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Landscape approach for biodiversity, climate change and sustainable development co-benefits

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The Institute for Global Environmental Strategies (IGES) and the United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS) convened an online session entitled "Landscape approach for biodiversity, climate change and sustainable development co-benefits" at the 13th International Forum for Sustainable Asia and the Pacific (ISAP2021) on 2 December 2021. The session had a keynote speech, two case study presentations of the projects supported by the Satoyama Development Mechanism (SDM) and a panel discussion. This issue brief summarises the points from the presentations and discussion.

KEY MESSAGES

Socio-ecological production landscapes and seascapes (SEPLS) support biodiversity and climate resilience in local production systems. These are traits shared by the 'scapes approach and nature-based solutions (NbS) for global biodiversity and climate goals.

However, livelihood insecurity of local smallholders, who are often SEPLS managers, sometimes hinders the contributions of SEPLS to these global goals. Their livelihood insecurity can arise from inequity throughout product value chains and in landscape governance.

Actions to ensure equity for local smallholders provide an enabling environment for the real-world implementation of the 'scapes approach and NbS for long-term sustainability outcomes.

Introduction

Global attention on the climate and biodiversity nexus is increasing. The landscape and seascape approach can be at the heart of solutions that simultaneously contribute to biodiversity conservation and climate mitigation and adaptation.

The Satoyama Initiative, proposed by the Government of Japan and endorsed at the 10th meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP10) in 2010 in Aichi, Japan, is a global effort to promote the landscape and seascape approach for biodiversity and human well-being. The Initiative focuses its efforts on "socio-ecological production landscapes and seascapes", or SEPLS, which are dynamic mosaics of habitats and land/sea uses providing the goods and services needed for human life while being managed to maintain biodiversity. Considering their role in supporting biodiversity, often outside protected areas, SEPLS can be a good example of "other effective area-based conservation measures" (OECMs)[1] to complement protected area networks.

Ahead of the 26th meeting of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP26), the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), released an important workshop report on biodiversity and climate change jointly with the Intergovernmental Panel on Climate Change (IPCC) . The report explained the interdependence between climate, biodiversity and human well-being. The report also pointed out potential trade-offs between biodiversity conservation and technological solutions for climate change mitigation, including renewable energy technologies that require specific minerals, such as lithium, and accelerate mineral mining in natural areas. The workshop report thus emphasised the need for NbS which can generate co-benefits for climate, biodiversity and human well-being through a wide variety of actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges while promoting human well-being. Further, the report advocated a "new conservation paradigm" with multiple-benefit interventions to focus conservation on multifunctional "scapes" including landscapes, freshwater scapes and seascapes. Multifunctional 'scapes include protected area and corridor networks, agricultural lands, fishing grounds and urban areas. The report says that, for these approaches to be successful, sustainable, and rooted in the local context, any solution requires equitable planning and the proactive participation of affected local communities in its design and implementation. Hence, similarities exist between the concept of "scapes", and SEPLS.

In the context of the CBD, Aichi Biodiversity Target 11 (to protect 17% of terrestrial and inland water ecosystems and 10% of marine ecosystems) saw moderate progress[3]. However, to address continuing global biodiversity loss, the proposed post-2020 global biodiversity framework (post-2020 GBF) may increase the goal to 30% for both terrestrial and marine ecosystems by 2030[4]. This is what is known as "30 by 30". Due to the amount of the earth's surface required to produce the food, materials and energy necessary to support the global population, this concept of protection includes the spaces where people and nature interact but where conservation still takes place – the aforementioned OECMs. SEPLS can play an important role as potential OECMs.

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[1] CBD. 2018. Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity 14/8 Protected areas and other effective area-based conservation measures. https://www.cbd.int/doc/decisions/cop-14/cop-14-dec-08-en.pdf

[2] IPBES. 2021. IPBES-IPCC co-sponsored workshop report on biodiversity and climate change; IPBES and IPCC. DOI:10.5281/zenodo.4782538. https://www.ipbes.net/events/ipbes-ipcc-co-sponsored-workshop-report-biodiversity-and-climate-change

[3] Secretariat of the Convention on Biological Diversity. 2020. Global Biodiversity Outlook 5. Montreal. https://www.cbd.int/gbo5

[4] CBD. 2020. First draft of the Post-2020 Global Biodiversity Framework. Open-ended Working Group on the Post2020 Global Biodiversity Framework. Montreal. https://www.cbd.int/article/draft-1-global-biodiversity-framework

Case presentation 1: Enhancing upland adaptation for improving local livelihood and landscape: insights from Sumatra, Indonesia

Mr. Sacha Amaruzaman
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Coffee agroforest in Pagar Alam

