

# POLICY BRIEF

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## The Biodiversity–Health–Sustainability Nexus: Integrated Solutions from Landscapes & Seascapes

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### Highlights

Nexus perspectives help to clarify trade-offs and maximise synergies between policy options to move towards more sustainable futures. These approaches are practiced in socio-ecological production landscapes and seascapes (SEPLS) where integrated solutions have emerged to conserve biodiversity and sustain human health and well-being. They provide valuable lessons for more coherent and inclusive policymaking for sustainable development.

#### Recommendations:

- Identify nexus hotspots through co-producing knowledge, learning mutually, combining resources, and developing capacities.
- Ensure the multi-dimensional well-being of local communities, and the economic viability of interventions to maintain stakeholder engagement.
- Strengthen community-based governance, and apply adaptive approaches for policy coherence and fair, equitable incentive mechanisms.
- Contextualise global indicators by reflecting community needs and local adaptability, and engage in whole-of-society approaches.

### Nexus Approaches for Transformative Change

The 2030 Agenda for Sustainable Development calls for integrated solutions to balance economic, social, and environmental dimensions, with a specific target (17.14) for enhancing policy coherence under the SDGs (UN 2015). This is also reflected in the development of the Post-2020 Global Biodiversity Framework. The Kunming Declaration adopted by Parties to the Convention on Biological Diversity (CBD) in 2021 stresses the urgent need for integrated action for transformative change through policy coherence to achieve the 2050 Vision for Biodiversity (CBD/COP/15/5/Add.1).

Despite these commitments, effective policy integration is yet to be achieved (IPBES 2019). A key challenge is the trade-offs involved in pursuing pathways to achieve multiple objectives for sustainable development. The COVID-19 pandemic has exposed this complex challenge — ecosystem changes benefit some populations (e.g., providing food security and medicinal treatments) at the expense of others, often the most vulnerable (Gaynor & Wilson 2020). In our interconnected world, the projected increase in frequency and impact of pandemics compounds threats from global inequality to health and well-being. These could be exacerbated by new patterns of consumption — such as preferential consumption in developed countries relying on wild resources (IPBES 2020).

As understanding of health–ecosystem interlinkages further develops, the concept of One Health is gaining widespread attention. Defined as “an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems” (OHHLEP 2021), it seeks to operationalise a nexus approach — a way to advance integrated solutions across multiple sectors to deliver better outcomes for health and well-being. Yet there remain challenges in practising the nexus approach and mainstreaming One Health, such as resource allocation and communications (Lajunie and Morand 2021).

Nexus thinking evolved in the realm of natural resource management as an approach to better manage trade-offs and develop synergies. In particular, it has recently been applied in the context of biodiversity conservation and human health (IPBES 2019). Nexus approaches emphasise the dynamic interdependencies of ecosystem components and human uses across spatial scales and sectors.

This policy brief synthesises on-the-ground strategies for policy coherence, drawing from experiences and lessons in managing socio-ecological production landscapes and seascapes (SEPLS) where nexus approaches are practised

### Angkorian Landscape, CAMBODIA

In this river catchment, upstream forest exploitation has led to a decrease in downstream groundwater, demonstrating complex trade-offs and compounding effects. It has negatively affected water quality and quantity in the upper catchment despite providing material gains (e.g., forest products), and constrained the downstream system across water, agriculture, and tourism sectors. Increased tourism in Angkor Archaeological Park has also boosted demand for water, adding stress on groundwater resources and endangering the foundations of temples as cultural assets. The COVID-19 pandemic has led to a decline in tourism, reducing the revenue available for water management. But increased return migration has raised demand for food, land, water, and jobs. In combination with border closures and greater health awareness, however, this challenge has opened opportunities for promoting local food production and associated cultural practices to enhance food sovereignty. But questions remain: who should pay for the benefits of water and forest management, can the cost of local food production be paid, and how can the ownership of food, knowledge, and culture be secured?

to meet multiple needs of local communities. It offers recommendations for policymakers and other stakeholders to operationalise One Health and other relevant approaches (e.g., nature-based solutions) to advance policy coherence for sustainable development.

## Integrated Solutions in Socio-Ecological Production Landscapes & Seascapes

### Trade-offs in SEPLS Management

In pursuing multiple goals in SEPLS management some goals may need to be compromised to pursue others, and these trade-offs cut across sectors, spatial and temporal scales, and governance levels. There are at least three main types of trade-offs. First, they occur between multiple ecosystem services (e.g., provisioning, regulating, and cultural services), as well as between quantity and quality for each service. For instance, prioritising quantity in food provision (e.g., mass production of crops) could compromise quality (e.g., food contamination from agricultural chemicals), impacting both the ecosystem and human health. Trade-offs also exist between beneficiaries of these differentiated ecosystem services (e.g., those in the upstream vs. the downstream of a river). This leads to further trade-offs between different dimensions of human well-being — including material, relational, and subjective — across stakeholders or even within a single community or individual. Importantly, these trade-offs are political and gendered. Those with greater political and economic power have better access to more and higher quality ecosystem services than others (e.g., the affluent have good nutrient intake while farmers suffer negative health impacts without appropriate compensation).

