

Greening high impact sectors

Large-scale, high-impact sectors, including logging, palm oil cultivation and mining, play an important role in the current economies of Borneo. They require a range of investments from both public and private channels to enhance their sustainability. Positive incentives put in place by governments to stimulate business to follow certification processes, internationally recognized sustainability standards and penalties to discourage unsustainable practices, will all help to change behaviour. The most relevant ones to the HoB are elaborated in more detail:

- **Certification for responsible timber supply**, which would include improved forestry practices such as reduced impact logging, maintaining High Conservation Value Forests (HCVF) and forest restoration;
- **Certification for responsible palm oil cultivation**, which would prohibit expansion into natural forests, encourage expansion only on already degraded land and include improved fertilizer and pesticide application methods;
- **Responsible development of sustainable hydropower** following international good practice guidelines, and;
- **Responsible mining**, also following international good practice guidelines, with improved waste management treatment reducing impacts on air and water quality.



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Certification for responsible timber supply

Description	Certification is a way to indicate to buyers that the producer has upheld certain standards of conduct embodied in the certification requirements. For responsible timber production, this entails responsible forest management, taking into account the forest's role in regulating water flow, preventing floods and landslides, storing carbon and providing habitat. It also involves avoiding logging or plantation development on High Conservation Value Forest (HCVF), which is a classification established by the Forest Stewardship Council (FSC). Social aspects are also addressed.
What is the issue?	Forests play an essential role in regulating water flow, preventing floods and landslides, maintaining soil functions, storing carbon and providing habitat for endangered and other species. Depletion and degradation of forests affects their ability to perform these functions. Furthermore, in some countries, concession systems restrict local communities' access to forests which have traditionally helped to provide their livelihoods.
Who is the seller?	Companies
Who is the buyer?	Middlemen, companies
Steps towards successful business model:	<ul style="list-style-type: none"> • Where necessary, adapt requirements of existing certification bodies to local policy, legal and institutional conditions; • Promote and incentivize certification.
What can investors do	Investors and lenders can deny uncertified companies credit and adopt certification as a criterion for eligibility to credit
What can consumers do?	<ul style="list-style-type: none"> • Invest in meeting the certification standards and in getting certified; • Lobby for extending the duration of exploitation permits, so that businesses will have an incentive to adopt a longer-term view; • Negotiate with local communities on a compromise to solve restricted access and exploitation rights. • Buy certified wood/paper/pulp products.
What can the Government do?	<p>National:</p> <ul style="list-style-type: none"> • Extend the duration of concessions and exploitation permits, so that producers have an incentive to adopt a longer-term perspective on forest management. <p>Local:</p> <ul style="list-style-type: none"> • Tax uncertified businesses and waive taxes for certified businesses; • Only issue long-term exploitation permits.
Contribution to...	<ul style="list-style-type: none"> • Securing natural capital: Contributes to the health of ecosystems and ecosystem services. • Poverty reduction: Solving problems of restricted access, local communities can revert to traditional forest-based activities for extra income. • Economic growth: By solving problems of restricted access, traditional local economies can be revived. Natural capital (including ecosystem goods and services) is maintained, benefiting a range of economic sectors in the region and avoiding unnecessary environmental costs. • Climate change mitigation/adaptation: Restoring forests improves their capacity as carbon sinks, which supports the mitigation of climate change.

Certification for responsible palm oil cultivation	
Description	For responsible palm oil cultivation, certification entails responsible management of land, including taking habitat loss, carbon emissions, fire and watershed and land degradation into account within management and contingency planning. Social aspects are also addressed.
What is the issue?	Conversion of forest to palm oil plantation is occurring at a rapid pace in Borneo. As forest cover is eliminated, forest ecosystem services such as water regulation, flood and landslide prevention, soil function maintenance and habitat provision services are eliminated. Especially on peatlands, conversion triggers near irreversible damage. Quality and quantity of water supply are affected, with resulting impacts on aquatic life and human health. Current land use legislation does not take traditional claims to ancestral lands into account, often causing social conflict and vulnerability to poverty. Degraded land is available but currently not favored for palm oil cultivation due to extra costs (bureaucracy, land conflicts, delays).
Who is the seller?	Companies
Who is the buyer?	Middlemen, companies
Steps towards successful business model:	<ul style="list-style-type: none"> • Contact an accredited certification body for initial information on certification principles and criteria, costs and time; • If needed, implement changes in areas in which you are not yet compliant; • Assessment is conducted by an approved certification body on the basis of which certificate of compliance is issued, or rejected with recommendations on further required action to obtain certification.
What can investors do	Investors can deny uncertified companies credit and adopt certification as an eligibility criterion for lending.
What can the private sector do?	<ul style="list-style-type: none"> • Invest in certification; • Lobby for extending the duration of exploitation permits, so that businesses will have an incentive to adopt a longer-term view; • Assist smallholders with information and technology to meet certification standards.
What can consumers do?	<ul style="list-style-type: none"> • Buy from producers who are committed to 'green procurement' and use certified palm oil in their production chain
What can the Government do?	<p>National:</p> <ul style="list-style-type: none"> • Provide financial incentives in the form of subsidies for use of degraded land; • Prohibit, or place steep fees on, conversion of forested land; • Where necessary, adapt requirements of existing certification bodies to local policy, legal and institutional conditions; • Promote and incentivize certification; • Reduce barriers to certification for smallholders; • Draft legislation that recognizes the rights of indigenous communities in the HoB, including tenure/use rights; • Extend the duration of concessions and exploitation permits, so that producers have an incentive to adopt a longer-term view on land and water management. <p>Local:</p> <ul style="list-style-type: none"> • Prioritize use of existing degraded land for future expansion of palm oil; • Develop degraded land database showing location, soil type, owner and current land use; • Preferential taxation for certified businesses; • Only issue long-term exploitation permits.
Contribution to...	<ul style="list-style-type: none"> • Securing natural capital: Contributes to the health of ecosystems and ecosystem services. • Poverty reduction: Lack of adequate quality water sources has great impacts on the lives of the poor; addressing degradation reduces vulnerability to shocks. • Economic growth: Palm oil industry can continue to provide income in a way that ensures a sustainable supply in the future. • Climate change mitigation / adaptation: Despite the detrimental effect of monoculture on resilience to climate change, palm trees do fix carbon.



