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POLICY ADVISORIES

SUBMITTED TO THE GOVERNMENTS OF THE SNOW LEOPARD RANGE COUNTRIES

Contents

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POLICY ADVISORY NO. 13 (UPDATED EDITION):

Sustainable Economies and Biodiversity Conservation in Snow Leopard Landscapes

(ORIGINALLY ISSUED ON OCTOBER 23, 2022)

Introduction

The ongoing loss and conversion of vast stretches of natural habitats across the world's lands, the overexploitation of wild plants and animals on land and in the oceans, pollution, climate change, and the resultant degradation of ecosystems have triggered a planetary environmental crisis and mass extinction of species (Dasgupta 2021). These changes have been precipitated by the predominant model of development that prioritizes economic growth at the expense of the environment. To arrest these changes, there is an urgent need for an approach that can promote economic development while also conserving biodiversity. This policy advisory lays out such a development model for snow leopard landscapes, which are typically multiple use areas and represent social-ecological systems.

In 2017, under the leadership of the country's President, the Kyrgyz Government hosted the second International Forum for snow leopard and ecosystem conservation in Bishkek.

As part of this event, a Green Investment Forum was hosted to showcase the investment climate within snow leopard range countries and invite the private sector to explore investment opportunities in ecologically sustainable and non-destructive sectors. The Forum laid out an opportunity for bringing investments into snow leopard landscapes that complement the conservation action on the ground, rather than act against it. The need for a development approach that prioritizes conservation for economic development was highlighted. The Bishkek Declaration 2017, issued jointly by the 12 snow leopard range countries, identified the need to stimulate green investments and mainstream green infrastructure, while striving to undertake economic valuations of ecosystem services. This advisory follows up on the proceedings of the Green Investment Forum in 2017 and provides a thought framework for policy action.

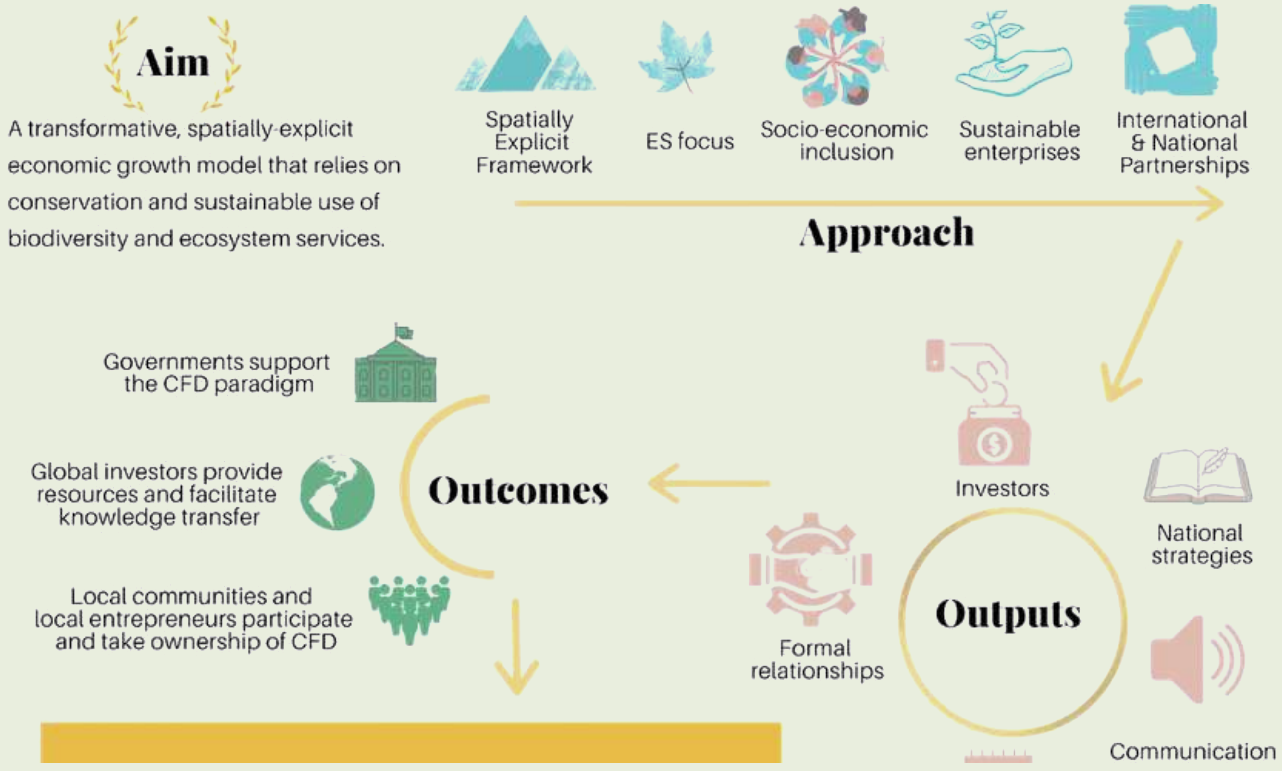
The Conservation-for-Development Approach

Global conservation efforts driven by protection and exclusion, and economic development driven by consumerism and economies of scale, have been locked in an adversarial relationship with negative consequences for each other (Folke 2006). This is where an alternate approach to global development, that synergizes economy with ecology, has the potential to help humanity move towards a more sustainable planet.

This policy advisory lays out an approach for economic development that is built on the conservation of biodiversity and the sustainable use of ecosystem services. Such an approach could ensure that harvest of natural resources stays within the limits of sustainability and planetary boundaries (Steffan et al. 2015). Rather than economies of scale, it focuses on economies of value, where premium commodity values are generated through their linkages with local ecosystems, cultures, sustainable use of ecosystem services, and contribution to biodiversity conservation.

The vision of the conservation-for-development approach is to create a transformative, spatially-explicit development model that relies on conservation and sustainable use of biodiversity and ecosystem services (Figure 1).

Figure 1: The theory of change for the conservation-for-development approach



The Conservation-for-Development Approach is meant to be spatially and contextually specific, and it rests on five main pillars designed to safeguard biodiversity, culture and economic well-being. The five pillars, further described below are:

1. **A Spatially explicit conservation framework**
2. **Ecosystem services focus**
3. **Sustainable value enterprise model**
4. **Socio-economic inclusion**
5. **Wide-ranging partnerships**

