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Impact of Subsidies and Incentives on Socio-Ecological Production Landscapes and Seascapes (SEPLS)

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Executive Summary

There is a sense of urgency in policy discussions on pressing socio-ecological crises such as biodiversity loss, ecosystems degradation, and the deterioration of livelihoods and human well-being. Among the drivers of this polycrisis are economic and political instruments, which were originally devised to support development but have become harmful to the environment and society. Several of these subsidies and incentives have outrun their intended benefits, and can be considered perverse due to their negative effects on environmental resources and human welfare.

This report discusses the immediate need to reform subsidies and incentives that negatively impact biodiversity and human well-being in socio-ecological production landscapes and seascapes (SEPLS). It aims to support and respond to Target 18 of the Kunming-Montreal Global Biodiversity Framework (GBF), which calls for identifying and phasing out harmful subsidies by 2025 and reforming them by 2030.

Drawing upon survey responses from members of the Satoyama Initiative and the Alliance for the Mediterranean Nature and Culture (AMNC), the report reveals local actors' perspectives on how incentives affect their environments and livelihoods. Among the concerns raised were the dominance of industrial-scale actors due to disproportionate support; loss of cultural and ecological diversity; policy incoherence leading to spillover effects that undermine sustainability; and inadequate recognition of small and medium-scale production systems.

Despite these challenges, local actors are initiating innovative solutions, including agroecology, ecotourism and participatory governance, driven by increased awareness of sustainability issues and shifting consumer preferences.

Key policy suggestions:

- Adopt integrated and inclusive planning approaches to manage trade-offs across land and sea use.
- Level the playing field by aligning subsidies with sustainability-aligned solutions, especially for small-scale producers.
- Support appropriate and localized technologies, finance mechanisms and institutions.
- Invest in education and capacity development across all actors in the decision-making chain.

UNU IAS

SATOYAMA INITIATIVE

Alliance for Mediterranean Nature & Culture

Introduction: Socio-Ecological Production Landscapes and Seascapes (SEPLS)

- Socio-ecological production landscapes and seascapes (SEPLS), cultural landscapes and seascapes (CLS), and similar conceptualizations denote sites where the interactions between people and the landscape ensures sustainable resource use while providing humans with the goods and services needed for their well-being.
- Despite their high contributions to biodiversity conservation and sustainable use, many SEPLS/CLS are showing signs of degradation due to various anthropogenic and natural drivers.
- The issue of subsidies and perverse incentives for various activities has been recognized as a critical indirect driver impacting biodiversity and consequently human well-being.

Socio-ecological production landscapes and seascapes (SEPLS) are areas where the interaction between people and the landscape maintains or enhances biodiversity while providing humans with the goods and services needed for their well-being. These also include Cultural Landscapes and Seascapes (CLS) and other similar conceptualizations. Such areas include a mosaic of ecosystems used for multiple benefits or functions by multiple users, informed by their worldviews and priorities, and involve a diverse range of governance regimes. They often include a mix of protected areas, buffer zones and managed landscapes and seascapes that are used for different types of production activities, from primary production (agriculture, fishery, forestry, pastoralism, mining, etc.) to infrastructure and other industrial activities (Gu and Subramanian 2014).

Historically, most SEPLS were managed and stewarded by Indigenous peoples and local communities who were usually part of the landscape or seascape for several generations. Over time, government agencies and private sector players have become more engaged in SEPLS management in response to various social, environmental and economic priorities (UNU-IAS and IGES 2023). Such local communities[1] have interconnected, reciprocal relationships with the landscape and resources that have informed their ways of production and management of the landscape. These tangible and intangible interactions infuse a higher sense of identity with the places, resources and people. The term SEPLS is a relatively new one and represents a variety of concepts that capture socio-ecological systems and relational interactions between people and nature (Subramanian and Nishi 2023; Berkes et al. 2003; Folke 2006; Walker et al. 2006).

In an ideal scenario, SEPLS are sites of high ecosystem integrity and biodiversity values. They are utilitarian spaces of human-nature interactions charaterized by equity, sustainable resource use and conservation of biodiversity, as well as respect and integration of different knowledge systems contributing to socio-ecological resilience and well-being of the populations.

The production activities of the actors operating in SEPLS are at a small or medium scale. However, due to the globalization of trade in commodities, production patterns and control over decisions related to SEPLS have shifted in response to multiple stimuli from market signals, policy regulations, demographic change etc. (Pretty et al. 2006; Sarmiento 2015; UNU-IAS and IGES 2019). Despite their high contributions to biodiversity conservation and sustainable use, many SEPLS/CLS are showing signs of degradation due to various anthropogenic and natural drivers, including depopulation, demographic changes, changes to land use priorities of actors (within and outside the SEPLS /CLS), abandonment of sustainable practices, external pressures on land and resources, and the resultant policy incentives and changes in consumption trends.

As the IPBES Global Assessment on Biodiversity and Ecosystem Services (IPBES 2019) mentioned, addressing indirect drivers of biodiversity loss would be key to ensuring a transformative change towards sustainable societies. The issue of subsidies and perverse incentives for various activities has been recognized as a critical indirect driver to be addressed. This is a topical issue in the SEPLS and CLS context, as it is pertinent to the choice of sustainable pathways for production, consumption and marketing. Global assessment reports (viz., IPBES 2019; GBO 5 2020; GEO 6 2019) suggest that they play a deterministic role in the integrity and resilience of landscapes and seascapes. To enhance productivity, policies incentivized practices such as monocropping, high chemical use, resource overexploitation, infrastructural change and conspicuous consumption (Foley et al. 2011). These have had significant consequences on both nature and climate, with many adverse effects on SEPLS and CLS.

Various assessments and other research related to biodiversity (viz., SCBD 2020; UN Environment 2019; IPBES 2019) identify and discuss perverse subsidies that negatively impact economies and the environment. These subsidies are mainly classified under agriculture, fossil fuels, road transportation,

[1] In this report, the term "local communities" is used as a short form to refer to both Indigenous peoples and local communities, unless specified separately.

and water, fisheries and forest sectors (Myers and Kent 2001; Cruz-Trinidad 2024). Wasteful subsidies, such as the promotion of cheap chemical fertilizers, are usually projected as being pro-poor while largely privileging the elite (Damania et al. 2023; IATP 2022). Usually, subsidies are provided to boost economic growth and to meet the external demand of the agricultural and livestock sectors with scant attention to environmental costs (Scherr et al. 2015), even if these may be acknowledged (Navarro and Lopez-Bao 2019; Pe'er et al. 2019). However, cases also suggest that subsidies might deter improved and better infrastructure, resulting in low-quality development projects posing a threat to environments and life (McRae 2015). For example, the fertilizer subsidy in India affects efforts to modernize irrigation, and farmers rely on unsustainable methods of water extraction with the supply of cheap or free electricity (Pingali 2012). Similarly, the palm oil subsidies in Indonesia have led to large sedimentation in water bodies due to poorly constructed roads resulting in degraded aquatic ecosystems (Wicke et al. 2011).

