goals

The 5<sup>th</sup> Basic Environment Plan of Japan sets out a range of anticipated benefits of regional/local CES. It explicitly recognises *satoyama* and

*satoumi* as making an important contribution to these, especially increased energy security through decentralised energy systems (Cabinet decision 17 April 2018). Table 2 maps potential *satoyama* and *satoumi* contributions to some of the goals laid out in the 5<sup>th</sup> Basic Environment Plan.<sup>6</sup>

Goals	Potential SEPLS' contributions
Revitalisation of regional economies	<ul style="list-style-type: none"> <li>✓ Provide diverse products for development of new value chains, reflecting high plant genetic and species diversity</li> <li>✓ Social capital and indigenous and local knowledge can help develop new value chains</li> <li>✓ Provide opportunities for new service industries, e.g. eco-tourism</li> <li>✓ Can provide new sources of materials and energy for regional industries, service sector and residents</li> <li>✓ Provide ecosystem services critical to regional economies, e.g. stable and high-quality water supply</li> </ul>
Revitalisation of regional society	<ul style="list-style-type: none"> <li>✓ Can provide opportunities for high quality employment in forestry and agriculture</li> <li>✓ Contribute to healthy living environments</li> <li>✓ Provide opportunities for "dual residence lifestyle"</li> </ul>
Reduced environmental burdens	<ul style="list-style-type: none"> <li>✓ Provision of materials, food and energy for local use to reduce energy use and waste</li> <li>✓ Urban-rural linkages: Products from SEPLs with environmental labels can help urban consumers select "sustainable food"</li> </ul>
Climate change mitigation	<ul style="list-style-type: none"> <li>✓ Provision of materials and energy from SEPLS can reduce greenhouse gas emissions</li> <li>✓ Important sinks and stores of carbon</li> </ul>
Conservation of secondary nature	<ul style="list-style-type: none"> <li>✓ Hold high biodiversity values</li> </ul>
Increased energy security and independence through localised energy systems	<ul style="list-style-type: none"> <li>✓ Supply biomass and water as well as utilise wind and solar resources for decentralised energy systems</li> </ul>
Improved balance of payments	<ul style="list-style-type: none"> <li>✓ Supply of biomass for energy, agricultural produce, wood for local wood industries, etc. reduces reliance on imports</li> </ul>



*Table 2 cont.*

Resilience against potential large-scale natural disasters	<ul style="list-style-type: none"> <li>✓ Provide soil protection, coastal protection and hydrological control (Eco-DRR)</li> <li>✓ Support decentralise systems that reduce risks at national level</li> </ul>
Climate change adaptation	<ul style="list-style-type: none"> <li>✓ Hold high plant genetic and species diversity supporting adaptation</li> <li>✓ SEPLS social capital and indigenous and local knowledge (ILK) can support adaptation</li> </ul>
Sustainable society	<ul style="list-style-type: none"> <li>✓ Food from SEPLS supports dietary diversity and healthy diets</li> </ul>

**Table 2. Potential SEPLS’ contributions to goals of Japan’s 5<sup>th</sup> Basic Environment Plan**

## Conclusion

SEPLS contribute to sustainable development goals at different scales and will be important for attaining those goals in both developed and developing countries with a long history of traditional landscape management. As SEPLS around the world are facing growing threats, and with the IPSI Plan of Action 2013-2020 drawing to a close, a new international mechanism is required to support them.

The concept of regional/local CES can help in designing the successor to the IPSI Plan of Action 2013-2020, with a view to supporting SEPLS policies and mobilising resources to conserve and enrich SEPLs globally. The regional/local CES concept recognises SEPLS as local CES linked with other SEPLS and nested within regional CES. It acknowledges SEPLS’s values at both local and coarser scales.

Nested and overlapping regional/local

CES, with SEPLS as a basic unit, can be built and supported to provide the foundations for a green and resilient economy. The unique natural and social capital of SEPLS in different localities can be tapped to promote local and regional economic development characterised by sound material cycles. The successor to the Satoyama Initiative should be designed with these ideas in mind.

## Acknowledgements

The authors are grateful to Professor Kazuhiko Takeuchi and Dr. Mark Elder for their comments on an earlier draft of this paper, to Ms. Emma Fushimi for her careful proof-reading of the paper, and to Ms. Saeko Kadoshima for her invaluable administrative support.