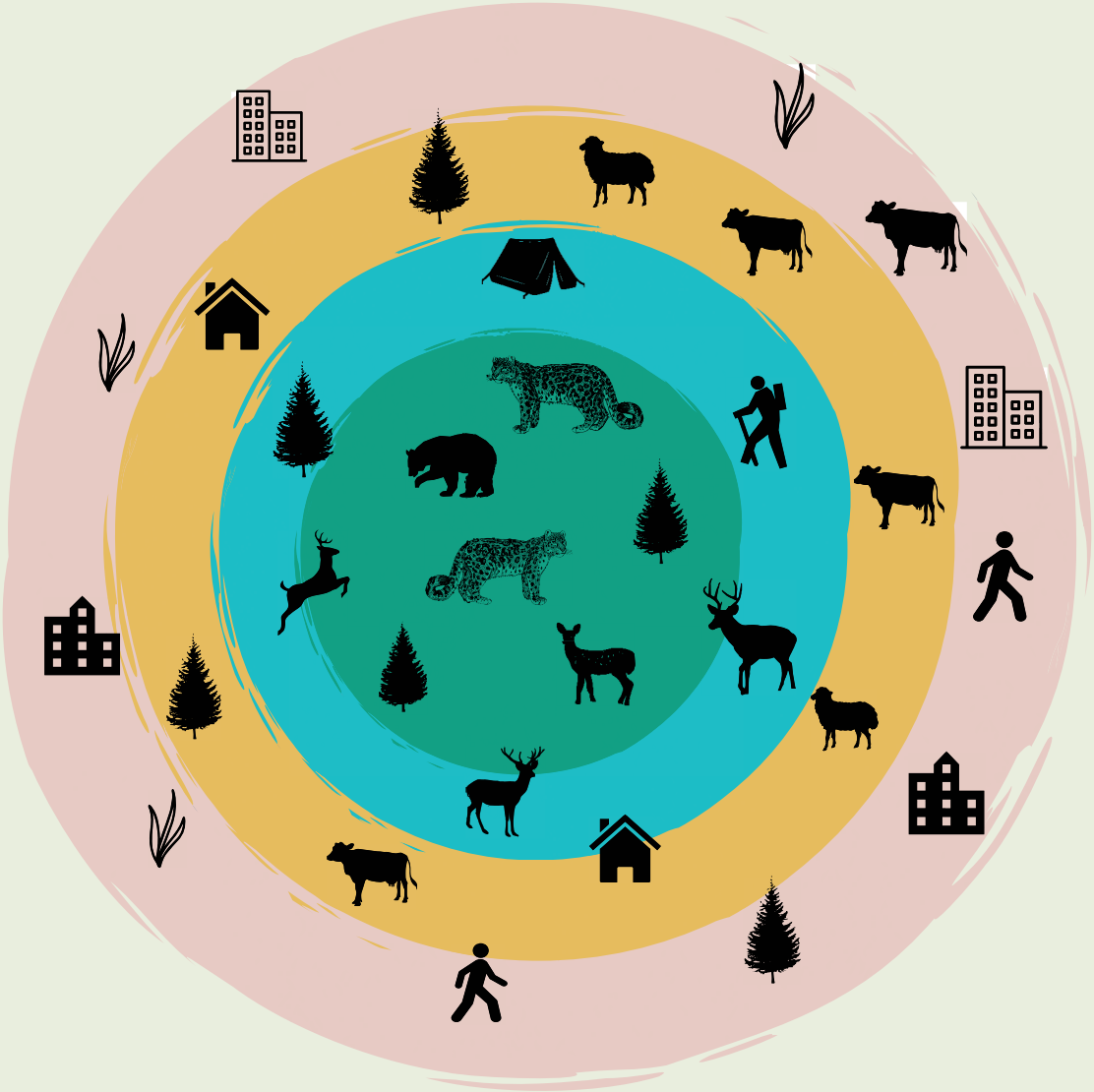
The approach can be envisaged to have short and long term outcomes. The short-term outcomes would be to garner political support for the conservation-for-development approach; attract investors for resources and knowledge transfer; and motivate and support local communities and entrepreneurs to participate and take ownership. Government support, global investors, and local partnerships can lead to the longer term impact of protecting biodiversity while ensuring economic development and improved human well-being in the landscapes of interest.

Five Pillars of the Conservation-for-Development Approach

1. SPATIALLY EXPLICIT CONSERVATION FRAMEWORK

In the conservation-for-development approach, the landscape of interest is designated as a special ecological zone and is mapped based on biodiversity values, ecosystem service stock and flows, land tenure and current human use. In partnership with local communities, relevant government authorities and other stakeholders, the landscape is categorized into three to four zones, somewhat along the lines of how protected area zonation is undertaken (Figure 2). Depending on the context, the critical wildlife zone and the ecosystem services stock zone could be combined into a single category. A zone-specific mitigation hierarchy is designed to ensure a net gain in measures of biodiversity and ecosystem functioning while meeting the goals of economic growth.

Figure 2: Mitigation hierarchy and zonation mapping of special ecological zones under the conservation for development model.



CRITICAL WILDLIFE ZONE (AVOIDANCE)

ES STOCK ZONE (MINIMIZATION)

ES HARVEST ZONE (RESTORATION)

ECONOMIC DEVELOPMENT ZONE (OFFSET)

Critical Wildlife Zone

- Priority: Biodiversity and Wildlife Conservation
- Mitigation Hierarchy: AVOIDANCE
- No permanent infrastructure or habitation
- Research, monitoring and protection
- Regulated visits, temporary camping for research
- Very low intensity livestock grazing where necessary
- Maintain wildlife populations (Nc) at carrying capacity (K) over the long-term, enable conditions where birth rates (bc) exceed rates of mortality (mc), and rates of emigration (ec) are considerably higher than immigration rates (ic) to enable spill-over effects:
  - Nc ≈ K,
  - bc > mc,
  - ec >> I.

Ecosystem Services Stock Zone

- Priority: Forest, Habitat and Ecosystem service Conservation
- Mitigation Hierarchy: AVOIDANCE / MINIMIZATION
- No activity that degrades or pollutes
- Ecosystem service stocks identified and protected
- Ecosystem services flow is ensured to downstream populations
- Research, monitoring and protection
- Sustainable, energy efficient infrastructure
- Maintain wildlife populations (Nes) close to carrying capacity (K) over the long-term, enable conditions where birth rates (bes) exceed rates of mortality (mes), and rates of emigration (ees) are higher than immigration rates (ies) to enable spill-over effects: - Nes ≈ K, - bes > mes, - ees > yes.

Ecosystem Services Harvest Zone

- Priority: Ecosystem Services Harvest for Human Welfare
- Mitigation Hierarchy: MINIMIZATION / RESTORATION
- Livestock grazing, bee keeping, sustainable harvest of other ecosystem services such as clean water, etc.

- Research, monitoring and protection
- Low impact infrastructure in support of livelihoods
- Estimate the desirable wildlife population size (Neh), which will be a function of the trade-off between conservation and ecosystem service harvest objectives – and ensure that populations are maintained around that level: -Neh = K – f(H), - beh + ieh ≥ meh + eeh, - where f(H) is a function by which the wildlife population size is reduced below carrying capacity as a result of an acceptable level of harvest of provisioning ecosystem services.

Economic Development Zone

- Priority: Industrial and Agricultural Production
- Mitigation Hierarchy: OFFSET Agro-Processing and other industry, special economic zones.

This approach of zonation, use and mitigation hierarchy can serve as the basis for conservation efforts and land use planning. Together, the critical wildlife areas and ecosystem service stock zone, for example, effectively serve the purpose similar to what a protected area typically serves.

The ecosystem service harvest zone allows for the sustainable use of natural resources (e.g. grazing, irrigation water, water for household purposes, medicinal plants, eco-tourism), while the economic development zone is dedicated to infrastructure, production, housing and other needs of enterprises. All enterprises set up in this zone must comply with this spatially explicit conservation and ecosystem services framework, in addition to meeting other relevant sustainability standards and certification. Unlike existing land use systems, however, in this model, the various zones and activities are typically linked and serve as resource catchments for each other.

2. ECOSYSTEM SERVICES FOCUS

In the conservation-for-development model, the focal landscapes are not viewed solely as engines for economic growth or sources of ecosystem services, nor are they envisioned to become inviolate areas for strict protection of biodiversity. Instead, they are viewed as coupled social-ecological systems where biodiversity as well as ES stocks must be preserved, and ES flows used sustainably for human welfare and economic growth (Figure 3).