The global assessments reiterated an urgent need to reform and transform negative and perverse subsidies and incentives that harm biodiversity and, consequently, human well-being (Damania et al. 2023; BIOFIN 2024; FAO, UNDP, UNEP 2021; Bridle et al. 2019). Almost all of them call for integrated approaches to land and sea use planning and management that help identify and address various trade-offs that arise due to multiple activities on the sites. This would also help rationalize the types of subsidies and incentives provided across the diverse activities.

The Kunming-Montreal Global Biodiversity Framework (GBF), adopted in December 2022 at the 15th Conference of Parties of the CBD (CBD COP 15), addressed this issue in its Target 18, calling for Parties to take action, report and monitor:

> *"Identify by 2025, and eliminate, phase out or reform incentives, including subsidies, harmful for biodiversity, in a proportionate, just, fair, effective and equitable way, while substantially and progressively reducing them by at least $500 billion per year by 2030, starting with the most harmful incentives, and scale up positive incentives for the conservation and sustainable use of biodiversity."* (Target 18, KMGBF; FAO UNDP and UNEP 2021)

There are two parts to Target 18. The first is to identify various subsidies and incentives harmful to biodiversity by 2025. The second calls for reform, phase out or eliminate them as necessary by 2030 in a progressive manner. Apart from the CBD context, this concern is also raised in the Global Chemicals Framework (GCF), especially Targets A7[2] and D5[3] (UNEP 2024), and the UN Convention to Combat Desertification (UNCCD) (Tomalka et al. 2024). In terms of regulating emissions, it is also mentioned in the UN Framework Convention on Climate Change (UNFCCC).

This report identifies both negative and positive subsidies and incentives that have impacted SEPLS and CLS based on the practices and experiences at local implementation scales. This will help inform CBD Parties about aspects related to Target 18, which seeks to identify various subsidies and incentives harmful to biodiversity by 2025. Consequently, it could assist Parties in redesigning and repurposing limited public resources to support socio-ecological production systems and enhance their resilience. While the CBD has a direct Target that provides a frame of reference for the study, the results are relevant to broader sustainability goals, including Agenda 2030, which aims to ensure that no one is left behind, as well as to the mandates of other intergovernmental treaties such as the UNCCD, ensuring coherent policies designed for Climate Action (UNFCCC).

Survey Methodology and Approach

For the purpose of analysis, subsidies and related support measures within the SEPLS and CLS context are categorized into four broad categories, to account for impacts that arise from support for activities within the site and for those outside of the site (spillover effects):

- **Primary Production Subsidies:** Namely for agriculture, fisheries, forestry and others in terms of choice of crops and cropping patterns or production practices, and inputs like land, fertilizers, water and electricity
- **Subsidies/Incentives for Business Development:** Value addition, transportation, marketing and financing (including export subsidies)
- **Subsidies/Incentives for Other Industries On-site:** Mining, infrastructure development, tourism and others (also linked to employment and other development activities)
- **Subsidies/Incentives for Other Industries Away from the Site:** Finance sector, consumption and energy sector

Data Collection and Analysis

Data collection was done through an online questionnaire survey distributed to IPSI and AMNC members. Eighteen responses were received in July 2024 from organizations that work on SEPLS/CLS revitalization in 11 countries, including academia, non-governmental and civil society organizations.

[2] Target A7 of the Global Framework on Chemicals (GFC): By 2035, stakeholders have taken effective measures to phase out highly hazardous pesticides in agriculture where the risks have not been managed and where safer and affordable alternatives are available, and to promote transition to and make available those alternatives.

[3] Target D5 of the GFC: By 2030, Governments implement policies and programmes to increase support to safer and more sustainable agricultural practices, including agroecology, integrated pest management and the use of non-chemical alternatives, as appropriate.

The responses were analyzed and their findings synthesized across issues related to extant landscape and production patterns and changes, direct and underlying drivers of change, the specific impacts of different types of subsidies and incentives, and how these could be aligned with sustainability principles (see Questionnaire in Appendix).

While not exhaustive, the results represent perspectives from a diverse set of local contexts, aiming to identify the nuances of the impacts of different types of subsidies and incentives. There is scope to expand this area of research and analysis. The broad themes that were covered in the analysis include:

- Underlying drivers/motivations behind policies related to subsidies and incentives relevant to SEPLS.
- Primary and spillover (secondary and tertiary) effects of subsidies on biodiversity and human well-being at the SEPLS (secondary effects imply within the boundaries of a landscape or seascape on other sectors, while tertiary implies beyond the boundaries of a landscape or seascape).
- Negative externalities from within and across sectors, and how they can be reformed. This also includes conflicts arising between production activities due to variable support for each.
- Opportunities for positive externalities; if present, how they can be ratcheted.
- Role of other policy support tools and instruments, such as rights-based approaches and socio-cultural instruments and regulations, in moderating the influence of negative subsidies. For example, agricultural subsidies linked to environmental regulations that promote the diversification of farming practices and soil conservation. This is critical as integrating the above policy instruments into a coherent policy framework, supported by a strong enforcement mechanism, brings efficiency to align the subsidies with long-term sustainability goals.

The study also draws on discussions that were held during a side event of the Fourth Meeting of the Subsidiary Body of Implementation of the CBD at Nairobi in May 2024, and relevant literature reviews and discussions with different participants during CBD COP 16 and UNCCD COP 16.

Survey Results and Discussion

Subsidies and incentives are fiscal measures adopted by governments to promote the uptake of certain activities, production or consumption. These include direct measures linked to production (e.g., fertilizer subsidies, tenure security etc.) and indirectly supporting production activities (e.g., market incentives, tax breaks etc.) (Pingali 2012). They are considered necessary to offset costs of production or consumption and enable accelerating economies of scale in production and marketing activities (World Bank 2008; OECD 2001). However, the incoherence between support given for certain activities and its impact on other activities (spillover effects viz., land use changes and loss of livelihoods due to support of high infrastructure projects in production or conservation areas) or even within a sector (e.g., loss of soil fertility due to excessive use of highly subsidized chemical fertilizers) have been detrimental to biodiversity, ecosystems and human well-being (Matthews and Karousakis 2022). Policymakers must address this issue and rationalize the deployment of subsidies by identifying what subsidies need to be reformed (SCBD 2022 KMGBF; FAO 2021).

Impact of Subsidies and Incentives on SEPLS

- Over the last 50 years there has been a tendency toward degradation of the landscape or seascape, loss of resource diversity and cultural heritage, and uneven changes to various human well-being parameters.
- Communities report feeling a sense of reduced or loss of agency and control over their local economy arising from external actors and processes.
- The impact of subsidies and incentives on SEPLS varies with context, indicating the need for more nuanced understanding of trade-offs.

