

## Land use conversion contributes to high rates of greenhouse gas emissions

Deforestation and land conversion have long been issues for Indonesia. The effects are evident not only in deteriorating environmental quality and livelihoods of forest communities, but also in the declining economic returns from forest-based activities. Recently, with growing concern over climate change, Indonesia's record of deforestation and land conversion has regained public prominence. This is because **loss of forest cover, forest fires and peat land drainage in Indonesia is contributing high levels of greenhouse gases** to the atmosphere.

Although there is uncertainty about the exact magnitude of these emissions, all estimates show that emissions from forest and land use conversion are currently much higher than total emissions from combustion of fossil fuels. The level of emissions from deforestation and land use conversion places Indonesia among developing countries with high carbon emissions – and thus a country where **mitigation measures should take place to prevent further acceleration of climate change**.

The world's attention on climate change is creating additional pressure on Indonesia to resolve its problems associated with deforestation and land use conversion.

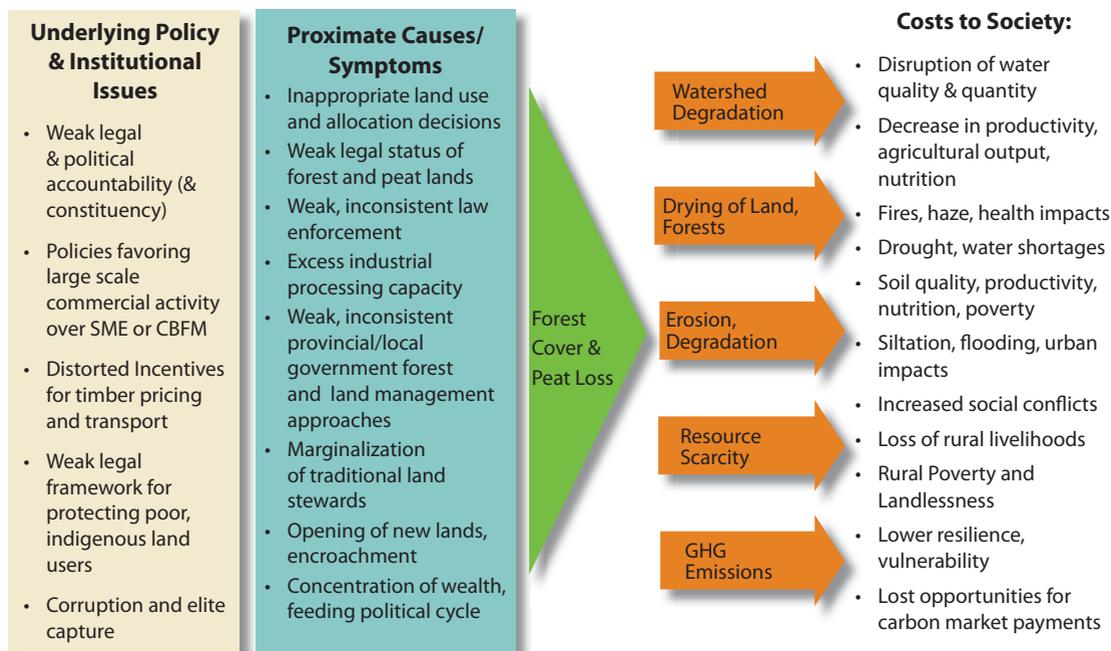
However, at the same time, it is also **creating new opportunities to explore solutions, as well as opportunities for international cooperation**. New financial schemes are available and can serve as incentives for instituting changes in Indonesia's forest and land use sectors.

### Poor forest and land use management have long-term social and economic costs

Forest and land use conversion in Indonesia have been addressed by many policy reforms and development programs. Recent data and analysis show lower rates of deforestation, which indicate signs of progress. However, the reported **high levels of greenhouse gas emissions from this sector demonstrate that more work needs to be done in this area**.