The approach thus involves (i) developing a comprehensive understanding of society and land tenure, and an economic and socio-cultural valuation and mapping of the landscape's ES, (ii) creating a management system that optimizes the use of ES for welfare while conserving biodiversity, and protects peoples' identify and their sacred spaces, promotes societal welfare, and increasesing the resilience of the social-ecological systems, and (iii) setting up enterprises that comply with the management system and other sustainability and certification systems mandated and overseen by the governance and management bodies.

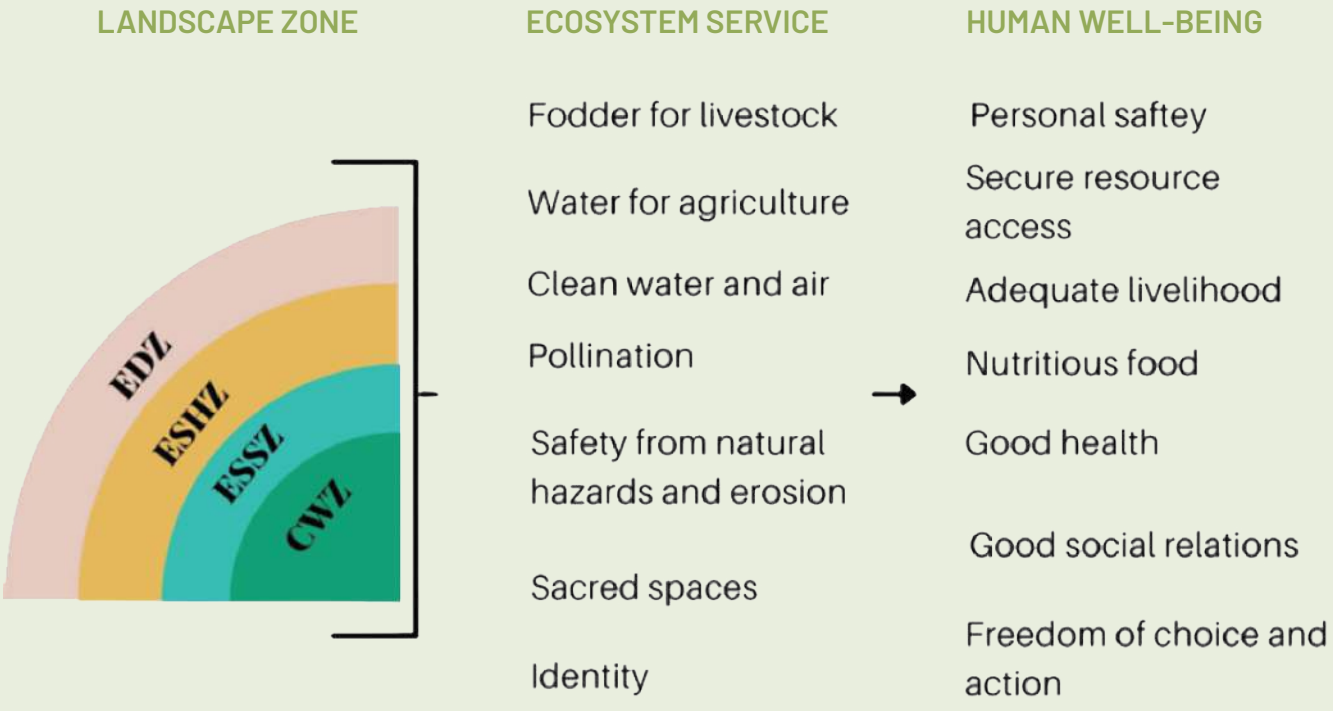


Figure 3: An ecosystem services based representation of the conservation for development model (EDZ: Economic Development Zone, ESHZ: Ecosystem Services Harvest Zone, ESSZ: Ecosystem Services Stock Zone, CWZ: Critical Wildlife Zone).

3. SUSTAINABLE VALUE ENTERPRISE MODEL

Central to the conservation-for-development approach would be a set of ecologically sustainable commercial enterprises that prioritize value over scale. For instance, local traditional strengths in agriculture can be combined with a range of innovative technologies and practices to develop a host of organic and environmentally less damaging products ranging from vegetables and fruits, fibre, to processed products (Fernandez et al. 2013). These products can tap into the rapidly expanding community of consumers in the global as well as growing regional markets (Rahmaniah et al. 2020).

Local experience in livestock management, when combined with a range of meat or dairy packing, storage and transport technologies, can afford an alternative to industrial scale animal production, and allow for the possibility of developing niche businesses that offer a range of unique products (Howe et al. 2018). There will be a need for the development of a well-trained workforce with a diverse set of industry specific vocational skills, appreciation of sustainability science and more general technology expertise and business management capabilities. Enterprises set up to impart training in these skills, while generating value for the local communities, can also form a vital component of the economy.

4. SOCIO ECONOMIC EQUITY

The conservation-for-development approach recognizes that social, economic, political, and ecological issues are interconnected. Socio-economic inequality can lead to increased environmental degradation. Critical in this approach is the inclusion of various sections of the local societies, across different societal barriers and power structures, and other relevant stakeholders. Local entrepreneurs are supported to create value-focused businesses that, in addition to generating profits, benefit a larger proportion of local community members through employment or training.

5. WIDE-RANGING PARTNERSHIPS

Participation of international networks of experts and institutions is vital for the economy. In an increasingly globalized world, the transfer and application of technologies developed in one part of the world to businesses in another part can often unlock synergies and value for local and global economies. Local enterprises can benefit from obtaining access to specific technologies and approaches in soil, water and crop management, conservation, and training that have been developed in other markets or regions.

Mutually beneficial commercial partnerships with globally experienced companies can help local entrepreneurs introduce novel business models and create unique value propositions for global and local customers.

Financial investments will be of utmost importance for growth of the enterprises. Recent times have seen encouraging growth in the community of global conservation financers driven by the need to preserve natural ecosystems while utilizing them for economic development. A range of innovative financial instruments, that include debt, equity and grant funding have been employed (Berghöfer et al. 2017). Such opportunities could help fulfill investment requirements of this green economy. Investors in this community range from high-net-worth individuals to foundations and sovereign funds.

Community-Based Enterprises (CBE's) in Conservation

To operationalize the "Sustainable Value Enterprise Model" and "Socio-Economic Equity" pillars, the establishment of Community-Based Enterprises (CBEs) is paramount.

What Are CBE's?

An enterprise is an organization engaged in producing goods or providing services for a market to generate revenues and profit. CBEs are enterprises owned, managed, and operated by Indigenous or local communities. They focus on producing profit-generating goods and services that address local needs, utilize local natural resources, and foster social, economic, and environmental benefits. CBEs are not just social initiatives; they have clear economic imperatives to create sustainable livelihoods, improve economic self-reliance, and scale up to serve broader markets.

Historically, CBEs emerged in the 1970s and 1980s as a shift from top-down development toward participatory models. Today, they are vital sources of local economic development, social cohesion, and environmental sustainability.

The Emergence of CBEs in Conservation

Historically, conservation efforts were top-down, often leading to community displacement and restricted resource access, resulting in complex conflicts. By the 1990s, it was widely recognized that conservation needed to be promoted in partnership with local communities. This new approach recognized the importance of economically empowering communities through enterprises.