As characteristic of SEPLS, the survey respondents were engaged in different types of locally based production activities. These range from crop production, livestock rearing, pastoralism, forestry and fishery to crafts and eco-tourism in some combination, as suited within a landscape or seascape and depending on the demand and type of support they receive. Several had other occupations outside the SEPLS (see Table 1), and some of them have set up areas for educational purposes (e.g., biodiversity parks). These SEPLS cover multiple ecosystems, ranging from forests and grasslands to coastal areas, with combinations depending on the landscape (see Table 2).

A common refrain across all sites was that over the last 50 years there has been a tendency toward degradation of the landscape or seascape, loss of resource diversity and cultural heritage, and uneven changes to various human well-being parameters (loss of food sovereignty, livelihood options, sense of place, access to resources and cultural sites, control

over local economy etc.). Several underlying social, environmental and political drivers have exacerbated the changes in land and sea use and management. In the last 10 years, attempts at salvaging ecological integrity and reducing vulnerabilities of socio-ecological systems to various natural and socio-economic shocks seem to be gaining ground (see Table 3 and related Figure 1).

Table 1: Profile of Ecosystems and Activities Engaged by SEPLS Stakeholders

Characteristic	Status Quo
Area under active production (%)	~5-70%
% of population engaged in active production activities, e.g. farming (crop production, livestock production), pastoralism, forestry, fishery and crafts	~15-90
% population engaged in tourism (landscape, agrotourism, food tourism and guided hikes)	5~25~95
% population engaged in education related activities	3~10
% income that comes from production activities	~15~30~50~80

NOTE: The wide range is indicative of contextual realities. Frequently referred to approximations have also been noted within a range. For instance, area under active production varies from 5% to 70% across the responses; the percentage of income from production related activities within the SEPLS varies from 15% to 80%, with several respondents also reporting 30% and 50%. Please note that there will be overlap between different activities.

Drivers of Changes

In an ideal situation, production activities and management actions in a SEPLS ensure resilience of the socio-ecological system. This means that all activities are aligned with sustainable practices, inclusive of perspectives from various stakeholders, participatory and equitable in nature. Furthermore, they anticipate necessary coping strategies and actions to be in place for any economic or environmental perturbances (UNU-IAS and IGES 2023).

However, the state of activities across all the sites covered in the survey is at odds with this ideal scenario, compromising the well-being of people and the resilience of the socio-ecological system. Respondents identified that over the last 50 years several factors have led to these changes. These range from policies related to conservation, infrastructure, economy, trade and commodity standards, to demographic changes and socio-cultural drivers. Communities report feeling a sense of reduced or loss of agency and control over their local economy arising from external actors and processes. For example, in the Chimborazo Fauna Production Reserve in Ecuador, the flow of tourists has increased manifold after the establishment of the protected area in 1987. This change has prevented the local Indigenous Puruwa people from exercising any decision-making power.

In the past decade, with rising disruptions from natural and other causes, communities and other stakeholders have been trying to put in place appropriate mitigation and coping mechanisms. For instance, regulating building and other activities in coastal areas, banning quarrying to ensure soil stability and similar measures for ecological stability, incentives for marketing locally produced products and fostering local economic activities that ensure sustainable use of resources and ecosystems. While these drivers have brought challenges, they also create positive impacts, as demonstrated in other studies (for instance, Hellegers et al. 2022). Below is an outline of the major drivers and their influences on landscapes and seascapes as identified by the respondents.

- **Changes in policies, trade and economic opportunities** Policy changes related to trade and aligning national production decisions with external regional or global standards and priorities have often resulted in drastic changes to the cropping patterns and modes of production in SEPLS. For instance, integration with the EU Common Agricultural Policy (CAP) has led to the loss of traditional varieties on the Lemnos Island of Greece (North Aegean region) due to the preference for commercially popular varieties in fertile areas. It has also led to neglect of the less fertile areas with unique diversity. Furthermore, there is a marked reduction of traditional breeds of sheep and increased import of fodder to feed the burgeoning population of non-native breeds. In some cases of artisanal products such as cheese, stricter hygiene standards with inadequate support to achieve them have weakened local industries. Similarly, policy support for the cultivation of commercial crops for export has downsized local staple crops, resulting in food sovereignty issues as reported in rice cultivation in the Wayanad region of India and several sites in Taiwan, Province of China (continued on p. 8).

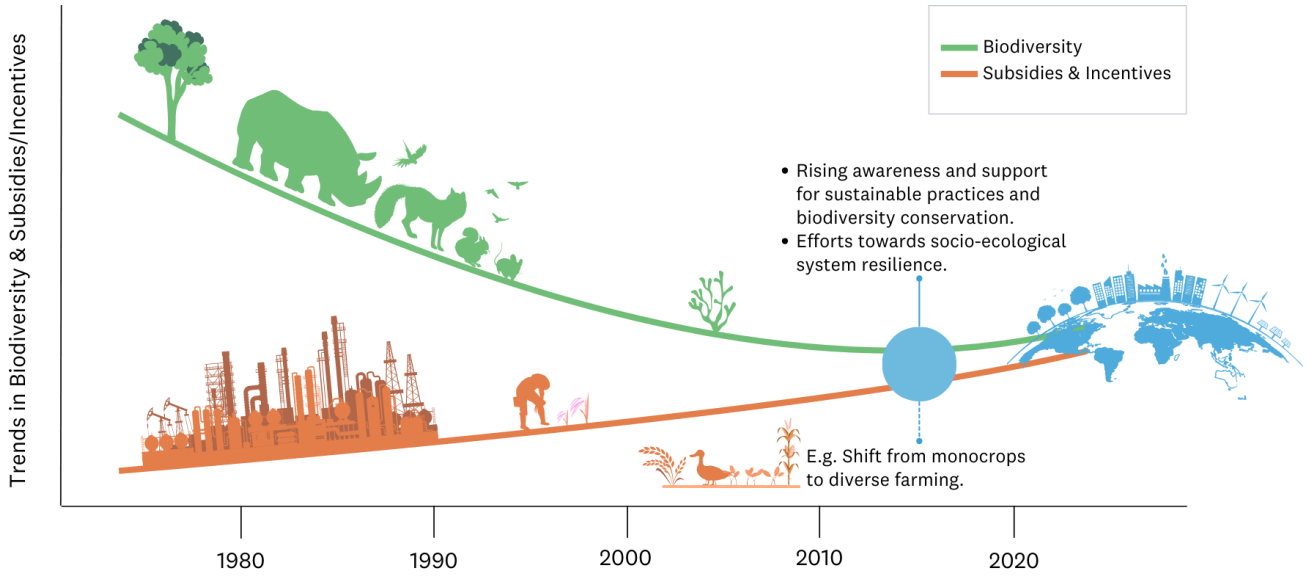
Table 2: Profile of Respondent SEPLS Sites