Box 5.3: Land status swaps for palm oil concessions on forested land⁸

A land status swap is a mechanism to divert oil palm expansion (or other activity such as plantation forest) from forest areas by swapping a concession on forest land with one in an area with no forest. New oil palm plantations often overlap with forest areas. Conversion of forests to plantations leads to high biodiversity losses, GHG emissions and decline of ecosystem services. Land swaps can mitigate the loss of valuable ecosystem services and contribute to retaining natural capital. Furthermore, by preventing the destruction of forests and drainage of peat, large carbon sinks are secured. Using degraded land for oil palm expansion will not only prevent emissions, it could even result in a net sequestration of carbon⁹.

Implementing this strategy, however, is complex due to challenges in both mapping capacity and policy barriers. Often the provincial land database only includes existing usage and land tenure, but does not include degraded land, does not specify soils, forest cover or other dimensions of economic potential. Degraded land is often left out of the spatial planning process altogether. Despite these obstacles, some encouraging pilots are in progress concerning land status swaps to divert oil palm plantations to degraded lands.

Current regulations fail to provide easy access to degraded land for oil palm cultivation; lack of a degraded land database, no access to degraded land and land conflicts between concessions and communities all contribute to the challenges of using degraded lands. Disparity and the scattering of available degraded lands represent additional complications.

Spatial planning reform, inspired by the pilots currently evolving, would prioritize degraded land over forested areas for palm oil plantation location permits and refrain from entering into concessions on forest areas. It would subsidize the use of degraded land and/or allocate high carbon taxes on forested land. The latter might also be necessary to encourage the private sector to use degraded areas.

Oil palm concessionaires may have to be compensated or otherwise incentivized to shift from forested land to degraded land, e.g. through a compensation fund or by providing access to cheap credit for businesses willing to swap existing concessions in forest and peat areas. For companies, identifying suitable degraded land for oil palm development before the development is planned reduces the costs of environmental impact mitigation, or in the case of sustainable oil palm development, the cost of implementing additional due diligence activities¹⁰.

Responsible development of sustainable hydropower	
Description	Responsible development of hydropower fulfills sustainable development principles and is socially, environmentally and economically responsible, transparent and accountable.
What is the issue?	The development of hydropower dams creates significant environmental and social impacts and loss of natural resources. It places increased pressure on already reduced forest cover and freshwater resources. These impacts can be avoided or reduced and hydropower development can be made more sustainable with proper development planning, assessments, mitigation measures and conservation efforts. If developed responsibly and sustainably, hydropower can provide great economic and social benefits with manageable environmental impacts.
Who is the seller?	Developers of hydropower
Who is the buyer?	Governments, businesses and domestic consumers
Steps towards successful business model:	<ul style="list-style-type: none"> Comprehensive and transparent energy needs assessments, energy production options assessments and environmental and social impact analysis; Areas with critical natural assets and areas of high conservation value are protected; A representative sample of free-flowing rivers and their ecosystem services is maintained; Credible information is made publicly available to present the best options, locations, designs and operating rules; Develop multi-stakeholder planning process (state and local government, local communities, operators, businesses, NGOs); Follow internationally accepted best practices, standards and principles; Create financing mechanisms (e.g. REDD+) which encourage conservation of the natural assets (e.g. forests) by the local community on lands provided to them in resettlement schemes or those living within watershed areas; Establish programs to encourage environmental and socio-cultural protection, e.g. river heritage programs; Systems to distribute economic returns fairly among stakeholders.
What can investors do	Adopt and enforce responsible financing mechanisms based on sustainable development criteria
What can the private sector do?	Energy Suppliers <ul style="list-style-type: none"> Ensure energy resources are developed responsibly and sustainably; Invest in conservation and enrichment efforts in affected river basins; Establish hydropower planning and development processes to help minimize social, cultural and environmental impacts; Participatory development of watershed management plans.
What can consumers do?	Energy Purchasers <ul style="list-style-type: none"> Adopt and implement responsible business activities, which include sourcing and purchase of energy from sustainably managed sources; Apply technology and management practices to prevent or mitigate pollution; Adopt hiring policies that promote local community inclusion and capacity building; Contribute to conservation of natural resources and ecosystem services which are shared both by the communities and the businesses, e.g. the protection of watersheds for water resource conservation.
What can the Government do?	National: <ul style="list-style-type: none"> Comprehensive energy planning and development to identify needs and best options with respect to economic, environmental and social considerations; Create incentives and enabling environments for businesses that undertake conservation and proper management of natural resource, e.g. green energy certification systems; Require legal mechanisms and national project approval mechanisms which include cumulative impact assessments of development policies and plans; Create financing mechanisms whereby a percentage of payments from large consumers of water, developers and downstream industrial users are put towards improving water quality and habitat restoration in the watershed. Local: <ul style="list-style-type: none"> Strict enforcement of environmental and social impact assessments prior to project development; Create a framework or structure for multi-stakeholder and integrated water resources and land-use planning and management; Design and establish sustainable income opportunities for communities (e.g. ecotourism areas and eco-villages).