Over the past three decades, these conservation-focused businesses have aimed to embody the "triple bottom line"—balancing nature conservation, social equity, and economic profitability.

Key characteristics include:

- **Local Community Ownership:** Ownership and decision-making power reside primarily within the community.
- **Conservation Focus:** Aligning economic activities with environmental protection.
- **Sustainable Use of Resources:** Ensuring long-term ecological sustainability.
- **Economic Empowerment & Inclusion:** Creating income and promoting social inclusion for marginalized groups (women, youth, indigenous peoples).
- **Revenue Reinvestment:** Reinvesting profits into community development or conservation initiatives.
- **Ecosystem Service Valuation:** Leveraging eco-tourism, non-timber forest products, and cultural heritage as assets.

Challenges Confronting Conservation CBEs

Building a sustainable CBE is complex and fraught with hurdles:

- **Overexploitation & Short-Term Focus:** The pursuit of immediate profit can lead to unsustainable harvesting or practices that undermine conservation goals.
- **Market Vulnerabilities:** Dependency on specific markets (like eco-tourism) makes enterprises susceptible to economic swings, geopolitical or social conflicts or pandemics.
- **External Dependence:** Excessive reliance on government agencies, NGOs, or donors can diminish local ownership, leading to enterprise collapse when funding wanes.
- **Power Imbalances & Loss of Autonomy:** External agencies may dominate decision-making, imposing models that do not align with local cultures or ecological realities.
- **Governance & Inequity:** Profit motives can foster corruption, and poorly managed profits can lead to inequitable benefit-sharing and social tensions.
- **"Greenwashing":** False portrayals of environmental sustainability to attract markets, masking harmful practices.

Building CBEs for Conservation: A Guide

To overcome these challenges, a strategic approach emphasizing strong local leadership, diversified income streams, and transparent governance is essential.

- **Fostering Genuine Community Ownership:** Involve communities from the outset. Conduct participatory processes to identify entrepreneurial champions with leadership qualities.
- **Aligning Conservation and Livelihoods:** Generate sustainable incomes through eco-friendly tourism, sustainable use of ecosystem services, and value-added products aligned with ecological limits.
- **Building Local Capacity:** Provide training for ecological monitoring, business management, and conflict resolution early on. Establish long-term mentorships.
- **Transparent Governance:** Create equitable rules for decision-making and benefit-sharing through inclusive management committees to foster trust.
- **Adaptive Business Models:** Build flexible enterprises with diversified income streams. Reduce reliance on external agencies over time.
- **Markets and Partnerships:** Develop strong branding emphasizing conservation and community empowerment. Establish strategic partnerships to access new markets.
- **Financial Management & Monitoring:** Implement transparent accounting. Regularly track ecological impacts, social benefits, and financial performance.

Operationalization

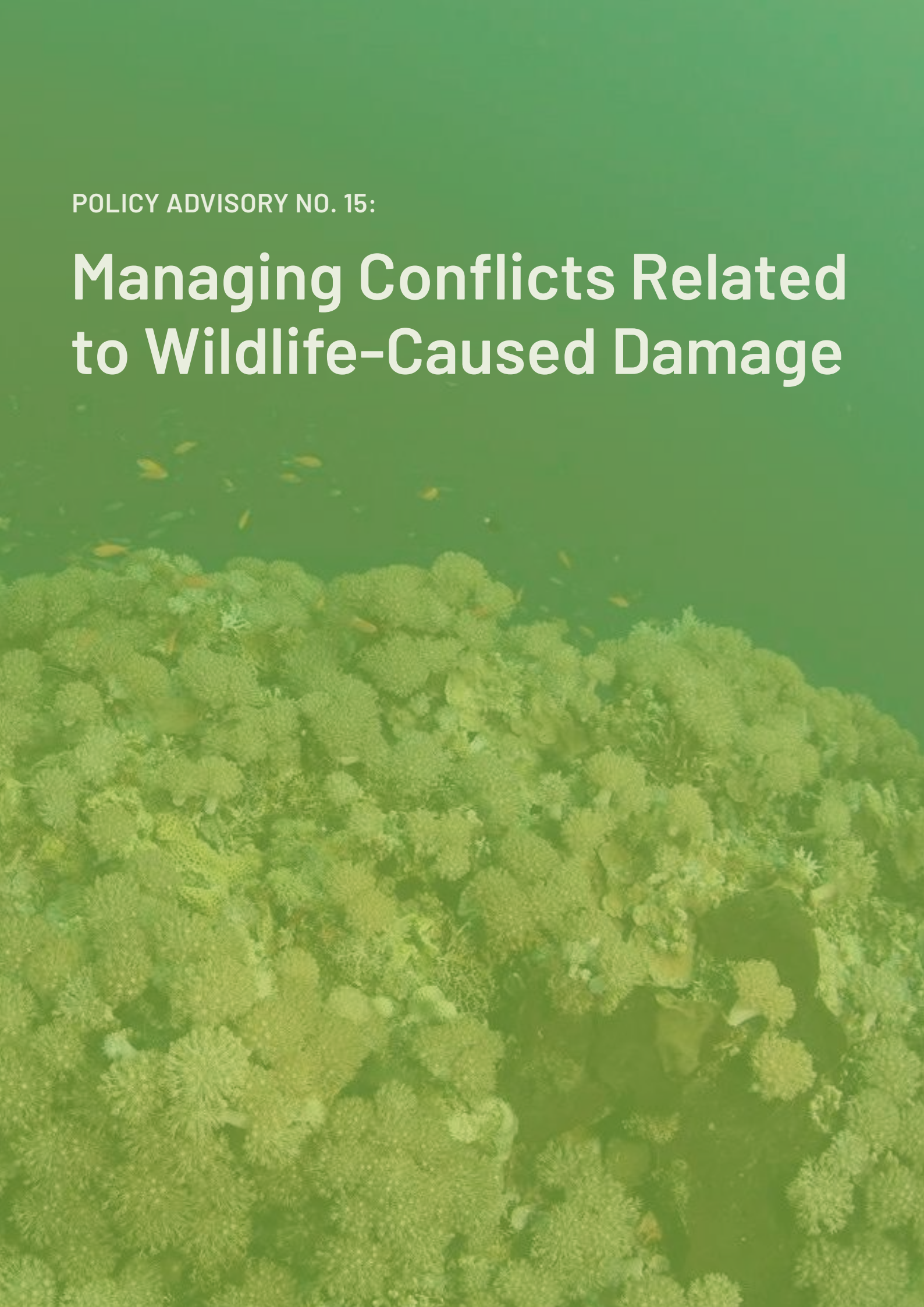
To help operationalize the conservation-for-development approach in snow leopard landscapes, the GSLEP Secretariat and partners have created a platform and brand identity (Equal One) for sustainable economic development enterprises linked to conservation. Such a common platform and brand identity can help in the uptake of this concept across different sectors, and scales– right from the on-ground implementation to potential policy support.