Country and Region	Types of Ecosystems in Landscape	Major Activities
Colombia	Coastal and riverine	Fisheries, aquaculture and vegetable farming
Ecuador	Mountains and pastures	Pastoralism, fabric and furs from vicunas
Greece	Grasslands	Farming, sheep rearing and ecotourism
Haryana, India	Plains and farmlands	Paddy, wheat and vegetable cultivation
Mannar, India	Marine	Fishery, ecotourism and salt production
Wayanad, India	Mountains, farmlands and forests	Paddy farming, home gardens, ecotourism, ethnomedicine, biodiversity parks and pilgrim spots
Indonesia	Wetland and plains	Rice cultivation
Italy	Farmlands	Vineyards, food crops and banana cultivation
Kibaoni, Kenya	Mangroves	Reforestation, fishing, beekeeping and ecotourism
Bulun, Nepal	Agriculture lands	Farming
Panchase, Nepal	Forests, mountains and agricultural landscapes	Farming and ecotourism
The Philippines	Wetlands and mangroves	Paddy and mangroves
Galicia, Spain	Forests, grasslands, shrublands, farming areas and rivers	Inshore fishing, farming of staples and fodder, vegetable farming and industrial activities in coastal areas
Menorca, Spain	Forest, coastal area, farms and urban	Agrotourism, realty and land abandonment
Hualien, Taiwan, Province of China (POC)	Hills, forests and paddy lands	Agriculture, horticulture and tourism
Nan'an Indigenous Community, Taiwan, POC	Forests and agricultural landscape	Paddy cultivation, home gardens, fruit trees and oil bearing crops
Zhuoxi, Taiwan, POC	Forests and agricultural landscape	Paddy cultivation and home gardens
Uganda	Dryland	Cattle corridor, livestock and forestry

Table 3: Summary of the Status Quo of Different Production Activities and Underlying Drivers of Change at the SEPLS Level

Activity Category	Status Quo of Production Activities	Main Underlying Drivers of Change: Both Positive (P) and Negative (N)
Agriculture	Mostly active but struggling Reduction in types of crops, number of varieties and livestock breeds	Labour shortages (N) Policy support for less diverse production systems Market demand pulls (N and P) Outcompeted by larger producers (N) Loss of fertile areas for other developments (N)
Fishery	Mostly active with reduction in fish diversity and population	Overexploitation (N) Poaching (N) Pollution (N)
Forestry	Mostly active in reforestation activities	Less interest by youth in traditional occupations (N) Policy support for reforestation activities (P)
Pastoralism	Struggling with insufficient support and patronage	Changes to landscape, such as conversion of grasslands to other uses (N) Inadequate support and non-feasible standards of compliance (N)
Value-added products and services	Improving with innovations being undertaken but not self-sustaining	Non-feasible product standards in destination markets (N) Labour shortages (N)
Ecotourism and other forms of tourism	Mostly thriving	High urban and outside consumer demand for nature-based experiences (P)

Figure 1: Schematic Illustration of Trends



The fisheries sector is facing similar problems with the introduction of exotic species for aquaculture and the increased number of harvested species due to the use of fishing crafts with higher technological capacities (as seen in Colombia).

Support for other infrastructure-related activities in the landscape to meet multiple development priorities, including real estate and roads, have led to significant land use changes. This has resulted in reduced biodiversity, loss of habitats and ecosystem integrity, loss of agricultural land and grasslands, and environmental problems due to pollution and waste, impacting the livelihoods of local communities.

At the same time, some of these construction projects have increased urban income levels, mobility and convenience, as seen in access to external markets and influx of tourists and consumers of SEPLS products and services. Support for alternative economic activities has also benefited local communities when they are targeted for on-site activities such as support for textile production (as in Ecuador); vermicomposting targeting specific interest groups like women and youth; and vocational jobs (e.g., training youth in snorkelling in the Gulf of Mannar, India). These enable the pursuit of gainful employment using local resources and skills, and tapping into the effective demand from external consumers.

Support for non-industrial economic activities within SEPLS includes a mix of regulations and subsidies to simultaneously promote conservation and economic development (e.g., bans on certain resource extraction and promoting ecotourism). Several positive outcomes have been reported such as bans on quarrying, which have preserved soil stability in fragile mountainous zones in Wayanad, India, or the promotion of ecotourism (e.g., guided hikes) which has allowed better conservation of heritage areas and biodiversity, and addressed housing issues (as seen in China, Greece, Kenya, Nepal and the Philippines). At the same time, there have been unintended fallouts, such as in Ecuador, where regulations that ban the use of animals for any purpose other than fur consumption have resulted in wildlife population imbalances. These experiences indicate that trade-offs need to be evaluated carefully with local expertise to avoid well-intentioned but misguided policies and regulations.

- **Changing demographics**
  Across all the surveyed SEPLS, there are significant demographic changes due to youth migration to urban centers for better employment prospects (as seen in Greece and Nepal), resulting in fewer people for labour and other activities. Issues related to immigration from forced settlements are also reported. New living environment and production models and drastic changes in the people-land relationship result in tensions related to landscape use and loss of traditional culture (as seen in Nan'an

Community, China). SEPLS are also being viewed as places to establish holiday homes (amenity tourism), with more realty purchases for non-production residential purposes (Gallent 2020). While the most visible outcome is an increase in realty prices within the site, some respondents noted renewed interest by youth in their bio-cultural heritage and revitalized traditional production practices due to emerging demand for such products (Woods 2011).

- **Changing land, sea and resource uses**
  Respondents indicate that the spectrum of land uses across the landscape has progressively narrowed because of greater homogenization of production patterns, lesser inclusion of diverse interests in land or sea use-related decisions, and changes in demographic priorities, especially of youth, relating to actively engaging with the landscape. For example, in the Galician mountains in Spain, shrubland is being replaced by rapidly growing forests with a resultant loss of multifunctionality and higher incidence of wildfires. Such forests, unlike native ones, are less diverse as their purpose is to cultivate fast-growing species for trade. Another example are the coastal and marine areas in the Gulf of Mannar, India, where excessive harvesting of marine resources is leading to a loss of ecosystem integrity.

- **Changing production emphases**
  Government and market preferences for certain crops, cropping systems and ways of life have encouraged specialization in the production of a limited number of species and the nature of the landscape (e.g., conversion of natural grasslands to pasture fields in Galicia, Spain). This leads to loss of multifunctionality and subsequent degradation of the landscape, and is aided by a mix of regulations and incentives.

- **Changing consumption patterns**
  Changing consumption patterns of consumers are reflected in their demand habits. According to the survey results, current production in SEPLS is primarily catering to outside demand (more than 50% on average), which is a complete shift from the consumption pattern more than two decades ago. This shows the significant influence that mainstream markets play on site-level production decisions.

