

A Framework of Incentives

Supporting Implementation of Indonesia's Spatial Plans

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Contents

Background	5
Incentive Framework.....	5
1. Sustainable agriculture	5
1.1. Definition	5
1.2. Trends.....	6
1.3. Benefits.....	6
1.4. How can Indonesian government support implementation of spatial plans?	6
1.4.1. Incentive mechanisms	6
1.4.2. Government actions required to support incentive framework	6
2. Sustainable forestry	7
2.1. Definition	7
2.2. Trends.....	7
2.3. Benefits.....	7
2.4. How can Indonesian government support implementation of spatial plans?	7
2.4.1. Incentive mechanisms	7
2.4.2. Government actions required to support incentive framework	8
3. Sustainable non-timber forest products	8
3.1. Definition	8
3.2. Trends.....	8
3.3. Benefits.....	8
3.4. How can Indonesian government support implementation of spatial plans?	8
3.4.1. Incentive mechanisms	8
3.4.2. Government actions required to support incentive framework	9
4. Sustainable fisheries and aquaculture	9
4.1. Definition	9
4.2. Trends.....	9
4.3. Benefits.....	9
4.4. How can Indonesian government support implementation of spatial plans?	9
4.4.1. Incentive mechanism	10
4.4.2. Government actions required to support incentive framework	10
5. Ecotourism.....	10
5.1. Definition	10

5.2.	Trends.....	10
5.3.	Benefits.....	11
5.4.	How can Indonesian government support implementation of spatial plans?	11
5.4.1.	Incentive mechanisms.....	11
5.4.2.	Government actions required to support incentive framework	11
6.	Recreational hunting and sport-fishing.....	11
6.1.	Definition	11
6.2.	Trends.....	11
6.3.	Benefits.....	11
6.4.	How can Indonesian government support implementation of spatial plans?	12
6.4.1.	Incentive mechanisms.....	12
6.4.2.	Government actions to support implementation framework.....	12
7.	Forest carbon.....	12
7.1.	Definition	12
7.2.	Trends.....	12
7.3.	Benefit	12
7.4.	How can Indonesian government support implementation of spatial plans?	13
7.4.1.	Incentive mechanism	13
7.4.2.	Government actions required to support incentive framework	13
8.	Payments for watershed service	13
8.1.	Definition	13
8.2.	Trends.....	13
8.3.	Benefits.....	13
8.4.	How can Indonesian government support implementation of spatial plans?	14
8.4.1.	Incentive mechanisms.....	14
8.4.2.	Government actions required to support incentive framework	14
9.	Biodiversity offsets.....	14
9.1.	Definition	14
9.2.	Trends.....	14
9.3.	Benefits.....	14
9.4.	How can Indonesian government support implementation of spatial plans?	14
9.4.1.	Incentive mechanisms.....	14
9.4.2.	Government actions required to support incentive framework	15
	Conclusion.....	15
	References	16

A Framework of Incentives: Supporting Implementation of Indonesia's Spatial Plans

Background

Ecosystem services are the benefits people receive from the environment. Ecosystem services support the health, happiness and security (well-being) of the Indonesian people and the growth of Indonesia's economy (MA 2005b). Ecosystem services provide benefits to local communities, such as drinking water, food, fuel, and control of floods. Ecosystem services support the Indonesian economy, for example, through pollination of agricultural crops and regulation of water supplies needed for business operations. Ecosystem services also provide benefits to the international community, such as climate regulation.

Ecosystem services in Indonesia are rapidly being degraded by threats such as illegal logging and forest fires. This causes major costs, frequently greater than the benefits of these activities (Balmford, Bruner et al. 2002). The current lack of incentives to sustain ecosystem services is a root cause of these problems. The Indonesian government has an important role to play in creating new incentives to sustain ecosystem services. Through a new incentive framework, the government can encourage efficient provision of ecosystem services within the spatial planning process, for the benefit of all Indonesians. Government can directly develop public incentive mechanisms and, even more importantly, government must develop the enabling conditions for private incentives to emerge.