Pagar Alam, an upland city renowned for its coffee production, lies on the Musi river upstream basin which is one of the largest watersheds in Sumatra, Indonesia. The watershed provides water to more than 10 million people in the South Sumatra Provinces. The Pagar Alam area is 63,000 ha, which is comprised of protected forest (32%) high on the eastern slope of Mt. Dempo, adjacent coffee agroforest (34%) and other land uses including rubber plantation and rice paddy. The protected forest provides habitat to various indigenous and endemic animals and plants, such as Sumatran tiger, Macaca, and endemic orchids. In the coffee agroforest, smallholders have been growing the robusta coffee (*Coffea canephora*) in a mixed system with fruit trees and annual crops since around 1900. The coffee agroforest, which underwent time-tested adaptation to the climatic and socio-ecological conditions for a century, provides not only coffee and other crops but also vital ecosystem services that underpin people's livelihoods and maintain the upland landscape. Such ecosystem services include carbon sequestration, soil productivity, resilience against pests, disease and natural disasters, water purification as well as wildlife habitats.

However, the upland forest frontier is being eroded. The coffee smallholders, due to low coffee prices, increasingly replace coffee agroforests with vegetable crops for a higher short-term profit. The low coffee prices are the result of agricultural policy that focused on quantity rather than quality, as well as poor farm management and post-harvest practices. Producers lacked incentive to improve coffee quality because local coffee brokers did not distinguish coffee beans by their quality. In addition, the national government programme to develop irrigation in the area is currently being implemented in Pagar Alam, threatening to convert about 3,200 hectares of upland agroforestry into irrigated rice fields.

A vulnerability assessment of the coffee smallholders clarified smallholders' key vulnerabilities, e.g. volatile coffee prices and climate-related stressors including high temperatures, changing precipitation patterns, pests and disease[5]. Local vulnerability to the coffee price fluctuation is

[5] Amaruzaman S, Isnurdiansyah, Nugraha M, Lusiana B, Leimona B. 2021. Profile of the production land-scape of Pagar Alam: towards sustainable upland agriculture. Bogor, Indonesia: World Agroforestry (ICRAF) Indonesia Country Program. http://apps.worldagroforestry.org/region/sea/publications/detail?pubID=4863

exacerbated by traditional farming practices that yield low quality coffee, further limiting the farm gate price of coffee for the local farmers. At the national scale, there is increasing demand for high quality coffee bean. However, local farmers are disconnected from this market, making the coffee farming practices less appealing for them. The World Agroforestry (ICRAF) has initiated several activities to address these vulnerabilities, focusing on support to the coffee smallholders to increase the profitability of coffee production and thus to ensure the sustainability of the coffee agroforest system and its regulating ecosystem services.

To improve coffee quality, ICRAF and its collaborators empowered the coffee smallholders, including through a pilot project to introduce good management practices in collaboration with Ned Coffee (currently named Sucden Coffee), a global coffee trader. A multi-stakeholder workshop on sustainable coffee market was organised by ICRAF and Ned Coffee in collaboration with and the Starbucks Farmers Centre. Participants at the workshop included representatives from Pagar Alam Local Government, coffee smallholders from the forest frontier area, and local coffee cooperatives. Furthermore, ICRAF supported the coffee cooperatives to strengthen its value chain by directly shipping coffee to a global coffee trader in an adjacent province.

The traditional coffee agroforest system in Pagar Alam has several features of NbS, particularly climate change mitigation and adaptation as well as food and livelihood security. As the vulnerability assessment revealed, the sustainability of agroforestry systems can potentially be maintainted and improved by connecting local coffee farming practices with a better coffee market. This shows the importance of redefining product value chains through green commodities to ensure economic security of local actors in the real-world implementation of NbS. Furthermore, this case showed an important role that "intermediaries", such as ICRAF, can play to facilitate an integrative, multi-scale and multi-sectoral action that involve local communities, businesses and national and local governments.

A female farmer in Pagar Alam manually drying coffee cherries

Case presentation 2: South American camelids as biocultural components in the Andean Altiplano of Argentina

Dr. Verónica Rojo, Vicuñas, camélidos y ambiente (VICAM)

Family group of vicuñas

Shearing wool fom a vicuña

The Argentinean side of the Andean Plateau, called *Puna*, is an Andean dryland where water and vegetation are sparsely distributed, in valleys and wetlands. The majority of indigenous communities inhabiting *Puna* are pastoralist, keeping mainly endemic llamas (*Lama glama*) and sheep (*Ovis aries*) on natural grassland. Through the traditional practice of *Chaku*, they harvest wool from live vicuñas (*Vicugna vicugna*), a wild camelid species that recently recovered from near extinction, and shares its grazing land with livestock. Vicuña wool is exported to, and highly valued by, consumers in the global north. This multi-species pastoral system on Puna is adapted to its harsh climate. A high proportion of camelids among livestock contributes to climate change mitigation and adaptation, as camelids are low impact grazers and release less methane than other ruminants (Dittmann et al., 2014).