  On one hand, it has led to the homogenization of production systems and the introduction of non-native species for cultivation due to suitable agro-climatic conditions based on exportability and increased profitability (e.g., shift to aromatic basmati rice from native rice varieties in Haryana, India, and Kampala in Uganda). Another example is cocoa, which was traditionally grown in Ghana for local consumption, but is now produced to meet the growing international demand for cocoa products, leading to deforestation, land use change and solely market-driven decisions. Poaching (e.g., shellfish in Galicia) and other unsustainable practices are directly linked to such consumer appetites. State-supported tourism and other activities are undertaken without the involvement of local communities and can be disruptive to natural populations such as medicinal plants and fish, affecting the livelihoods of people who depend on them (e.g., Kibaoni mangrove ecosystem in Kenya). All these result in reduced diversity of species and diets, decreased healthcare access and environmental instability.

  On the other hand, in some cases consumers have led the SEPLS restoration efforts. The demand for sustainably produced food and sustainably managed tourism has spurred institutional innovation such as co-operatives and the inclusion of women in decision-making processes (e.g., setting up fishers guilds to govern inland fisheries in Galicia). It has also allowed more income, networking and partnership opportunities and better human development-related indicators. Market-based instruments such as certification schemes have been found to enable discernment and incentivize sustainable production activities in SEPLS (e.g., geographical indication (GI) designation for products from Galicia, Spain or bio-certified products purchased for school menus in Menorca, Spain). The growing interest in agrotourism and leisure agriculture also helps to revitalize traditional SEPLS practices.

- **Changing technologies**
  Technology has often played a double-edged role in SEPLS. It has helped address labour issues and enhanced efficiency and marketability for different consumer preferences. For instance, cheaper substitute materials are now available for bamboo in Taiwan, Province of China, reducing the demand for bamboo. Selective support is given for the promotion of some crops through seed aids (Indonesia) or livestock seed stock, and for moving to more diversified farming (the Philippines), shifting from a focus on aquaculture to mangrove forestry activities.

  However, technology has also been instrumental in sidelining non-industrial production processes and reducing agricultural diversity, as homogenous cultivars

and production allow predictable efficiency and standardization across the value chains. The trade-offs between income, ecological support systems and cultural well-being are mediated through selective technological interventions.

- **Patriarchy and institutions**
  Respondents claim that power dynamics and insufficient consultation with communities is a result of state and local institutional patriarchy, where more influential actors with legal authority believe they know what is good for the community. Examples highlighted include CAP subsidies for specific crops, inputs and industrial activities that increase pollution and negatively affect habitats, biodiversity and livelihoods, fostering inequity. This has hampered access to various communities' needs, such as access to credit for activities they wish to undertake as they often do not meet the creditworthiness criteria set by the institutions. This is further compounded by serious issues of corruption that allow restricted or prohibited activities to be pursued.

  More engaged policymaking has resulted in mutually beneficial outcomes, enabling the sustenance of activities that might otherwise be economically unviable, even if this creates dependency on grants. Examples include: supporting skill enhancement programmes and linking social security system payments to compensation for implementing restoration and revitalization activities, as seen in the Philippines; providing assistance to marine fishers during periods of fishing ban or lean seasons, in addition to relief and savings schemes, as implemented in India (Gulf of Mannar); providing accelerated forest permits to communities for sustainable harvesting, as practiced in Pokhara, Nepal; offering subsidies for organic agriculture and milk production as seen in Menorca, Spain; recognizing provenance and specialized production through schemes such as GI certification and branding in Galicia, Spain; and encouraging corporate social responsibility (CSR).

- **Facilitating activities — education, training and capacity development**
  The importance of activities that raise awareness and educate different actors cannot be overemphasized. Almost all respondents stated that higher awareness of challenges from loss of biodiversity and ecosystem functions over the past decade led to more biodiversity-friendly practices. Respondents from Colombia, India and Kenya undertake environmental education programmes for various stakeholders, noting that these initiatives have influenced lifestyle choices towards sustainability. In Menorca, Spain, for instance, schools are being encouraged to source bio-certified products, which is raising the awareness of children, producers and wider consumers about the benefits of sustainable production and consumption habits. This also builds a case for investing in training activities that will enable inclusive decision-making, as well as adaptive management and monitoring of socio-ecological systems.

Key Social and Ecological Outcomes Arising from Changes to the Landscapes

- Monocropping or much simplified cropping systems.
- Loss of ecosystem functions.
- Monopsonistic and similar trade partnerships.
- Revitalization attempts towards sustainability with alternate vocations and value added activities for different markets.

- **Monocropping or much simplified cropping systems**
  There has been a shift from complex and diverse cropping systems that involved a broad range of varieties, species and ecosystems to meet multiple food, nutritional, health, livelihood and cultural needs of communities. Currently, due to multiple factors including political directions, engagement with mainstream economies and outmigration of people, most sites produce only a selection of varieties of crops and maintain lesser breed selections. Furthermore, intensive agricultural and livestock-rearing practices have become the norm, supported by high input subsidies. Where integrated activities are still practiced, there is evidence of some complexity in the production system where interconnectedness between people and nature is sustained. However, even in sustenance farming, there is more engagement with demand-sensitive commercial production.

- **Loss of ecosystem functions**
  The shift in production practices and the rise of other industrial and infrastructure activities in the landscapes have led to various adverse impacts such as soil and river pollution, sedimentation, and loss of biological diversity and ecological connectivity. This has resulted in degraded ecosystem integrity and affected several ecosystem functions, viz., loss of species, drying of wells and impaired

water regulation. This impacts health, nutritional security and species interactions, increasing the risk of diseases and pest incidences.

- **Cultural recession due to loss of resources and connections with nature and marginalization of local people**
  Issues such as outmigration and influx of actors who do not hold relational values with the landscape have often resulted in loss of biocultural ties. The lack of patronage and inadequate support for traditional practices and areas considered less productive but with high local cultural significance also contribute to loss of cultural values that have had an impact on the stewardship of nature. An example is the case of Bulun in Nepal, where outmigration has left the place with a largely elderly population, affecting crop production activities and subsequent income reduction.

  A related issue of concern has been the sidelining of different priorities and the impacts of changes on different actors. For example, water table reduction impacts all, but women are more affected as they are tasked with fetching water for drinking. This can negatively impact their education, income generation potential and participation in community level decision-making processes.

- **Monopsony and preferential trade partnerships**
  Production decisions are linked to external market demands and to the degree of support provided for producing different products and commodities. Often, the produce is bought by a single or collusion of purchasers, who wield a high degree of influence on the decisions made by communities relating to their economic activities.

- **Attempts at revitalization with alternate vocations**
  Several respondents have reported that over the last decade, conscious efforts have been made by the communities with support from other actors to move towards more sustainable practices that enhance biodiversity and ensure coping strategies to mitigate different types of risks, including climate, environmental, economic and social. Examples include persuading consumers to prefer bio-certified, sustainable produce from a geographical region. These efforts are complemented by initiatives that promote awareness, education and tourism activities such as agrotourism, nature hikes, eco-lodges, nature sports (like snorkelling, kite surfing, hikes and adventure activities), and cultural events or festivals that celebrate traditional SEPLS activities, among other models. This process has reinforced and revived traditional practices while fostering innovations that integrate technologies and insights from various knowledge sources. Additionally, it aims to raise awareness among stakeholders to take measures to conserve biodiversity and maintain ecosystem integrity through collaboration.