This report presents a framework of incentives that can support effective implementation of Indonesia's spatial plans, and thereby conserve the biodiversity and ecosystem services of Indonesia. The framework includes policies, regulations, economic instruments and institutions required to create incentives to conserve ecosystem services and biodiversity. We present incentive frameworks for six sectors: sustainable agriculture; sustainable forestry; sustainable non-timber forest products; sustainable fisheries and aquaculture; ecotourism; and, recreational hunting and fishing. We also present incentive frameworks for two ecosystem services – forest carbon and watershed services – and explore the scope for biodiversity offsets. For each sector and ecosystem service category, we first briefly present some background information on definitions, trends and benefits. Second, we describe the different incentive mechanisms already in existence or emerging around the world, which can be used to help implement Indonesia's spatial plans. Third, we present a set of recommendations for actions by the Indonesian government to take the incentive framework forward.

Incentive Framework

1. Sustainable agriculture

1.1. Definition

Sustainable agriculture refers to the ability of a farm to produce food indefinitely, without causing damage to ecosystem health. According to EcoAgriculture Partners, sustainable agriculture involves adoption of management systems, technologies and practices that sustain biodiversity and ecosystem services, particularly those that are essential for long-term agricultural productivity such as soil retention, pollination and water quality. Sustainable agriculture practices are verified through labels and certification standards.

1.2. Trends

New initiatives are emerging to support sustainable agriculture, such as roundtables on sustainable palm oil, soy and coffee, which focus on how agriculture can conserve biodiversity and sustain ecosystem services. Certified sustainable agricultural production is now growing much faster than for conventional agricultural products – due to growing demand from developed countries and large urban centers in developing countries, and growing concern in business to secure their reputations and supply chains. In 2007, certified agriculture and fisheries was valued at \$26 million in global sales per annum, with the potential size estimated to reach \$200,000 million in 2050 (Bishop, Kapila et al. 2008). South East Asia is currently trailing behind other areas of the world in sustainable agricultural production.

1.3. Benefits

Sustainable agriculture can provide a source of income and employment. There is a growing body of evidence that higher biological diversity increases economic productivity in agriculture. The ecosystem services supported by sustainable agriculture support the sector itself as well as the wellbeing of local communities, through pollination of agricultural crops, water quality for communities, and reduction of hazard risk from soil erosion, land-slides and floods.

1.4. How can Indonesian government support implementation of spatial plans?

The Indonesian government can create biodiversity reserves, corridors and buffer zones within agricultural production areas, to support sustainable agriculture. Government can increase public funding for sustainable agriculture and encourage private sector development by promoting the enabling conditions for incentive mechanisms outlined below. The Indonesian government must also develop policies and policy processes that ensure agriculture operators pay the full cost, including environmental costs, of their actions. Conversely, government should develop agricultural policies that promote soil and water conservation, reduction of pollution and control of invasive species.

1.4.1. Incentive mechanisms

- Reform of perverse subsidies (pressure to reform agricultural subsidies globally, but slow to change)
- Taxes and fines
- Tax deductions, tax credits and subsidies (emerging, particularly in Europe and North America)
- Certification and labeling schemes (established for many agricultural sectors)
- Payments for ecosystem services (PES) e.g. carbon, water, biodiversity (emerging in other countries)
- Education, awareness and training

1.4.2. Government actions required to support incentive framework

- Integrate ecosystem services into agricultural policies, spatial and land-use plans
- Remove existing perverse subsidies that promote unsustainable agriculture
- Taxes and fines on unsustainable agricultural practices
- Tax deductions, tax credits and subsidies for verified sustainable agriculture operations, particularly to support small-scale farmers to move to sustainable practices
- Promote certified agricultural production by exempting certified sustainable agricultural producers from taxes, regulations etc.
- Develop publicly funded PES schemes that reward sustainable agriculture practices
- Provide farmers with education, awareness and training programs in sustainable agriculture practices e.g. fire prevention techniques