Key characteristics of such a platform and the benefits that it can provide include:

- An opportunity for dialogue among stakeholders (individuals, influencers and communities) and institutions (governments, organizations and brands) for co-creating a way of doing business that is sensitive to natural habitats (people, animals and plants).
- Aggregate existing knowledge and experiences from different projects and create useful resources that can facilitate co-learning
- Make the idea bigger by building a network of beneficiaries, many of whom become the community of co-believers and partners. They, in turn, grow the program with their knowledge, assets and resources, portfolio of products and services, their passion and ideas, and their influence.
- Offer different forms of need-based support to local entrepreneurs or communities to help build businesses that are ecologically sensitive, socially inclusive, culturally relevant, and bring economic benefits.
- Increase trust with investors and buyers by ensuring transparency and traceability of the value chain, quality control of products and services, and ecological, social and economic sustainability.
- Help people to connect with others doing similar work and sharing the same values, support each other, learn from each other and grow together. It can facilitate knowledge and resource exchange with others who need them and/or can benefit from them to achieve their social and environmental sustainability goals. The beneficiaries could be projects or people, individuals or groups, institutions or enterprises, creators or catalysts.
- Support potential entrepreneurs from local communities with funding and resources. Range countries, GSLEP Partners and international financial institutions may consider investing in supporting such local startups. Range countries may consider inducting the Equal One framework in their projects and policies.
- Develop metrics to measure social, economic and ecological impact and document efficacy of specific interventions, projects and the larger vision.

POLICY ADVISORY NO. 15:

Managing Conflicts Related to Wildlife-Caused Damage



Introduction and Terminology

The term "Human-wildlife conflict" is widely used to describe situations where wildlife negatively impacts human lives and livelihoods. However, the framing of this term implies a direct, hostile opposition between people and wildlife. It risks oversimplification of a complex situation where in most cases the conflict is actually a human-human conflict between differing values and interests, where one prioritizes species conservation while the other seeks to secure peoples' safety or livelihoods.

It's best to move away from using the term "human-wildlife conflict" or its variants, and refer to these situations as either conservation conflict or, simply, wildlife-caused damage.

These situations can be understood in two parts:

a. **Wildlife-caused damage to human interests.**
b. **Retaliatory or preventive persecution of wildlife by humans.**

It is important to recognize that when humans and wildlife co-exist, some level of damage to human interests is inevitable. For example, crops and livestock are attractive resources to wildlife. When they occur in the vicinity of wildlife, such conflict interactions cannot be entirely eliminated, and at best they can be managed.

For government agencies, multilateral organizations and other supporting entities, reframing this issue from 'conflict eradication or resolution to conflict management and co-existence' is an important policy shift. By integrating ecological science, traditional knowledge, human dimensions of culture, gender and equity, and ethical governance frameworks such as free, prior and informed consent (FPIC), Governments and institutions can develop sustainable conflict mitigation strategies that align with national biodiversity targets, international social safeguards, and human rights obligations.

The Value of an Ethical, Co-Design Approach

Addressing conservation conflicts through an ethical, community-centric model offers several distinct advantages for conservation practitioners, state agencies, multilateral organizations and local stakeholders. Specifically:

a. **By shifting the focus away from blaming problem animals and addressing problem contexts** (e.g. seasonal overlap, livestock vulnerabilities, risk-taking behaviors of male large carnivores or herbivores), wildlife agencies can deploy proactive, science and traditional knowledge-based interventions rather than only reacting to situations.

b. **Human responses to wildlife damage are profoundly shaped by culture, power dynamics and gender** (e.g. women typically bearing hidden nutritional or emotional costs of wildlife caused losses). Utilizing frameworks such as the PARTNERS Principles[1] ensures that marginalized voices are included in conflict management, while directly fulfilling the equitable development mandates and social safeguard policies.

c. **Empathy and rapid response are foundational to conflict management.** Establishing protocols for immediate, compassionate support (e.g. rapid response checklists) reduces anger and can prevent retaliatory killings.

d. **Top-down, reactive measures such as the translocation or culling of wildlife are highly scrutinized, typically expensive, and often ecologically ineffective.** Empowering communities through co-designed approaches ensures local ownership and lowers the long-term burden on government authorities for enforcement.

1 https://snowleopard.org/our-work/conservation-programs/partners-principles-overview/

Key Principles and Implementation

To successfully operationalize conflict management, strategies must be deeply contextual and co-designed with affected communities, rather than imposed from the outside.

1. Relying on a single measure (e.g. compensation) rarely succeeds. Government line departments and project managers must deploy bundled approaches that:

    a. **Reduce damage:** Combining physical barriers (predator-proof corrals, fencing) with behavioral deterrents and vigilance.
    b. **Offsetting losses:** Utilizing fair, predictable compensation for unpredictable losses, and supporting community-managed insurance schemes to build ownership and discourage false claims.
    c. **Promote Co-existence:** Increasing social carrying capacity through conservation-linked livelihoods such as ecotourism, and awareness programs.

2. Mapping conflict hotspots, seasonal trends and community knowledge:
   a. **Co-design:** Developing interventions with communities, clearly distributing costs, maintenance responsibilities and decision-making power.
   b. **Start small and support in the long term:** Piloting solutions in manageable areas to build evidence and trust before scaling across larger areas.
   c. **Monitor and adapt:** Using participatory monitoring and evaluation tools to track incidents, community-well-being and trust so it establishes clear grievance and repair mechanisms.

3. Engagement with the communities must honor Indigenous and local governance systems. Data and knowledge sovereignty (e.g. OCAP & CARE Principles) should be respected, ensuring that communities own their knowledge and derive fair and tangible benefits from conservation and conflict-management partnerships.