- **New activities and value addition for different markets**
  In a bid to enhance income and livelihood security in a sustainable manner, communities seek to add value to their produce and customize them for different markets (domestic, rural, urban, export) and market segments (women, men, children, elderly etc.). New activities such as ecotourism, leisure holidays and food tourism cater to a growing consumer appetite for nature-based experiences that has progressively evolved from "sun and beach" tourism (Balmford et al. 2009). Often facilitated by non-governmental and similar organizations, these activities have brought in income, increased patronage for specialized skills in SEPLS (e.g., traditional medicine specialists) and a rise in ex-situ and in-situ conservation. This could reduce the pressure to expand primary production activities at the cost of multiple ecosystem benefits. However, unregulated ecotourism activities have also led to a rise in pressure on water, plastic pollution and incidents of human-wildlife conflict.

Issues Requiring Urgent Attention

- Competition and pressure from large-scale, commercial producers engaged in activities in the same sector.
- Inadequate or absent support for the necessary inputs and technological know-how.
- Insufficient recognition of traditional knowledge and practices.

Respondents identified several areas that underline the loss of biodiversity and impair locally led production activities. A major factor is competition and pressure from large-scale, commercial producers engaged in activities in the same sector. For instance, subsidies and incentives given to large-scale commercial agriculture across the value chain have hurt small-scale, diverse production systems (as seen in Taiwan, Province of China, Colombia, Greece, and Wayanad, India).

Another is the inadequate or absent support for the necessary inputs and technological know-how to transition

to more sustainable practices. This includes accessing appropriate technology and availability of training to use such technologies. Other examples include inadequate incentives for cultivating native crop varieties, rearing native breeds, traditional fishery activities, organic manure and less polluting inputs, as well as access to credit that factors in sustainability-related benefits, risks and tax breaks. There is also lack of support for activities related to quality standards and marketing of artisanal products as seen in the case of cheese marketing in Menorca, Spain. The common refrain across all respondents is to level the playing field between different types of inputs available in the marketplace, enabling more rational and optimal choices and decisions regarding the production and management of resources and landscapes or seascapes.

Respondents also noted insufficient recognition of traditional knowledge and practices in policy decisions related to land and sea use, management and governance. Even while there is acknowledgement of the benefits of principles of co-management, co-design and transdisciplinary approaches (Swiderska 2006), active consultation with communities on activities and spaces they are custodians of is still not as common as desired (UNESCO 2019).

Finally, there is a need to determine optimal limits to providing incentives or subsidies to activities (e.g., ecotourism) to avoid the newly promoted activities becoming an obstacle to achieving socio-ecological resilience.

Reforming Subsidies and Incentives to Foster Socio-Ecological Resilience

- SEPLS actors are often outcompeted by bigger, commercial players in the same sector due to incentives for production activities that favour monocropping, homogeneity and limited support for culturally important production systems.
- There is a need to distinguish between industrial and small and medium scale production systems, and design support mechanisms that address the priorities of SEPLS and similar systems.

Socio-ecological resilience ensures high capacity of socio-ecological systems to adapt and recover from various shocks, whether economic, political or environmental. It factors in contextual realities relating to socio-political and environmental circumstances in which decisions are made. A close reading of multilateral development and conservation goals points towards this ambition. As reforms to fiscal incentive mechanisms are being sought to enable transformations towards sustainability, the following are some areas identified by the respondents as relevant to ensure socio-ecological resilience in their contexts.

Reform assessment criteria for support and monitoring of activities

It is crucial to develop and adopt creditworthiness criteria and credit access for sustainability-aligned activities. An important precursor would be to distinguish between industrial production systems and small-scale production systems (whether agriculture, livestock production or fisheries), and build in distinct mechanisms for the design, implementation and use monitoring of support mechanisms. Credit access could include inter alia support for the conservation and restoration of ecosystem-related efforts, promotion of sustainable production practices such as sustainable animal husbandry and pastoralism, breed conservation and crop production practices. It is also necessary to include support for activities in areas not considered suitable for mainstream production activities but actively utilized by local communities for various other production and cultural purposes.

Occasionally, eligibility criteria for subsidies require parts of SEPLS to be removed, as seen in Galicia, where culturally important landscape elements such as hedgerows or tree lines are removed to improve eligibility for subsidies promoting production intensification. In addition, some activities, whether traditionally practiced or introduced into the SEPLS, could be problematic if they are not following sustainability principles. For example, the pursuit of traditional aquaculture in the Philippines has now been phased out for mangrove restoration activities, while in Uganda the activity was introduced to meet the demand for fish. This also brings forth the argument that decisions relating to promoting different activities need to be made based on clear identification of trade-offs that arise in specific contexts. A related component would be to embed support for resource stocks monitoring, ecosystem functioning and human well-being parameters to ensure locally led assessments and quicker actions as needed.

Rationalize subsidies

Several existing subsidies have had both positive and negative impacts on the socio-ecological systems. The negative impacts occur primarily due to misalignment of support and desired outcomes (e.g., free electricity, often not useful in the face of unstable power supplies). Crop intensification of introduced crops affects resource availability in the sites (as seen with water in Wayanad, India), affecting some

stakeholders more than others. Therefore, rationalizing subsidies needs to focus on:

- Transitions to renewable energy use, especially for use in technology required on production sites to enable self-generated access to electricity for various activities from farming to value addition and marketing.
- Incentivize the availability and access to environmentally friendly inputs and factors of production (fertilizers etc.).
- Promote the development of and access to hybrid finance, including schemes like Payment for Ecosystem services (e.g. Nan'an).
- Commercialize native fish varieties, animal breeds and crops.
- Local products and crafts across the value chain.
- Results-based payments rather than subsidies. i.e., moving away from charity to compensation for undertaking desirable actions in managing socio-ecological systems (e.g., support for integrated landscape approaches and sustainable production).
- Rationalize public procurement policies towards sustainably produced products.
- Incentivize partnerships with sustainability expertise by identifying and strengthening partnerships between different stakeholder, expert and influencer groups to promote sustainability-linked goals (e.g., all players involved in the hospitality sector could form alliances to increase procurement of sustainably produced products and engage in less polluting activities). This may require a combination of certification schemes, subsidies for eco-friendly inputs, value addition and incentives for setting up profitable enterprises.
- Incentivize inter-sectoral and departmental collaboration.
- Support for appropriate technology transfer and adoption.
- Support for capacity development and training.

Transformational change towards sustainability requires a good awareness of sustainability issues, integrated approaches to decision-making, bridging different worldviews, and fostering policy alignment and coherence to synergize support across multiple activities and stakeholders in any value and decision chain. It includes experiential and peer learning approaches that enhance awareness of the interconnectedness of people with nature, and leverage the links between cultural values and sustainability (Piñeiro et al, 2020; Nishi et al, 2021; Hörisch et al, 2014). This enables development and strengthening of partnerships, creating more inclusive, equitable and representative engagement. Investments and support for capacity development, training and customized communication programmes are necessary for all actors with a stake in SEPLS activities, whether as producers, consumers, managers or regulators.