### Nexus Approaches in SEPLS

In SEPLS, a nexus is understood as the ability of local stakeholders to access resources and ecosystem functions that contribute to human health and well-being. They include food security, medicinal resources, rights to access culturally important areas, availability of diverse resources, and ecosystem integrity. It relies on shared responsibility for natural resource conservation and sustainable use through action such as ensuring spatial connectivity, maintaining biodiversity and ecosystem integrity, and enhancing livelihood security and social-ecological resilience. Uptake of such interventions requires inclusive planning by stakeholders in various sectors and groups (e.g., academia, the private sector, government, and civil society). It also requires integrating traditional and modern knowledge systems to inform management decisions, and respectfully acknowledging the aspirations and

institutions of local communities. For example, communities in the Food and Milpa Landscapes of Yucatan, Mexico reverted to milpa-based diets (i.e., corn, beans, squash, honey, and other products) to address a rise in lifestyle diseases. They developed local strategies to address both environmental and human health issues, and invest in more sustainable biodiverse production based on traditional practices and knowledge.

## Policy Recommendations

Strategies for concerted efforts towards sustainability should minimise inevitable trade-offs and maximise synergies through promoting shared visions of sustainable futures. Nexus approaches have strong potential to advance such strategies, as evident in their use to manage the mutually interdependent elements of SEPLS. Effective implementation of nexus approaches entails the following four steps.

### 1. Identify nexus hotspots through knowledge co-production by stakeholders who learn from each other, bring together resources, and develop their own capacities.

The first step is to collectively identify a nexus hotspot (i.e., a vulnerable area of the nexus wherein trade-offs are established at a given scale), taking into account existing and potential hotspots at multiple scales (Mohtar & Daher 2016). To address high-level complexity and uncertainties, which often lead to unintended consequences and equity questions, it is crucial to facilitate co-production of knowledge by a variety of stakeholders. This allows for peer learning, intra- and inter-generational knowledge transfer, and capacity development for empowered decision-making and action.

Where trade-off impacts are directly felt and managed, it is essential to incorporate experiential knowledge of local communities to make SEPLS more resilient. Although such knowledge is not always available in an easily communicable form, methodological development for documentation, synthesis, and visualisation (e.g., foodway documentation, citizen science) would aid the nexus analysis. Building or taking part in a loosely connected platform (e.g., regional initiatives or global networks) can incrementally facilitate dialogue and learning across a wider range of stakeholders who value and mobilise different resources for nexus analysis.

### 2. Ensure the multi-dimensional well-being of local communities and the economic viability of interventions to maintain stakeholder engagement.

Stakeholders must be motivated to act on the findings of nexus analysis. The process of co-producing knowledge

may help to change mindsets and behaviours, increasing understanding of trade-offs as well as their rights and responsibilities in taking action for sustainability. Empowering local stakeholders in the process will enhance their subjective and relational well-being (emergent from relationships and connections to nature and people). Yet their material well-being is equally important. The long-term economic viability of interventions needs to be safeguarded, particularly for those who are highly susceptible to market conditions. This requires cautious approaches, including safety-net measures (e.g., social security systems and micro-insurance), and step-by-step interventions combining immediate managerial and financial support with longer-term capacity development.

### 3. Strengthen community-based governance, and take adaptive approaches to enhance policy coherence and fair and equitable incentive mechanisms.

Actions by different stakeholders must be strategically steered to handle the nexus across sectors and levels. Government authorities play an important role in enhancing policy coherence and implementing fair and equitable mechanisms for incentive creation and benefit sharing. However, policymaking and implementation should be informed by others, particularly the local communities where integrated and inclusive approaches are practised.

An effective approach to address interconnected issues at higher governance levels is to expand locally integrated solutions. This ensures that negative trade-off impacts on the ground can be predicted and prevented. Supporting and strengthening community-based governance institutions is a crucial first step to facilitate endogenous development and make interventions more sustainable. To mainstream local institutions into higher-level policy, phased and adaptive approaches help to build on local experiences and lessons but also mobilise a broader range of knowledge, expertise, and resources. These approaches should involve both short- and long-term measures (e.g., immediate income compensation, consultation among stakeholders, administrative support, and awareness raising).

### 4. Contextualise global indicators by reflecting local needs, and engage in whole-of-society approaches throughout the planning cycle.

The progress and results of management should be monitored and evaluated in a locally tailored and contextualised manner, and then reported to high-level policy arenas. This helps to ensure local actions are aligned with national and global policy goals for sustainable development. A critical challenge is to reflect the rich

diversity of local contexts in terms that are relevant to the format and language of policy forums, while assessing multiple synergies and trade-offs arising from complex social-ecological connections. No single methodology or standardised indicators would be applicable to all contexts, but globally accepted frameworks and indicators (e.g., Livelihood Vulnerability Index, Social Vulnerability Index, planetary-boundary indicators) can be adapted or downscaled to local settings. Inclusive and participatory approaches are required across the decision-making phases of the planning cycle (i.e., planning, implementation, monitoring and evaluation, review, and reporting).

Whole-of-society strategies can be leveraged to engage the community in localising global indicators to operationalise traditional knowledge systems and enhance their capacities. Other examples are peer learning, promoting co-responsibility over sectoral priorities, and bridging institutions to negotiate and reduce conflicts over resources. Further investments should be made, however, in data collection, capacity development, and mainstreaming of these whole-of-society approaches to bolster the entire planning cycle considering multiple sectors and their overlapping agendas.

#### Notes

This brief is based on research conducted by UNU-IAS with the support of the Ministry of the Environment, Japan, as a collaborative activity involving experts from the International Partnership for the Satoyama Initiative (IPSI). IPSI is a network comprising over 280 member organisations across the globe dedicated to realising societies in harmony with nature, whose secretariat is hosted by UNU-IAS. It was established in 2010 to foster synergies among member organisations working on SEPLS.

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