- Provide government support to sustainable agriculture initiatives
- Develop private-public partnerships with sustainable agriculture business
- Support monitoring, evaluation and verification of certified agriculture schemes

2. Sustainable forestry

2.1. Definition

Sustainable forestry involves activities that reduce the negative environmental impacts of forestry, and ideally maintain or enhance biodiversity and ecosystem services (Bishop, Kapila et al. 2008). According to the International Tropical Timber Organization, sustainable forest management seeks to ensure that *“forest-related activities should not damage the forest to the extent that its capacity to deliver products and services – such as timber, water and biodiversity conservation – is significantly reduced. Forest management should also aim to balance the needs of different forest users so that its benefits and costs are shared equitably”*

2.2. Trends

There are many certification schemes emerging for sustainable forest products. The Forestry Stewardship Council market for certified timber and non-timber forest products alone was worth \$5,000 million in 2007, predicted to grow to \$50,000 million by 2050 (Bishop, Kapila et al. 2008). There are also a growing number of countries developing good practice in sustainable forest management, such as Joint Forestry Management in India.

2.3. Benefits

Sustainably managed forests provide a range of ecosystem services, many of which provide direct financial benefits, such as income from certified wood products, carbon payments, non-timber forest products, and ecotourism. Community forestry can also help build local institutional capacity.

2.4. How can Indonesian government support implementation of spatial plans?

The Indonesian government can promote sustainable forestry in production areas, especially those important for biodiversity. Forestry policy must recognize the value of forests for multiple ecosystem services, not only timber plantations. Government can increase public funding for sustainable forestry and encourage private sector development by promoting the enabling conditions for the incentive mechanisms outlined below. The Indonesian government must also develop policies and policy processes that ensure forestry operators pay the full cost, including environmental costs, of their actions. Conversely, government should develop forestry policies that promote soil and water conservation, carbon storage and sequestration, reduction of pollution and control of invasive species.

2.4.1. Incentive mechanisms

- Reform of perverse subsidies
- Taxes and fines
- Tax deductions, tax credits and subsidies
- Certification and labeling schemes for sustainable timber (established)
- Payments for ecosystem services (PES) e.g. carbon, water, biodiversity (emerging globally)
 - REDD payments (emerging in pilot phase, policy will be determined in December 2009)
 - Voluntary carbon market payments (existing)
- Education, awareness and training

- Ecotourism
- Increased enforcement of regulations to prevent illegal logging

2.4.2. Government actions required to support incentive framework

- Integrate ecosystem services into forestry policies, spatial and land-use plans
- Clarify land tenure and access rights
- Remove existing perverse subsidies that promote unsustainable forestry
- Set taxes and fines on unsustainable forestry practices
- Support community forestry and decentralize forest management to involve local communities
- Promote certified timber by supporting small-scale producers to cover the initial costs of certification, improving market access for certified products and supporting research into monitoring, evaluation and verification of certification schemes
- Promote more efficient timber processing
- Reduce corruption in forestry sector and enforce policies to combat illegal logging
- Develop publicly funded PES schemes that reward sustainable forestry practices e.g. payments for watershed services
- Support new markets and payments for ES e.g. carbon, plus eco-tourism etc.
- Develop private-public partnerships with sustainable forestry business
- Tax deductions, tax credits and subsidies for verified sustainable forestry operations, particularly to support small-scale foresters to move to sustainable practices

3. Sustainable non-timber forest products

3.1. Definition

Non-timber forest products are natural products other than wood derived from forests or wooded land (Bishop, Kapila et al. 2008).

3.2. Trends

80 % of the developing world use non-timber forest products for food and medicine. The Forestry Stewardship Council market for certified timber and non-timber forest products alone was worth \$5,000 million in 2007, predicted to grow to \$50,000 million by 2050 (Bishop, Kapila et al. 2008).

3.3. Benefits

NTFPs provide a source of subsistence and cash income for local communities, especially those in rural poverty, and can therefore contribute to poverty alleviation. These benefits can only continue in the long-term if NTFPs are sustainably managed.