Contribution to...	<ul style="list-style-type: none"> Securing natural capital: A share of revenues can be directed towards conservation of high conservation value and heritage areas. Hydropower is a viable renewable energy resource that can replace other more harmful energy production options. Multi-purpose reservoir use is possible to prevent loss of natural assets due to flood damage. Hydropower can be used in combination with other sources of renewable energy that provide intermittent supply (e.g. solar, wind power). Poverty alleviation: Creates jobs, infrastructure and capacity; generates alternative revenues, and support for local community services (e.g. schools, hospitals and roads). Economic growth: Responsible hydropower development can generate job opportunities, help build a qualified workforce, and mitigate losses from floods, secure natural resources such as water and energy. Climate change mitigation/adaptation: Hydropower can reduce: <ol style="list-style-type: none"> 1) The reliance on fossil fuels for energy production; 2) Carbon footprint of an economy; 3) The vulnerability of communities and economies to climate change induced water extremes (e.g. floods & droughts).
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Responsible mining	
Description	Mining will always impact the environment. There are, however, ways in which mining impacts can be minimized and methods which allow for recovery up to a certain degree. This can be done by smart mine design that incorporates potential post-mining use and mitigation measures during operations.
What is the issue?	<p>Most prevalent in the HoB is open pit coal mining (due to the relatively shallow location of the deposits), while gold is mined mostly from the rivers. Since non-alluvial deposits are often found together with copper, renewed interest is emerging in open-cast mining.</p> <p>Habitat loss, watershed and soil degradation, erosion, land subsidence, dust, social issues, degradation of water quality, hazardous waste are common problems related to mining. Coal is transported over long distances, adding to CO₂ emissions and fragmenting habitats. In addition, transshipment facilities are inefficient, resulting in more environmental damage. Gold is sometimes mined illegally in the HoB with the use of mercury, severely endangering human and aquatic life.</p>
Who is the seller?	Mining companies/ illegal miners
Who is the buyer?	Mostly electricity suppliers (coal power plants) or other industries requiring coal for energy in their production processes, such as cement plants, asphalt factories or chemical plants.
Steps towards successful business model:	<ul style="list-style-type: none"> • Improve the quality of environmental impact assessments (EIA) and ensure they meet international standards; • Build capacity of local government to participate in the EIA process; • Enforce the implementation of environmental monitoring and management plans; • Require industries that use coal to show certificates of origin to impede illegal mining. • Invest in new technologies that allow power generation from low-carbon coal to increase efficiency of coal use; • Invest in research on renewable energy to make it competitive with coal; • Invest in underground mining.
What can Banks/investors do?	<ul style="list-style-type: none"> • Uphold guidelines such as those prepared by the World Bank¹¹ and require any mining initiative funded to adhere to them; • Development banks such as the World Bank can aid local capacity building to properly monitor mining operations.
What can the private sector do?	<ul style="list-style-type: none"> • Use the EIA as intended, carefully mitigating as much as possible impacts on water use and quality, wastes, hazardous materials (in case of gold mining), land use and biodiversity, air quality, noise and vibrations, energy use and visual impacts; • Require buyers of gold, and industries and electricity suppliers who use coal, to show certificates of origin to impede illegal mining; • Invest in more efficient transportation systems; • Invest in underground mining; • Invest in corporate social responsibility (CSR).
What can the Government do?	<p>National:</p> <ul style="list-style-type: none"> • Strengthen enforcement of current regulations (incl. EIA); • Expand capacity to monitor compliance with regulations. <p>Local:</p> <ul style="list-style-type: none"> • Strengthen enforcement of current regulations (incl. EIA); • Expand capacity to monitor compliance with regulations; • Ensure that all mining concessions complete a mine closure plan.
Contribution to ...	<p>Securing natural capital: Preventing the worst forms of degradation.</p> <p>Poverty alleviation: Creates jobs, infrastructure and capacity if tied into local economies.</p> <p>Economic growth: Can generate job opportunities, qualified workforce and capacity if tied into local economies.</p>



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