Informing Land-Use Plans in Central Sumatra

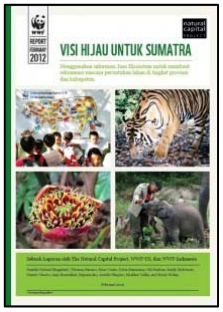
Balancing development and conservation goals

The Natural Capital Project (NatCap) is working with WWF and other partners to include natural capital in spatial plans used to guide development and conservation on the island of Sumatra in Indonesia. Some planning options clearly result in higher carbon stocks, reduced sedimentation, cleaner water, and greatly enhanced habitat quality, in addition to providing land for forestry and oil palm production. International investors such as the Millennium Challenge Corporation are recommending that ecosystem service assessments, such as the one conducted with InVEST, be used to guide priorities for millions of dollars in forest investments to reduce greenhouse gas emissions.

Building a sustainable land-use plan for Sumatra

Working with government agencies and local NGOs, we partnered with WWF-Indonesia to help district and provincial governments consider natural capital as they develop land-use plans in central Sumatra. Rapid proliferation of palm oil plantations and commercial forestry are forcing government officials in Sumatra to balance tradeoffs in revenues and livelihoods from these activities with their impact on nature's other benefits to people. From storing huge amounts of carbon in peatlands and forests, to producing food and medicine, securing clean water, and protecting biodiversity and endangered species, healthy forests provide a myriad of ecosystem services to the people of Sumatra. By strategically planning where and how development occurs on the landscape, government agencies can plan for development and maintain critical ecosystem services.

A Green Vision for Sumatra



In February 2012, the Natural Capital Project and WWF published a new report, the first of its kind, which uses ecosystem services information from InVEST to make recommendations for sustainable land use planning in Sumatra. *A Green Vision for Sumatra* demonstrates how spatial and economic analyses of ecosystem services and wildlife habitat can support provincial and district planning in Indonesia. By assessing the benefits from nature that the people of Sumatra depend on, the report identifies the full costs and benefits of alternative future development trajectories. Its results are drawn from comparison of Sumatra's landscape in 2008 with a possible business-as-usual future and an "Ecosystem Vision for Sumatra." The report includes detailed methods for InVEST users, as well as policy recommendations for the Indonesian government and international agencies, such as the Millennium Challenge Corporation.

Results

Informing Land-Use Plans

InVEST maps and associated analyses have informed spatial planning decisions in several provinces in Sumatra, such as Jambi, and a Strategic Environmental Assessment for the region.

Safeguarding Natural Capital

Our research offers practical options to safeguard natural capital. Analyses also provide planners with information they need to target districts for conservation and development activities.

Providing Clear Policy Guidance

Our results suggest that implementing the Sumatra Vision will result in higher carbon stocks, reduced sedimentation, cleaner water, and greatly enhanced habitat quality.

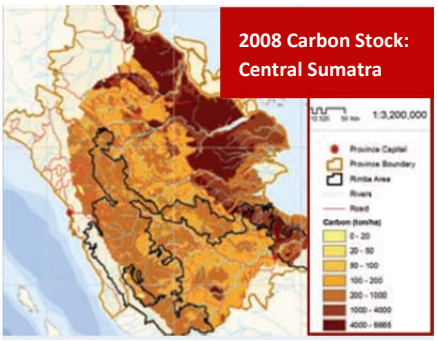
Informing Investment Decisions

The Millennium Challenge Corporation recently signed a Compact Agreement with the Indonesian government to fund $600 million for projects for sustainable development and offsetting carbon emissions. They recommend in their call for proposals that ecosystem service assessments, such as the one conducted with InVEST, be used to guide priorities for investments.

Public Support

The Sumatra Ecosystem vision has been indorsed by the Indonesian Ministry of the Environment, Ministry of Public Works, Ministry of Forestry, and Ministry of Home Affairs.

NATURAL CAPITAL PROJECT:
Central Sumatra, Indonesia



Ecosystem Services

Carbon Storage & Sequestration

Over 50 years, the Sumatra Vision will replenish 350 million tons of carbon stock, while the current government plan would result in net carbon loss. Forest carbon projects in Central Sumatra's peat swamps and upland forests offer global climate benefits, and support Indonesia's goal to reduce carbon emissions by 26% from 2005 -2020.

Biodiversity

Sumatra's tropical rainforests are home to many endangered species of animals including Sumatran tigers, elephants, orangutans and rhinoceroses. They also harbor over 15,000 known species of plants.

Hydropower

Hydropower is an important source of electricity in the region. Healthy forests upstream forests can reduce sedimentation in the rivers and limit the amount of dredging required at the hydropower facility.

Water Quality & Quantity

InVEST models can map and value the water supply to a region, which is of critical importance to human health as well as to agricultural production.

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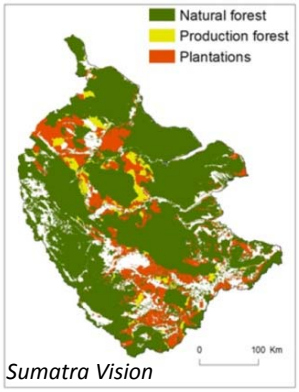
A Historic Commitment to Conservation

In Indonesia, district and provincial spatial plans specify where timber harvest, plantation expansion, infrastructure development, and conservation should take place. In 2010, the 10 governors of Sumatra made an island-wide commitment to conduct ecosystem-based spatial planning, which supports sustainable development and conservation. The plan addresses environmental, climate, and livelihood concerns and also identifies critical areas for biodiversity and peatland conservation. Six national government agencies and a forum of NGOs developed an ecosystem vision for Sumatra as an alternative to the existing government spatial plans.

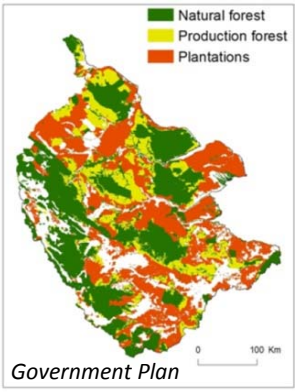
Comparing Development Scenarios with InVEST

To develop land-use plans for Central Sumatra that balanced development and conservation goals, WWF worked with stakeholders to develop scenarios of different possible futures- one showing business as usual, and the other balancing conservation and development objectives. The InVEST software suite was used to map and value how ecosystem services (such as carbon storage and sequestration, water quality and quantity, and habitat quality for biodiversity conservation) would change under these alternative land-use planning scenarios. InVEST maped and quantified ecosystem services, allowing for easy identification of tradeoffs and synergies among multiple services and economic activities. Combing this information with input from stakeholders, an alternative land-use plan was identified that would result in higher carbon stocks, reduced sedimentation, cleaner water, and greatly enhanced habitat quality than the current government plan.

2008 Land Cover



Sumatra Vision



Government Plan

In the map above, both development scenarios are shown to have significantly more forest cover than in 2008. Production forests - where logging and conversion can take place - drive the increase under the under the Government Plan, while the Sumatra Vision results in a greater proportionate increase in natural forest cover.

As a result of the analysis and continued work on the ground by WWF, the ecosystem service information has been incorporated into a Strategic Environmental Assessment for Jambi Province. Jambi and multiple district governments are now using this information to develop official land-use plans that guide permitting and development decisions for the region.