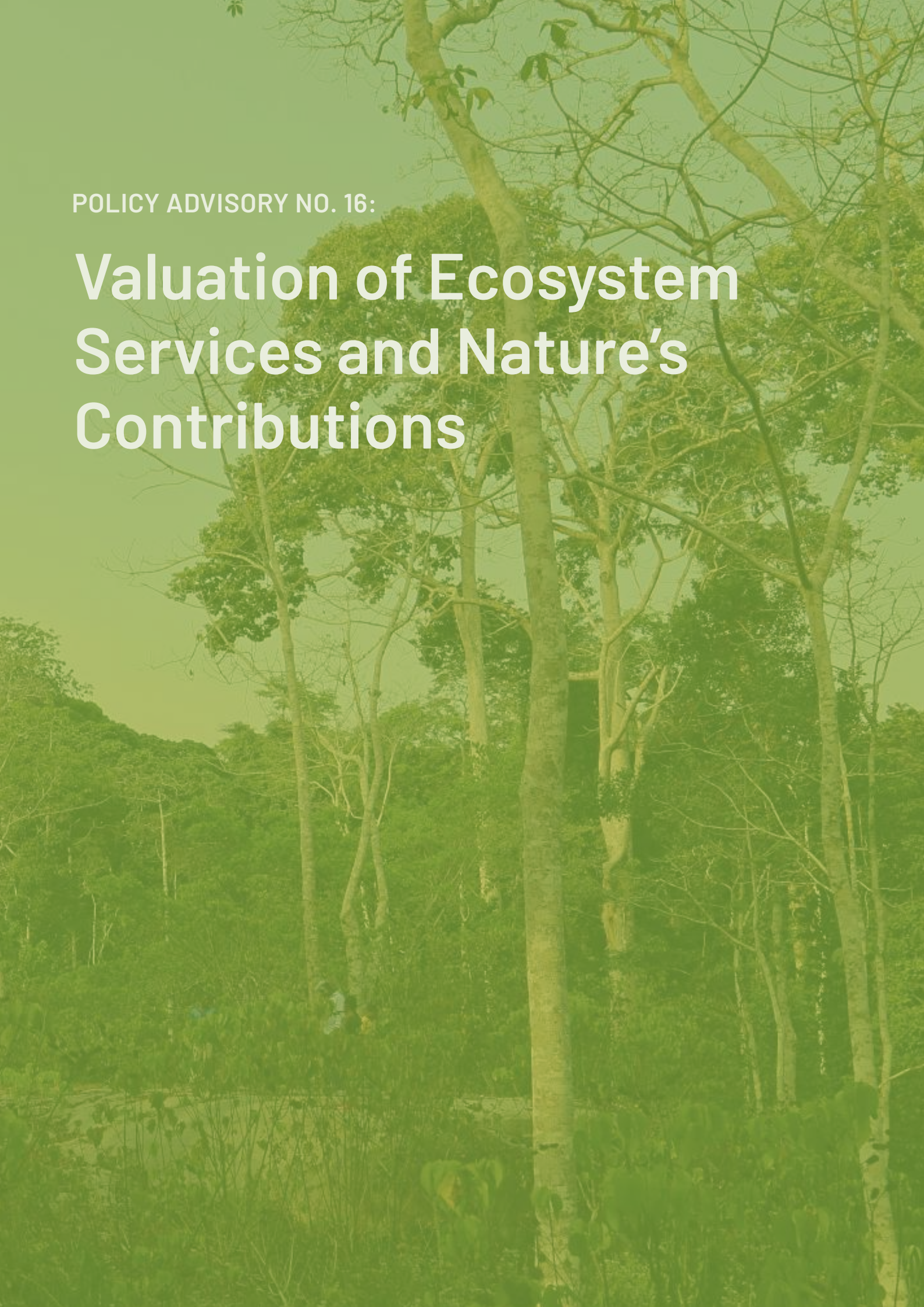
Navigating Institutional Challenges

Transforming conflict management from a reactive practice to a proactive, coexistence-based model requires navigating entrenched funding and bureaucratic hurdles:

1. Single, highly visible interventions or extreme policies like translocation often appeal to people for rapid results, but they frequently fail to address root causes. Multilateral organizations and state planners must commit to funding bundled, long-term coexistence strategies that address both physical damage and social well-being.

2. Building trust takes time. Governments and donors must provide flexible budget lines that allow practitioners to start small with pilot interventions. Scaling must only occur once local trust, maintenance capacities and proof-of-concept are established.

3. Government agencies and large institutions may engage policy champions and non-governmental partners to streamline administrative procedures such as the rapid deployment of emergency support mainstreaming ethical frameworks (e.g. PARTNERS Principles) into standard operating procedures (SOPs) and disaster response protocols.



POLICY ADVISORY NO. 16:

Valuation of Ecosystem Services and Nature's Contributions

Introduction and Rationale

Economic growth and environmental degradation have long been framed as opposing forces, with development assumed to require trade-offs such as deforestation, habitat loss and pollution. This tension is reinforced by traditional economic models that ignore nature's significant but often invisible contributions to national economies. As such ecosystems can be undervalued, overexploited and degraded.

The concept of ecosystem services was developed to make nature's contributions explicit. Ecosystem Services are defined as the benefits or outputs from ecosystems, including natural, semi-natural or human-modified, that directly or indirectly contribute to human well-being. **Ecosystem processes are only termed as 'services' when there is a human beneficiary involved. A final human beneficiary is needed for an 'ecosystem service'.**

For Government agencies, multilateral organizations and development planners, including ecosystem services in decision-making is not an environmental choice, but a core macro-economic necessity. More importantly, it is critical to balance situations where ecosystem degradation poses direct, systemic risks to national economic stability, translating into tangible financial liabilities such as greater disaster recovery costs from unmitigated floods, reduced agricultural yields due to the loss of natural pollinators, and negative impacts on resource-dependent rural livelihoods. By recognizing nature's contributions and ensuring their valuation, governments can secure long-term economic resilience, fulfil international commitments and preempt costly socio-environmental conflicts.

Operationalizing the ecosystem services framework is a vital policy shift, but one that is resisted because of the reluctance of economic systems to audit (or pay) for resources (ecosystem services) they have so far accessed for free. Transforming the view of nature from a 'cost center' or passive backdrop into recognized natural capital is difficult. However, internalizing these values, governments and institutions can balance national economic development goals with international biodiversity commitments, ensuring sustainable access to the services that underpin human wellbeing and local, national and global economies.

The Value of Ecosystem Services Framework

Understanding and categorizing Ecosystem Services allows state agencies and conservation practitioners to articulate the multifaceted value of natural landscapes. Ecosystem Services fall into three primary categories:

a. **Provisioning services** can be defined as the nutritional, material and energetic outputs from living systems such as cultivated crops, harvested natural goods, clean water and timber.

b. **Regulating services** are defined as the mechanisms through which living organisms mediate the ambient environment such as climate regulation, carbon sequestration, flood and fire protection, and crop pollination.

c. **Cultural services** are non-material outputs that affect physical and mental well-being such as aesthetic experiences, traditional ecological values, recreation and spiritual values.

To integrate these services into actionable policy, their value must be expressed in ways that resonate with diverse stakeholders. These include:

1. **Biophysical values:**
   Measurable, tangible ecological properties, e.g. a 100 ha forest absorbs 1,500 tons of carbon dioxide. This provides foundational data for conservation targets.

2. **Monetary values:**
   Expressing ecological benefits in financial terms allows for inclusion in cost-benefit analyses, making natural capital legible to finance ministries and multilateral donors.

3. **Socio-cultural values:**
   Non-monetary metrics that capture societal preferences, cultural identities and human needs, ensuring that community rights and spiritual values are prioritized alongside economic metrics.

Key Principles and Implementation Methods

To integrate ecosystem services into landscape planning, practitioners need to first map the entire chain from underlying ecosystem structures to processes and functions leading to the services being received by people.

The specific values for nature , i.e. the value expressed in context-specific situations are instrumental (the value of ES as a means to a human end), relational (the value of nature based on the relationships people have with nature, and with each other through nature) and intrinsic (nature's inherent value). A pluralistic approach ensures that policy decisions are not biased by values driven by the most powerful voices.

When designing valuation assessments,the chosen methodologies can be evaluated based on relevance, robustness and resource availability. Specifically, multiple values have different methods of assessing and different metrics for communicating the value, and require time, budget and realistic data constraints for the project.

To measure and assess ecosystem services, policy makers can choose suitable methods based on the purpose of valuation, the values being assessed, and the services being valued:

BIOPHYSICAL METHODS

These assess nature's physical capacity to supply services and are best for setting clear, objective national targets (e.g. assessing carbon emission baselines or water flow regulation). Tools may include remote sensing, life-cycle assessments, ecological modeling, and biodiversity hotspot mapping. While these are robust, they can at times be detached from the local dependencies.

STATEMENT-BASED METHODS

These are critical for inclusive, protected-area management and to capture relational values. They rely on direct stakeholder input to understand how local communities perceive, use and value ecosystems. Crucially, these methods provide a formalized means to integrate Indigenous and Local Knowledge into policy. Examples include deliberative workshops, choice experiments, surveys and participatory mapping.

BEHAVIOR-BASED METHODS

These are best for observing actual market behaviors and quantifying economic reliance on ecosystems. These measure the instrumental value of nature by analyzing how people allocate time and money. E.g. revealed preference techniques, hedonic pricing, travel cost methods and replacement cost calculations.