3.4. How can Indonesian government support implementation of spatial plans?

The Indonesian government can develop and enforce practical, scientifically based guidelines for sustainable NTFP harvesting in relevant land-use zones.

3.4.1. Incentive mechanisms

- Land tenure and access rights to NTFPs
- NTFP certification and labeling schemes (emerging)
- Community forestry and decentralised forest management (best practice developing globally)
- Taxes and fines on over-harvesting
- Tax deductions, tax credits and subsidies for sustainable NTFP businesses

- Reform of perverse subsidies
- Education, awareness and training
- Increased enforcement of regulations to prevent illegal harvesting

3.4.2. Government actions required to support incentive framework

- Develop and enforce policies to support *sustainable* harvesting of NTFPs
- Clarify and strengthen land and NTFP access rights
- Support community forestry and decentralize forest management to involve local communities
- Build business, marketing and financial management skills of local communities
- Establish systems to monitor sustainability of NTFP harvesting
- Support NTFP certification by, for example, enabling small-scale harvesters to enter new markets for certified NTFPs

4. Sustainable fisheries and aquaculture

4.1. Definition

Sustainable fisheries are those fisheries that maintain and re-establish healthy fish populations. This involves effective fisheries management (Bishop, Kapila et al. 2008). The Marine Stewardship Council (MSC) asserts that sustainable fisheries should be based upon: (i) the maintenance and re-establishment of healthy populations of targeted species; (ii) the maintenance of ecosystem integrity; (iii) the development and maintenance of effective fisheries management systems, taking into account all relevant biological, technological, economic, social, environmental and commercial aspects; and (iv) compliance with relevant local and national laws, standards and international understandings and agreements.

4.2. Trends

75 % of marine and inland water fish stocks are over-fished or near to being over-fished. Aquaculture is the world's fastest growing food sector. Over the past 30 years, demand for seafood products has doubled. But aquaculture is itself leading to environmental problems such as habitat loss, demand on capture fisheries for fishmeal, pollution and invasive species. Consumer demand is growing for sustainable action in both fisheries and aquaculture. Producers are concerned about the long-term viability of supply without sustainable practices. As a result sustainable fishery and aquaculture certification schemes are being developed. Certified agriculture and fisheries was worth \$26 million globally per annum in 2007, with its potential size predicted to reach \$200,000 million in 2050 (Bishop, Kapila et al. 2008).

4.3. Benefits

Fisheries are the most globally significant source of wild food, with 1 billion people depending on fish as their primary source of animal protein. Sustainable fisheries and aquaculture provide an important source of subsistence and cash income, particularly to poor coastal communities, thereby helping to alleviate poverty. Sustainable fisheries are necessary to secure the long-term supply of this ecosystem services.

4.4. How can Indonesian government support implementation of spatial plans?

The Indonesian government can develop and enforce policies to end unsustainable fishing practices and encourage sustainable fisheries and aquaculture.

4.4.1. Incentive mechanism

- Reform of perverse subsidies (pressure to reform fisheries subsidies globally, but slow to change)
- Taxes and fines (uncommon)
- Tax deductions, tax credits and subsidies (emerging)
- Certification and labeling schemes (established)
- ITQs – Individual Transferable Quotas (emerging, for example in New Zealand)
- Education, awareness and training (established)
- Ecotourism (established)
- Regulations and enforcement e.g. protected areas (1% of world's marine areas protected)
- Payments for marine ecosystem services e.g. payments for contribution to fisheries and ecotourism by marine and aquatic protected areas (not yet commonly established)
- Biodiversity offsets / compensation payments (not yet common in marine zones)
- Technological advances in sustainable fishing equipment (emerging)