Santa Catalina village is included in the Laguna de los Pozuelos Biosphere Reserve, and the river basin that runs adjacent to the Barrancas town was declared a Natural and Cultural Reserve by local authorities. The Argentine *Puna* region face several challenges, such as persistent poverty, and youth and adult-male outmigration as the consequence of desertification, descending sales price of local products and poor market access. Grassland – the critical production base for the indigenous pastoral communities – is being degraded due to intensifying drought. These environmental conditions, exacerbated by scarce encounters with people due to COVID-19 confinement, have resulted in increased vicuña poaching. Indigenous pastoralists have limited market access although they hold skills to produce high-quality fibres and textiles. Consequently, vicuña fiber provides only marginal benefits to the Andean indigenous pastoralists while, due to its high retail price, profits largely apparel industries in the global north.

To address these interconnected social, economic and ecological challenges, VICAM (Vicuñas, camélidos y ambiente) worked with local communities to establish an evidence-based sustainable camelid management system that includes llama pastoralism, and the conservation and sustainable use of vicuñas. Efforts started from a census of livestock animals, vicuñas and suris, (*Rhea tarapacensis*) a large flightless bird of the Rheidae family that is vulnerable locally. The vegetation productivity of their feeding ground was assessed using remote sensing data, and a strategy was proposed for sustainable "pastoral biodiversity" encompassing livestock animals, vicuñas and grassland vegetation. The fair trade potential of hand-woven vicuña textile was

considered as an option to alleviate poverty. This included the identification of skilled weavers from local communities and pilot testing of the weaving process to assess the cost, time and labour requirements, as well as the textile quality.

The series of actions taken to address the critical needs of local communities can be interpreted as an integrated approach that also addresses climate and biodiversity challenges. The case highlights the importance of better understanding social-ecological interactions in a biodiverse pastoral system and to secure local livelihoods for its sustenance. Recently the Andean pastoral system has been under increasing pressure from lithium mining, driven by the current renewable energy boom. Indigenous pastralists, however, are excluded from the decision-making on these developments that have been eroding natural pastureland and thereby threatening wild animals and local livelihoods. This illustrates the need for an inclusive landscape governance that effectively represent the voices of indigenous pastoralists and that consider potential negative impacts of mineral mining, such as lithium, for renewable energy development.

Female herder spinning fibre of vicuña (left) and llama (right)

A herd of llamas (*Lama glama*), a domestic South American camelid, owned by indigenous communities

Discussion and conclusion

The above two cases demonstrate bottom-up integrated actions aligned with the NbS concept that potentially can contribute to both global biodiversity and climate goals. They illustrate how SEPLS, particularly when located adjacent to protected areas, can serve as OECMs to complement protected areas in achieving the proposed "30 by 30" target. The United Nations Framework Convention on Climate Change COP-26 (UNFCCC COP-26) convened from 31 October to 12 November 2021 and directly recognised the role of indigenous peoples and local communities (IPLC) to mitigate and adapt to climate change. Biodiversity was also accorded as significantly important for abating climate change. This is an important advancement in UNFCCC which only recognised the role of forests as "important carbon sinks" when the Paris Agreement was signed. In this way, global frameworks increasingly recognise the importance of inclusive and integrated local actions. In addition, forests will not flow from the IPLC issues.

However, as the two cases illustrated, there are gaps between local landscape management and global biodiversity and climate goals. Livelihood insecurity facing smallholders, who are often SEPLS managers, can hinder the contribution of SEPLS to the global goals. Inequity for smallholders can lead to livelihood insecurity, such as limited technical capacity and bargaining power in the product supply chain and weak representation in landscape governance.

Nevertheless, SEPLS can be managed so that they can contribute to the global biodiversity and climate goals. To enable such contribution, it is important to identify priority livelihood issues for local communities and then develop and implement integrative sustainability solutions to address these issues. Options include developing environment-friendly and value-added commodities from SEPLS that equitably benefit local smallholders. Such actions can contribute to and be supported by the global frameworks. Also, as in the case in Indonesia, "intermediaries" play an important role in an integrative approach by facilitating collaboration between grass-roots, government and private actors.

The post-2020 GBF, particularly the proposed "30 by 30" target, will provide a framework for governments and others to use for institutionalising OECM, to which SEPLS may contribute. Thus, a collection of strong local initiatives such as those presented during this session potentially contributes to the implementation of the post-2020 GBF. With the support of the Government of Japan, the Satoyama Initiative will continue supporting these actions and thus will contribute to the achievement of the new global biodiversity targets.