INTEGRATIVE METHODS

These are essential for mitigating complex stakeholder conflicts such as proposed coastal development or road construction in high altitude habitats, and are obtained by synthesizing scientific data, costs and perceived societal benefits into a deliberative decision-making process. These bridge different knowledge systems and help resolve trade-offs. Examples include multi-criteria analysis, structured decision-making, deliberative monetary valuation and integrated assessment modeling.

Mitigating Conflicts and Navigating Institutional Challenges

Recognizing the roles of ecosystem services encourages collaborative dialogue and helps shift stakeholder perspectives from viewing conservation as a threat to development, to recognizing mutual dependencies.

To move beyond mere recognition and actively promote the audit and integration of these valuations, governments can adopt the following strategic approaches and policy instruments that leverage ecosystem services:

SPATIAL TARGETING AND ECOLOGICAL ZONING

Governments can pilot ecosystem valuation by establishing designated Special Ecological Zones or focus on high-priority conservation landscapes such as National Parks, Biodiversity Reserves or other such designations. This shall allow authorities to test, refine and regulate valuation and auditing frameworks locally before scaling into national policies.

CORPORATE AUDIT AND TAX INCENTIVES

To incentivize the private sector, governments can offer tax exemptions, subsidies, or premium market access to companies that actively audit their footprint and invest in ecological restoration. The paying back of ecological debt for example can be used as a driver for governments to provide direct tax breaks to land owners and farmers who choose to conserve native vegetation, directly linking financial audits to ecological compliance.

PAYMENTS FOR ECOSYSTEM SERVICES AND INCENTIVES

Compensating communities or landowners for maintenance of services such as protection of upstream forests for downstream water quality.

NATURE CAPITAL ACCOUNTING

Integrating the value of ecosystem services into mainstreaming economic frameworks such as Gross Domestic Product to ensure governments track the health of their natural assets and hold industries accountable for resource depletion.

HABITAT BANKING AND OFFSETS

Ensuring that developers offset unavoidable environmental impacts by investing in equivalent ecological restoration elsewhere.

GENDER SENSITIVE AND INCLUSIVE APPROACHES

A Gender Equality and Social Inclusion (GESI) lens is essential when valuing and managing ecosystem services, as the benefits and burdens of environmental change are unevenly distributed. Women, Indigenous peoples and other marginalized groups often rely most on natural resources yet have the least influence over land-use decisions and limited access to compensation when ecosystems decline. Governments and multilateral organizations can strengthen equity by embedding inclusion criteria into ecosystem-service policies, using disaggregated data, and ensuring participatory processes that meaningfully involve under-represented groups. A GESI-responsive approach enhances both the legitimacy and effectiveness of ecosystem-service governance by ensuring that those most dependent on nature—and most vulnerable to its loss—are included in decision-making and benefit from sustainable management.

Addressing Critiques and Evolving Frameworks

While the ecosystem services framework is highly effective for policy translation, it has faced various valid critiques, especially given its anthropogenic focus, the risk of commodifying nature and its failure to account for disservices such as human wildlife conflict.

To navigate such challenges institutions are encouraged to evolve towards the Nature's Contributions to People (NCP) framework. The NCP framework was introduced by Intergovernmental Science-Policy Platform for Biodiversity and Ecosystems Services (IPBES) and can be considered as a successor to ES framework, incorporating these critiques by aiming to be more inclusive, pluralistic and culturally grounded.

Key Principles of the NCP Framework

- NCP is defined as the contributions, both positive and negative, of living nature to people's quality of life.

- Unlike the ES framework, where cultural services are isolated in a single category, NCP treats culture as embedded in every interaction between people and nature. Cultural worldviews shape how material, regulating, and non-material contributions are perceived, valued, and used.

- NCP emphasizes on the non-material ways in which nature contributes to human life, such as supporting ancient traditions, identities of nomadic herders or traditional hunters and sacred connections to specific landscapes, landforms or species.

- NCP explicitly encompasses the negative impacts or costs people experience from nature such as human-wildlife conflict. It is essential for these realities to be acknowledged to design equitable conservation policies.

To operationalize the NCP framework, policy makers and practitioners need to adjust their assessment and planning methodologies. Specifically:

a. Instead of forcing natural benefits into constrained economic categories, assessment methods (such as stated-preference or deliberative methods) can use plural valuation. Planners can utilize deliberative, narrative and participatory methods that emphasize the actual worldviews, traditions and values local people hold. This includes explicitly integrating indigenous and local knowledge systems alongside scientific data to capture relational and intrinsic values without forcing them into a single monetary metric.

b. When evaluating a development project, planners can calculate not only the material costs such as timber loss and biodiversity decline, but also the non-material costs such as the disruption of a sacred site, or the impact on a community's cultural identity.

c. Policies can be designed with the explicit goal of addressing power asymmetries and fostering a just and equitable distribution of nature's benefits. This ensures meaningful inclusion of rights-holders in the valuation and decision-making process, and ensures that marginalized and local communities are not disproportionately burdened by the costs of conservation conflicts while benefits are shared externally.

POLICY ADVISORY NO. 17:

Participatory Monitoring and Evaluation in Conservation Landscapes

Introduction and Rationale

Effective conservation depends on Monitoring and Evaluation (M&E) to determine if interventions and actions are relevant, effective and achieving their intended goals. Traditional M&E approaches, often built around theories of change and mapping of causal pathways, have historically been implemented through top-down processes in which local communities are positioned as passive data sources or project beneficiaries rather than equal partners. These conventional frameworks frequently create a disconnect between official project reports and the lived realities on the ground, leading to interventions that may appear ecologically sound on paper but remain unsustainable in practice.

Participatory Monitoring and Evaluation (PM&E) is defined as an approach that includes and respects local participants so they are the ones who decide the important monitoring questions, determine how the data are collected, analyse monitoring data and identify successes and challenges to determine course correction for the project. PM&E represents a shift towards inclusive, ethical, and community-driven practice. It positions local communities as active decision-makers who shape what is monitored, how data are interpreted, and how findings inform adaptive management. Implementing PM&E is not just a strategic choice to improve data quality or generate more contextually grounded indicators; it is an ethical imperative that respects the rights, sovereignty and traditional ecological knowledge of those living in these landscapes.

For Government agencies, multilateral organizations, and other supporting entities, PM&E can provide a robust mechanism to align local conservation efforts with national biodiversity strategies such as NBSAPs and international commitments such as the Sustainable Development Goals (SDGs) and the Kunming-Montreal Global Biodiversity Framework (GBF). By grounding policy mandates in lived realities, PM&E supports decentralized governance, minimizes conservation conflicts, enhances accountability and ensures greater compliance with the international social and environmental safeguards. It ensures that conservation outcomes are not only scientifically measurable but also socially legitimate, equitable and locally owned.

The Value of PM&E Approach

Using a participatory model for monitoring and evaluation offers several distinct, long-term advantages for both conservation practitioners and local stakeholders. These include:

ENHANCED DATA QUALITY AND RESPONSIVENESS

Involvement of those who are directly impacted by conservation is important for accurate, locally grounded data and enables quicker detection of emerging, localized threats. For instance, local herders or forest users, who traverse the landscape daily, can detect subtle changes in wildlife breeding behavior, illegal activities, or emerging disease threats far quicker than periodic scientific surveys. For state agencies, this supplements official monitoring networks and cost-effectively fills critical data gaps in hard to access landscapes.