Conclusions and Policy Suggestions

The ambitious yet intuitive goal of living in harmony with nature that the United Nations (UN) adopted in 2009 underscores the basic principle that cuts through all sustainability-related goals. This respects and acknowledges that people have the agency to strive towards flourishing lives while ensuring minimal harm to nature. It implicitly embeds support and engagement with all stakeholders in equitable decision-making, ensuring that sustainable practices are followed across value chains.

However, reality is not close to this ideal scenario. Often, seeking to maximize profits and optimize efficiency of production, economies of scale and comparative advantages in international markets, there is inadequate support for activities that are important to local communities. The survey respondents clearly articulate that over the last 50 years, there have been large-scale conversions in resource diversity, ecosystem integrity, and consequently, their well-being due to reduced control over their economic decisions, cultural practices and access to preferred resources and ecosystems within their landscapes.

They also point out that they are outcompeted by bigger industrial players in the same production sector, facilitated by large-scale financial investments, subsidies and supportive institutions for production, value addition and marketing. Artisanal creations are subject to unaffordable and unreachable standards, underlining the need for access to appropriate technologies, and fit-for-purpose standards and certification processes.

Consultations and co-design principles are not common, with patriarchal attitudes still allowing politically dominant actors to determine what is good for the community. This can result in well-intentioned but misplaced priority setting and support mechanisms relating to decisions on nature and people, compromising several aspects that contribute to socio-ecological resilience.

This presents two challenges: (i) non-recognition of diverse worldviews and priorities of those who do not have a strong political voice, even if their stakes to the landscape are high; and (ii) lack of awareness of the trade-offs that emerge from supporting different activities in a landscape or seascape. Addressing both these challenges requires investing in capacity development and training of all relevant stakeholders on the cause-effect interlinkages between on-site and off-site decisions, actions, resources and human well-being.

The impacts on the landscapes arise from both actions within and outside the sites, often supported by various facilitating instruments, including subsidies (for large infrastructure, chemical inputs, monocropping, intensive farming, livestock production etc.), incentives (viz., tax breaks, marketing support, preferential financial access etc.) and policies related to rights to lands, territories and resources. In the last decade, with the rising frequency of natural calamities and the increase in risks to livelihoods from loss of biodiversity and ecosystem functions, several respondents report growing interest in engaging in diverse production systems, restoring ecosystems, ensuring the conservation and sustainable use of biological resources, and focusing on alternative livelihood options that build on local assets (resources, knowledge, skills and innovations) with input from external sources (technology, expertise, finance etc.). Additionally, requirements for reporting on sustainable practices for private sector entities are obligating companies to be more mindful of their production and distribution practices (GSSB, 2024a; GSSB, 2024b).

Significant demographic changes are seen in landscapes where the working population (especially youth) tends to migrate in search of better incomes. This reduces the availability of people from the native population to undertake different activities in the landscape, and leads to loss of knowledge on the use and management of biodiversity and ecosystems. However, the increasing consumer interest in eco-tourism and leisure holidays, and the promotion of sustainably produced and traditional products have led to a recalibration of priorities by the population. Restoration activities and the maintenance of biodiversity are being prioritized, as they help to spread the risks associated with securing stable incomes. Furthermore, the role of biodiversity in adapting to environmental and climate change and to achieving multiple well-being parameters, including cultural connections, is also taken into account.

Access to appropriate technology and finance remains a challenge for several activities within SEPLS. It is necessary to rationalize existing support for technology to reorient production and management decisions towards more sustainable outcomes. This covers a wide range: from support for sustainable technologies such as renewable energy use in production and value addition activities, to support for certifying sustainable products to influence and cater to consumer demand. Potential policy-driven solutions include the following:

1. Adopt integrated approaches to manage trade-offs and streamline subsidies and incentives

It is desirable that decisions on land and sea uses and related governance mechanisms reflect the multiple interests of diverse actors within a socio-ecological system. It is crucial that planning systems deploy inclusive and participatory approaches (e.g., landscape approaches) that allow deliberations between different actors, interests and consequent trade-offs. This would also help to leverage potential synergies that exist across sectoral activities, technologies, and human and financial resources.

2. Level the playing field for sustainability-aligned solutions

For the most part, the current mainstream processes relating to environmental and developmental challenges prefer solutions that privilege narrow interests at the cost of biodiversity and sustainable land and sea management. As highlighted through the responses in the study, pursuing more sustainable options is hampered by higher costs and poor technical and policy support systems. Even where endogenously led success stories are present, upscaling such initiatives requires necessary and sufficient resources, as provided to the commercial actors within similar sectors.

3. Identify and support necessary and fit-for-purpose activities

It is evident that the types of support required in different socio-ecological contexts vary. Planners can hope to realize more co-benefits by providing timely and appropriate support (viz., appropriate and accessible technology, finance, human resources and facilitative institutions) for activities important to landscape actors.

4. Invest in awareness raising and developing capacities across decision-making chains

Understanding the interconnections between different activities, their support systems and implications on the well-being of people and resilience of socio-ecological systems is not an easy task across the entire chain of decision-making related to the environment or development. It requires acknowledging the diverse types of expertise available across different actor groups, instilling an openness to collaborate, and motivating a sense of collective responsibility in order to ensure that different policies and actions across sectors are aligned, coherent, equitable and non-dismissive of the cultural and relational ties that people have with nature.

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Impact of Subsidies and Incentives on Socio-Ecological Production Landscapes and Seascapes (SEPLS)
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APPENDIX I: Questionnaire — Research on the Impact of Subsidies and Incentives on the Integrity of Socio-Ecological Production Landscapes and Seascapes and Similar Areas

Notes for respondents:

- Please fill in details for only one site. If multiple sites are being reported, please reproduce tables fro multiple sites.
- Please note that only approximate quantitative data is requested.

1. Name and contact details of respondent.

Focal point name / surname:

Organization:

Address:

Email:

2. Please provide basic details about the site (please duplicate the form for multiple sites).

Name:

Location:

Area (Hectares):

3. What are the major uses of the land/seascape? For instance, primary production, infrastructure, roads etc. Please specify. Also, specify if changes have happened in the last 10 and 50 years on the land/sea uses (add additional rows as necessary).