## References

- Cabinet decision 17 April, 2018. "The Basic Environment Plan." English translation.
- Cabinet decision 25 May, 2008. "Fundamental Plan for Establishing a Sound Material-Cycle Society". English translation.
- Furtado, X. 2001. "Decentralisation and Capacity Development. Understanding the Links and Implications for Programming." Capacity Development Occasional Paper Series.
- Gibbs, H K, and J M Salmon. 2015. "Mapping the World's Degraded Lands." *Applied Geogr* 57: 12–21.
- Hirsch, P. 2012. "Reviving Agrarian Studies in South-East Asia: Geography on the Ascendancy." *Geographical Research* 50 (4): 393–403. <https://doi.org/10.1111/j.1745-5871.2012.00779.x>.
- IPBES. 2018. *Summary for Policymakers of the Regional Assessment of Biodiversity and Ecosystem Services for Asia and the Pacific Summary for Policymakers of the Regional Assessment Report on Biodiversity and Ecosystem Service*. Edited by W. Suzuki M. Karki, S. Senaratna Sellamuttu, S. Okayasu, H. Gundimeda L. Acosta, Y. Alhafedh, J. A. Anticamara, A. G. Ausseil, K. Davies, A. Gasparatos, P. Riordan F. H. Ibrahim, R. Kohsaka, R. Kumar, S. Managi, N. Wu, A. Rajvan-shi, G. Rawat, and T. Yahara and Y. Youn S. Sharma, A. Virk, C. Wang. Bonn.
- IPSI Secretariat. n.d. "IPSI Plan of Action: 2013-2020." Tokyo, Japan: United Nations University Institute for the Advanced Study of Sustainability.
- . n.d. "Socio-Ecological Production Landscapes and Seascapes (SEPLS)." Accessed May 19, 2019. <https://satoyama-initiative.org/about/#1>.
- Japan Satoyama Satoumi Assessment. 2010. *Satoyama-Satoumi Ecosystems and Human Well-Being: Socio-Ecological Production Landscapes of Japan – Summary for Decision Makers*. Tokyo: United Nations University. <https://doi.org/10.18356/5d7e4936-en>.
- Kamada, M. 2017. "Satoyama Landscape of Japan - Past, Present and Future." In *Landscape Ecology for Sustainable Society*, edited by S.-K. Hong and N. Nakagoshi, 87–110. Cham, Switzerland: Springer.
- Kawasaki, J. 2017. "Assessment of the Role of Karen's Ecological Knowledge to Sustain Biodiversity , Ecosystems and Ecosystem Services in Northern Thailand." IPBES ILK Case Studies
- Redman, Charles L, J Morgan Grove, and Lauren H Kuby. 2004. "Integrating Social Science into the Long-Term Ecological Research (LTER) Network: Social Dimensions of Ecological Change and Ecological Dimensions of Social Change." *Ecosystems* 7 (2): 161–71. <https://doi.org/10.1007/s10021-003-0215-z>.
- Tubiello, F.N., M Salvatore, R.D. C ndor Golec, A. Ferrara, S. Rossi, R. Biancalani, S. Federici, H. Jacobs, and A. Flammini. 2014. *Agriculture , Forestry and Other Land Use Emissions by Sources and Removals by Sinks*. Vol. 2. Rome: Food and Agriculture Organisation of the United Nations. <https://doi.org/10.13140/2.1.4143.4245>.
- UNESCAP. 2017. *Sustainable Social Development in Asia and the Pacific*.
- UNESCAP, UNEP, UNU, and IGES. 2016. *Transformations for Sustainable Development: Promoting Environmental Sustainability in Asia and the Pacific*. Bangkok.



### (Endnotes)

1 For more information on the SDM, see <https://www.iges.or.jp/en/natural-resource/bd/sdm.html>

2 A sustainable society can be defined as “a society in which the amount of resources to be extracted is minimised at all stages of social and economic activities, from resource extraction through production, distribution, consumption and disposal, through a range of measures such as reduction of waste generation and use of CRs [circular resources], thereby minimising environmental loads” (Cabinet decision 25-03 2008, 3).

3 The region’s material footprint of consumption grew threefold between 1990 and 2010 (UNESCAP et al. 2016), making the transformation to a sound material society a regional priority. Material is not circulating, rather it is being extracted, processed, used and dumped. Resource intensive growth has been at the expense of natural ecosystems (IPBES 2018) and this partly explains why over 2,500 million ha of land in the region is now degraded (Gibbs and Salmon 2015). Resource intensive growth is also responsible for massive and rapidly increasing volumes of waste, which are overwhelming local and national governments, and are mostly disposed through open dumping and uncontrolled landfilling (UNESCAP 2017). Asia Pacific growth strategies are also generating large and growing volumes of greenhouse gas emissions, including in the natural resource and agricultural sectors (Tubiello et al. 2014) forestry and other land use (AFOLU).

4 Manor (1999) reported that over eighty percent of countries were thought to be implementing some degree of decentralisation.

5 The results of the review will be reported in a forthcoming IGES publication on the Satoyama Development Mechanism.

6 These potential contributions were partly identified from Japan Satoyama Satoumi Assessment (2010) and Kamada (2017).





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