COMMUNITY EMPOWERMENT AND CONFLICT RESOLUTION

PM&E processes ensure that marginalized voices, including women, youth, indigenous groups, and other unrepresented groups, are meaningfully heard. PM&E allows them to uphold their right to participate in decision-making on issues that directly affect their livelihoods and cultural landscapes. When communities have a stake in the evaluation process, resistance and conflicts over conservation priorities are significantly reduced. This also aligns strongly with required social safeguard policies, ensuring conservation and development outcomes are equitable and inclusive.

GENDER-SENSITIVE AND INCLUSIVE OUTCOMES

Gender-responsive PM&E goes beyond simply including women in data collection. It identifies and actively mitigates the barriers that limit their participation including time burdens and social norms. By integrating gender analysis into design and processes, PM&E can help to reveal the differentiated impacts of conservation on women, youth and other underrepresented groups. A gender-sensitive approach provides policymakers a mechanism to meet international commitments on gender (e.g., SDG goal 5 gender equality).

TRUST AND CAPACITY BUILDING

The process fosters mutual trust and accountability between conservation practitioners and local communities and builds local capacity, technical skills and leadership, which drastically reduces the long-term cost of project enforcement and ensures post-grant sustainability for funders.

ETHICAL DATA MANAGEMENT

PM&E contributes directly to broader discourse about indigenous data sovereignty and allows community-generated data to be handled ethically. This can help government programs respect customary rights and fulfill international human rights obligations.

Key Principles

To successfully implement PM&E, the strategy and processes must be co-designed with participants during the early stages of the project cycle rather than be treated as an afterthought.

Co-Development of Indicators

Participants should collaboratively identify and select the indicators used to measure the success of conservation initiatives. These indicators need to reflect both local priorities and project needs, and follow SMART (Specific, Measurable, Achievable, Relevant and Time-bound) criteria. Government extension workers and multilateral partners must be part of this dialogue to ensure local indicators successfully map back to national reporting requirements and institutional logical frameworks (logframes).

Flexible Data Collection Tools

PM&E is an adaptable tool that benefits from a mixed-methods approach to provide a comprehensive view of the project. Tools should align with the community's preferences and can range from focus-groups to interviews, community workshops, and WhatsApp groups using photographic and videographic data collection. State agencies can ensure these tools are interoperable so that community data can seamlessly inform national databases without compromising local ownership.

Collaborative Analysis And Action

Communities may require training and support to collect and analyze data. Training and any necessary equipment should be provided to the communities. Findings should be presented back to the community using preferred, accessible formats such as audio-visual presentations and/or videos so they can inform subsequent project adaptations, resource allocation and continuous course correction. Government authorities can co-facilitate these processes, institutionalize the feedback loops within regular administrative reviews and inform subsequent project adaptations, resource allocation and continuous course correction.

PM&E in Practice

PHASE 1: Stakeholder identification and Engagement

i. Requires a thorough, nuanced stakeholder mapping exercise to identify all relevant groups affected by or involved in the conservation initiative. This may involve identifying formal as well as resource-dependent sub-groups whose daily lives directly interface with the conservation targets (e.g. herders, NTFP gatherers, fishers etc.).

ii. Ensuring that the voices of women, youth, indigenous groups and other marginalized members are actively included. This may require separate workshops or focus group discussions to safely navigate local power dynamics and hierarchies where specific groups may feel discouraged from speaking openly.

iii. Communicating the purpose, potential roles and direct benefits of PM&E to overcome potential hesitancy and secure informed voluntary participation such as time constraints, prior negative experiences with outsiders and lack of confidence.

PHASE 2: Co-Design and Collaborate for the Development of Indicators

i. Facilitate workshops to co-develop indicators that reflect local priorities, values, and the needs of the conservation project. Instead of imposing, one can allow the community to decide what success or failure looks like. E.g. while a donor may prioritize areas under protection, the community might select improved availability of water or reduced incidents of crop depredation by wildlife as their primary indicators of success.

ii. Ensuring the collaboratively chosen indicators are SMART so they can be reliably tracked over time.

iii. Involving government agencies and multilateral partners to be a part of this dialogue so these chosen indicators can be successfully mapped to the broader reporting requirements and institutional logical frameworks.

PHASE 3:
Build Monitoring Capacity and Data Collection

i. Developing consensus on how data will be collected. Tools may align with the community's preferences, convenience and local infrastructure. Methods can range from focus groups to interviews, community workshops, or mobile applications using photographic and videographic data. State agencies may ensure that these tools are in alignment with the national databases without compromising local ownership.

ii. Conservation practitioners and project managers can provide ongoing training, resources and equipment so local people have the technical knowledge, skills and confidence to collect data effectively and safely.

iii. Ensuring data collection activities are thoughtfully scheduled around local livelihoods so participation does not negatively impact the community's income or survival. E.g. avoiding certain periods when herders are away grazing.

PHASE 4:
Co-Design and Collaborate for the Development of Indicators

i. Upholding indigenous data sovereignty, ensuring the community retains ownership over their data and explicitly consents to how it is managed, stored and shared externally while establishing clear protocols for data protection.

ii. Training participants in basic data analysis techniques so they can collaboratively interpret the data that has been collected rather than handing data to external experts. The demystification of scientific process ensures that interpretations are contextually accurate.

iii. Presenting findings back to the community using preferred accessible formats rather than relying solely on dense, academic statistical reports.

iv. Facilitating focus groups to reflect on the findings, gather feedback and act on the results so necessary changes can be made to the project interventions, resource allocation and continuous course correction. Government authorities can be involved in co-facilitating these processes and institutionalization of the feedback loops within regular administrative reviews, demonstrating that community input leads to tangible action.

Navigating Institutional Challenges

Although PM&E offers robust long-term benefits and ethical approaches, it requires a significant initial investment in trust-building, capacity development, and relationship management. This can sometimes conflict with the expectations and timelines of traditional funding structures. It is important to keep the following points in mind when planning and implementing PM&E approaches:

1. PM&E is inherently more time consuming and resource-intensive initially than traditional M&E. This can at times clash with the strict reporting deadlines of donors seeking rapid, easily quantifiable impacts within a short funding cycle. However, this investment significantly reduces the downstream costs associated with project failure, community resistance, and law enforcement. To mitigate this tension, multilateral organizations and government planning commissions can build flexible inception phases, realistic timelines, and dedicated budget lines into their grants to accommodate this necessary participatory groundwork.

2. Given that PM&E focuses on community priorities and emergent learning, outcomes cannot always be predicted. This can sometimes lead to resistance from donors who might find themselves more comfortable with established, top-down metrics and assured deliverables. Donors and government bodies can overcome this by adopting Adaptive Management frameworks, moving away from rigid milestones towards outcome-based, flexible evaluations.

3. Conservation practitioners play a critical role in advocating for PM&E at the institutional level. By continually raising awareness of its long-term benefits, greater data validity, and ethical necessity, practitioners can help shift donor perspectives towards supporting sustainable, community-led evaluation frameworks. By mainstreaming PM&E guidelines into standard operating procedures (SOPs), national policy frameworks, and donor funding guidelines, practitioners can shift conservation paradigms towards sustainable, community-led evaluation frameworks that offer greater data validity, ethical necessity and sustainability.

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