Major Uses of the Land/Seascape			**Remarks (e.g. reasons for changes)**
Current	**Changes in the last 10 years**	**Changes in the last 50 years**	
E.g. farming rice and vegetables in different seasons Aquaculture – mining – dam	E.g. moved from mixed farming of staples, fruits and vegetables and livestock to specialized crops Moved away from millets to rice cultivation More industries	E.g. more diverse cropping system/ rotational farming practices	Market integration, more incentives for high yielding varieties, input costs cheaper **Please note that this is only an example to stimulate reflection**

4. What are the major primary production-related activities in the site (e.g. crop cultivation, livestock production, forestry, fisheries, etc that are based on natural resources on land, rivers and oceans. etc. Can include multiple activities)? Give details of major products, extent of production and percentage of population in the site employed in the activities. (Please note that it is fine if there is an overlap of area for different activities or if there is an overlap of population engaged in different activities, as the cases may be. The idea is to capture the level of engagement in such sites on primary production activities.)

Production activities (crop cultivation, livestock production, forestry, fishery and others). Add additional rows as necessary	**Products**	**Extent of production (area and % of total area of the land/ seascape)**	**Approximate % of population employed in the activity (irrespective of whether native to the site or not)**	**Approximate % or share of community income that comes from the activity**	**Changes over the last 50 years in the products produced (e.g., crop species, breeds, forest species, etc)**	**Remarks, if any**

5. What are the major services-type activities pursued in the site (e.g. ecotourism, education, etc that are based on natural resources on land, rivers and oceans. Can include multiple activities)? Give details of major activities, percentage of the population in the site employed in the activities, and changes in the last 50 years with reasons. (Please note that is fine if there is an overlap of area for different activities or if there is an overlap of population in different activities, as the cases may be. The idea is to capture the level of engagment in such sites on services.)

Service activities (ecotourism, education, guided bioprospecting etc.)	Approximate % of population employed in the activity (irrespective of whether native to the site or not)	Changes over the last 50 years	Remarks (e.g. reasons for change etc.)

6. What types of financial and non-financial incentives exist for production activities? For example, input subsidies, credit, special schemes through policy regulations, production incentives, etc. What are the impacts on SEPLS—CLS/resources, employment, culture, equity, etc?
(Please restrict to only government-supported incentives. Private sector enabled aid and grants and such support may be facilitative and can be included in the table for any other comments.)

Production activity (e.g. crop cultivation, livestock production, fishery, forestry, etc.)	Financial incentives/ subsidies (include subsidized access to inputs, loans related to activities, research and development, special prices, etc.)	Impacts on SEPLS & CLS (both ecological and social)		Non-financial incentives (e.g. access to markets, technologies, branding, partnership building, etc.)	Impacts on SEPLS & CLS (both ecological and social)		Remarks, if any
		Positive	Negative		Positive	Negative	
E.g. Fishery	• Discounted loans for boats and gears • Minimum support price assurance during lean season • No fishing regulations during spawning season • Low cost credit access for value addition	Increase in income from value addition due to credit access	Commercial fishing increased due to opening of access restrictions	Fast track licenses for sustainable harvesting of fish	Native fish population stable Some youth returning as income opportunities are better	Commercial fishing also targeting species not usually harvested	**Please note that this is only an example to inspire reflection**

8. What types of financial and non-financial incentives exist for other industrial activities in the landscape? For instance, export subsidies, tax breaks, policy regulations, production incentives, etc. What are the impacts on SEPLS & CLS/resources, employment, culture, equity etc.

Other industrial activities in the landscape (e.g., commercial mining, infrastructure projects, other industrial-scale activities, etc)	Financial incentives/ subsidies (including subsidies access to inputs, loans, special prices, etc)	Impacts on SEPLS & CLS (e.g., diversity of resources, ecosystem functions, employment, culture, equity)		Non-financial incentives (e.g., access to markets, technologies, branding, partnership building, etc)	Impacts on SEPLS & CLS (e.g., diversity of resources, ecosystem functions, employment, culture, equity)		Remarks, if any
		Positive	Negative		Positive	Negative	
E.g. Mining	Tax break, special economic zone	Higher employment opportunities	Loss of sense of identity Loss of clean water and clean air	Regulations mandating mineral exploitation	Branding and certification for sustainable use and fair trade	Culturally important sites degraded	**Please note that this is only an example**

9. How has consumer demand affected production decisions and land use decisions (domestic demand and external demand)?

Production activities		Consumer profile (indicate demand from domestic, export, other provinces, processing industry etc)		Reasons for change	Impacts (diversity of resources, ecosystem functions, food security, sense of place, identity, sense of control, employment, prosperity etc)		Remarks, if any
Current	20 years ago	Current	20 years ago		Positive	Negative	
Rice farming	Millets Tapioca Corn Legumes	Local: about 50% Nearby province: 30% Agents (for larger markets including exports): 20% Govt: 10%	Local: about 70% Traders from other provinces: 30%	Policy directives to promote rice cultivation. Highly regulated / subsidized prices for consumers.	More income More employment More partnerships	Less diversity of resources Pollution Dietary diversity reduced	**Please note that this is only an example**

10. What subsidies and incentives within and across sectors would you consider need to be reformed or strengthened and transformed to ensure sustainability and living in harmony with nature in SEPLS/CLs?

Sector (e.g. Crop cultivation, livestock production, forestry, infrastructure, mining etc)	Subsidies/Incentives needing reform (e.g. reduce support for some types of activities etc)	Subsidies/Incentives that should be strengthened (e.g. enhance credit for sustainable agriculture, climate-smart production etc)	Remarks, if any

11. Any other comments?

APPENDIX II: Member Organizations of the IPSI or AMNC Networks that Participated in the Survey

Ancient Grains Community, Italy (Guido Gualandi)
Back to Nature, Nepal (Dambar Pun)
Community Based Environmental Conservation, Kenya (Edward Mwamuye)
Department of Social Forestry and Forest Governance, College of Forestry and Natural Resources, University of the Philippines Los Baños, the Philippines (Leni D. Camacho)
Fundación FUNINDES, Colombia (Angie Patiño Montoya)
Grup Balear d'Ornitologia i Defensa de la Naturalesa (GOB) Menorca, Spain (Jara Febrer)
Higher Polytechnic School (EPS) of Engineering, University of Santiago de Compostela, Spain (Emilio Diaz Varela)
Hualien County Fuli Township Farmers Association, Taiwan, Province of China (Hao Chun Yu)
Integrated Organic Farming Systems Research Centre (IORC), Faculty of Agriculture, Brawijaya University, Malang, Indonesia (Uma Khumairoh)
Jawaharlal Nehru University, School of Environmental Sciences, India
Mediterranean Institute for Nature and Anthropos (MedINA), Greece (Lily Mordechai)
MS Swaminathan Research Foundation, India (Anil Kumar N)
Nature and Livelihoods, Uganda
Nepal Indigenous Nationalities Preservation Association (NINPA), Nepal (Ngwang Sonam Sherpa)
Neotropical Montology Collaboratory, University of Georgia, United States of America (Fausto O Sarmiento)
Suganthi Devadason Marine Research Institute, India (J K Edward Patterson)
Tribhuvan University, Nepal (Mohan P Devkota)
Tse-Xin Organic Agriculture Foundation, Taiwan, Province of China (Yu-Chun Chan)