4.4.2. Government actions required to support incentive framework

- Develop and enforce sustainable fisheries conservation and management policies, including marine and aquatic protected areas.
- Develop policies to improve sustainability of aquaculture
- Develop and enforce practical, scientifically based guidelines for sustainable fishing and aquaculture in relevant land and sea zones.
- Remove perverse subsidies for unsustainable fisheries and aquaculture operations
- Reduce corruption in fisheries sector and enforce policies to combat illegal fishing
- Develop biodiversity offsets / compensation payments for degradation to fisheries caused by industrial operations
- Support new markets and payments for marine ecosystem services e.g. ecotourism and fisheries productivity
- Clarify tenure and rights to access marine and aquatic areas
- Support community fisheries and co-management
- Promote certified fisheries and aquaculture, for example by supporting small-scale producers to cover the initial costs of certification and improving market access for certified products
- Provide tax deductions, tax credits and subsidies for sustainable practices, particularly to support small-scale fisheries/aquaculture transition to sustainable practices

5. Ecotourism

5.1. Definition

Ecotourism involves responsible travel to natural areas that conserves the environment and improves the wellbeing of local people (International Ecotourism Society).

5.2. Trends

Tourism is the largest industry in the world economy. In 2007 it employed 200 million people and generated US\$3.6 trillion in economic activity. Ecotourism is already growing rapidly (20-34 % per year, which is 3 times the rate of tourism as a whole). Ecotourism is predicted to be one of the tourism sectors that will grow most rapidly over the next two decades. Other forms of tourism often have negative direct and indirect impacts on biodiversity e.g. through land use conversion, introduction of invasive species, waste discharge, pollution and GHG emissions.

5.3. Benefits

Some ecotourism operations generate significant local economic benefits, such as local employment and demand for local goods and services, build local management capacity and business skills, and spur creation of locally owned ecotourism operations. Ecotourists often spend significantly more than other tourists, with a greater proportion of economic benefits staying in local communities. High quality ecotourism also makes direct, significant contributions to biodiversity and ecosystem services.

5.4. How can Indonesian government support implementation of spatial plans?

Government can support ecotourism with high standards for positive environmental impacts to support the spatial plan.

5.4.1. Incentive mechanisms

- Certification, labels and standards for ecotourism operations (emerging globally)
- User fees for national parks and heritage sites (common around the world)
- Sale of licenses, concessions and leases to ecotourism (emerging)
- Private sector funding and management of public protected areas and conservation actions (emerging, particularly in North America and Europe)
- Indirect taxes on tourists and tourism facilities (common globally)

5.4.2. Government actions required to support incentive framework

- Support development of tools for managing impacts of tourism e.g. guidelines and eco-labels
- Support ecotourism concessions within appropriate areas of spatial plan
- Support verified high standard ecotourism companies to take on management of tourism concessions in national parks
- Invest in joint public-private partnerships for ecotourism, based on participatory and equitable negotiations
- Support capacity building for local communities in business, financial and marketing skills.
- Support small-scale, community based ecotourism operations as they get started

6. Recreational hunting and sport-fishing

6.1. Definition

Recreational hunting and sport-fishing operations are those that support conservation (Bishop, Kapila et al. 2008).

6.2. Trends

Recreational hunting and fishing are already significant sources of conservation funding worldwide. This sector is predicted to increase as international travel and tourism expand, with increased demand from the urban middle class in developing countries such as China and India.

6.3. Benefits

Recreational hunting and sport-fishing can provide a source of income for local communities. When sustainably managed, this sector can also provide a source of income for conservation, which can be used for biodiversity management, such as providing additional resources for improved monitoring and enforcement of hunting and fishing operations.

6.4. How can Indonesian government support implementation of spatial plans?

Government can promote sustainable hunting and fishing to finance conservation within Indonesia's spatial plans.

6.4.1. Incentive mechanisms

- User, license and access fees (common, especially in North America and Europe)
- Certification of sustainable conservation hunting and sport-fishing (not yet established)

6.4.2. Government actions to support implementation framework

- Develop, monitor and enforce regulations to ensure hunting and sport-fishing are sustainable.
- Develop and enforce practical, scientifically based guidelines for sustainable recreational hunting and sport-fishing in relevant land-use zones
- Introduce user, license and access fees for recreational hunting and sport-fishing. Use these fees to support management of protected areas and regulation of hunting and fishing activities.
- Improve data and information on wildlife population dynamics and ecosystem function to develop sustainable hunting and fishing quotas.
- Control corruption associated with hunting and fishing licenses and revenues

7. Forest carbon

7.1. Definition

With growing awareness of the risks and costs of climate change, governments, business and individuals are taking action to reduce green-house gas emissions. Natural ecosystems sequester and store carbon in biomass. Forest carbon or 'biocarbon' combines climate mitigation and biodiversity conservation in the same activity, reducing climate change while benefiting biodiversity and a range of ecosystem services in the process (Bishop, Kapila et al. 2008).

7.2. Trends

Deforestation and forest degradation currently accounts for approximately 20 % of global green-house emissions. The regulated carbon market was worth \$30 billion in 2006, but does not yet include forest carbon projects. The voluntary carbon market was worth US\$100 million in 2006, which included carbon sequestration through forestry. The voluntary market is predicted to grow to \$6,000 million by 2050 (Bishop, Kapila et al. 2008). The Clean Development Mechanism has enabled very few transactions for afforestation and reforestation for land-based carbon. However, the voluntary carbon markets is growing fast as corporations and individuals seek to offset emissions to met their own reduction targets.

Reduced Emissions from Deforestation and Forest Degradation (REDD) pilot projects are underway, to develop technical capacity required to establish REDD within a post-Kyoto 2012 climate change treaty. At the UNFCCC COP meeting in Copenhagen in December 2009, decisions will be made about whether and how to create a regulated market for avoided emissions from deforestation and forest degradation. Currently Brazil and Indonesia are responsible for about half of greenhouse gas emissions from tropical forests.

7.3. Benefit

Forests and other ecosystems sequester and store carbon in biomass, thereby contributing to a stable climate. Carbon markets are growing, with experimentation in forest carbon in the voluntary market,

and the potential for a global REDD policy mechanism post-2012. Biocarbon markets provide a new source of income from forests and forest conservation. By preserving forests for carbon, Indonesia also gains many other ecosystem services, such as erosion and flood control, recreation and tourism value, NTFPs, and a regulated, purified water supply.

7.4. How can Indonesian government support implementation of spatial plans?

The Indonesian government can support the development of REDD global policy. It can already use the voluntary carbon market to finance, and create incentives for implementation of, forest zones within Indonesia's spatial plans.

7.4.1. Incentive mechanism

- Reduced Emissions from Deforestation and Forest Degradation (to be determined at COP13 negotiations of UNFCCC in Copenhagen in December 2009)
- Voluntary carbon markets (small, but established)
- Emerging regulated US carbon markets (emerging)
- Clean Development Mechanism (CDM) (established)

7.4.2. Government actions required to support incentive framework

- Clarify land tenure and rights
- Promote voluntary carbon market projects
- Support REDD development in global climate change negotiations
- Reduce corruption in forestry sector and enforce policies to combat illegal logging
- Support research into monitoring, evaluation and verification schemes for biocarbon

8. Payments for watershed service

8.1. Definition

Payments for watershed services create positive incentives for watershed protection to ensure delivery of watershed services (Asquith and Wunder 2008).

8.2. Trends

Payment for watershed services (PWS) schemes are increasingly common in Latin America, with some initiatives also in Asia e.g. Rewarding Upland Poor for Environmental Services (RUPES). Many payments are made by environment and development agencies, and NGOs, but there are also many payment schemes by local governments and the private sector. Public and private PWS are predicted to be worth \$3,050 million in 2010, and potentially \$30,000 million by 2050. PWS programs in Mexico alone are currently worth \$15 million.

8.3. Benefits

Ecosystems provide watershed services such as filtration of water to maintain quality water for drinking, regulation of water flows to provide a consistent supply of water for irrigation and hydropower, retention of sediments to improve water quality and reduce risks from hazards such as floods and landslides. PWS provide a new source of income, plus social benefits to local communities. In some cases, PWS have also helped to secure land use rights for local communities. Contributions to poverty alleviation can be significant. Economic returns can be high, particularly compared to the high costs of water treatment or new water supplies.

8.4. How can Indonesian government support implementation of spatial plans?

Government can support public and private payments for watershed services to finance, and create incentives for implementation of, spatial plans.

8.4.1. Incentive mechanisms

- Private and public payments for watershed services
 - Payments for water quality and water regulation (emerging around the world, especially in Latin America)
 - Nutrient trading (pilots in the USA)

8.4.2. Government actions required to support incentive framework

- Clarify and strengthen land tenure and property rights
- Support public payments for watershed services, including pilot schemes to encourage private sector involvement and co-funding of private PWS schemes
- Develop rules and regulations to enable public payments e.g. authorization to allocate budgets
- Develop rules and regulations to enable private payments e.g. contract law
- Support well-functioning legal system
- Capacity building in public sector to implement PWS
- Improve monitoring and enforcement of contracts

9. Biodiversity offsets

9.1. Definition

According to IUCN, biodiversity offsets are conservation activities intended to compensate for the residual, unavoidable harm to biodiversity caused by economic development projects (Ten Kate, Bishop et al. 2004). Biodiversity offsets can be one-off, voluntary initiatives or legally mandated systems of compensation, such as wetland mitigation banking in the USA.

9.2. Trends

The use of legally regulated biodiversity offsets is growing, particularly in North America, Australia, Europe and Latin America. There is also increasing interest in voluntary offsets from companies, such as BC Hydro, Rio Tinto and Wal-Mart, as part of corporate social responsibility programs. In some cases, mitigation can be conducted by third parties, creating a market in mitigation services. In the future, an international market for trading in biodiversity offsets may emerge, but it will be a more complex system than carbon because biodiversity varies by location. In the USA prices for mitigation credits can reach US\$300,000 per hectare, making it potentially very profitable for business to invest in biodiversity.

9.3. Benefits

When biodiversity offsets are strictly regulated with high biodiversity standards, they can achieve no net loss of biodiversity from development projects, and in some cases even enhance biodiversity outcomes. Increased biodiversity can also lead to ecosystem service benefits.

9.4. How can Indonesian government support implementation of spatial plans?

Government can provide the enabling policy for biodiversity offsets to finance, and create incentives for implementation of, spatial plans.

9.4.1. Incentive mechanisms

- Biodiversity offsets

9.4.2. Government actions required to support incentive framework

- Develop law, policy and governance systems to support biodiversity offsets
- Develop credible metrics for biodiversity offsets

Conclusion

The Indonesian government plays a vital role in promoting an incentive framework to supply ecosystem services and conserve biodiversity. The government influences critical elements of the legal, institutional and regulatory framework, which constitute the enabling conditions for incentive mechanisms. It is imperative that government address the following over-arching enabling conditions:

- Establish clear, secure land tenure and property rights to use and manage ecosystem services
- Develop and ensure public access to indicators of ecosystem health
- Develop strong legal frameworks that enable payments and markets for ecosystem services. In particular, improve contract law and enforcement of contracts.
- Establish coherent spatial planning and land-use regulations across sectors
- Encourage coordinated policy-making across sectors and levels (provincial, district, national etc.)
- Build capacity within government about incentive-based ecosystem service approaches to land-use planning
- Continue to promote and support protected areas and good environmental regulation and policy processes.

In conclusion, it is the responsibility of the Indonesian government to integrate ecosystem services explicitly into public policy, spatial planning, economic development policies and financial regulations. In doing so, this recognizes the importance of sustaining ecosystem services to support the wellbeing of Indonesia's citizens, and the economy of Indonesia. Given the rapid degradation of Indonesia's ecosystem services, this is an urgent agenda. Indonesia must balance a portfolio of ecosystem services, rather than just exploiting short-term financial gain from natural resource extraction. This requires explicitly considering the economic costs and benefits of the environmental impacts of policies, projects and programs.

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