Analyses are underway to obtain a clearer picture of emission levels from forest and land use to help define appropriate mitigation measures. It is known that different types of forests and soils, as well as different methods of deforestation cause varying levels of carbon emissions. For example, burning contributes emissions more directly and quickly than other land-clearing techniques. Peat land deforestation and drainage also cause more emissions per unit area than other forest types. In production forests, losses occur from poor forest management practices, illegal behavior, and ineffective law enforcement. While in conversion forests, deforestation is caused by conversion to pulp and oil palm plantations, as well as agriculture. A portion of forest loss occurs in swamp forest, which grows on peat soils that contain high concentrations of carbon. Deforestation in even small areas of swamp forests cause a release of high levels of carbon into the atmosphere.

### Forest & Land Use Sector: Upstream Policies & Distortions Impede Progress and Impose Cost on Society



Modified and expanded from WRI State of the Forest Report 2002, WB Strategic Options for Forest Assistance In Indonesia, 2006

Current information indicates that, in fact, much of the deforestation occurring in Indonesia is geographically concentrated in only ten provinces in Sumatra and Kalimantan. The ten provinces account for 78 percent of dry forest loss and 96 percent of swamp forest loss, and are thus responsible for most of Indonesia's non-energy greenhouse gas emissions. The provinces of **Riau, Central Kalimantan and South Sumatra alone account for over half of forest losses and emissions.**

Reducing carbon emissions from forest and land use will require improved forest management practices and law enforcement. Many of the underlying policies and institutional issues that are responsible for poor forest and land management have been analyzed and discussed by stakeholders over the past two decades. These policies and distortions are summarized in the diagram on the previous page. The diagram shows that **all environmental consequences associated with deforestation and land use conversion incur costs to society**, in the form of health impacts, social conflicts, reduced productivity, and other economic losses.

### **Focused efforts towards better forest management**

There are many good economic and social reasons to address deforestation and land clearing by fire, even aside from the important climate benefits. Reducing deforestation and burning can contribute to economic development, **poverty alleviation, protection of environmental services, and promotion of good governance.**

Some economically beneficial forest management options that should be implemented include:

- Improving forest law enforcement, management and governance to improve asset management and revenue collection within the sector;
- Realigning incentives for timber harvesting and processing firms to improve competitiveness and economic returns;

### **A MORE SUSTAINABLE INDONESIA is one where:**

- The costs of environmental degradation and climate change are lowered so that less wealth is diverted from growth;
  - Good environmental management contributes to poverty alleviation by reducing impacts on the poor and better sharing of benefits;
  - Renewable resources are used sustainably while non-renewable ones are wisely developed for investment in human and physical capital; and
  - Citizens are aware of and participating in environmental issues directly or through their representatives and other organizations.
- Restructuring and revitalization of forest sector industries to improve domestic efficiency, and access international markets;
  - Controlling forest and land fire, to reduce smoke and haze that cause high health costs and economic losses;
  - Ensuring equity and transparency in forest/land use decisions to reduce uncertainty and conflict that add to costs of business;
  - Conducting independent monitoring of legal compliance and participation standards.

In addition, it is also necessary to **reexamine land use licensing mechanisms and the role of local governments in allocating and creating incentives for land conversion.** Long-term vision from local governments is critical to achieving better forest and land governance.

The positive side of geographically-concentrated deforestation is that **reform efforts can be focused in the few provinces that contribute most to deforestation and land use conversion**, namely **Riau, Central Kalimantan and South Sumatra.** A few changes in these places have the potential to create economic benefits for Indonesia and emissions reduction benefits for the entire planet. Expansion



into the ten provinces with the highest rates of deforestation and land conversion would have even greater benefits.

## International forest carbon financing can benefit Indonesia

In recent years, GOI has allocated significant funds for reforestation and rehabilitation of lands that have been deforested and degraded. The Ministry of Environment is also developing Indonesia's Second National Communication to UNFCCC on GHG emissions, while the Ministry of Forestry is developing a plan and baseline estimates for a carbon market mechanism called Reduced Emissions from Deforestation and Degradation (REDD), a Forest Resource Information System, and a National Carbon Accounting System.

The international community recognizes the role of deforestation reduction in preventing further carbon emissions. An international forest carbon market is under negotiation, and is expected to be established in the post- 2012 framework. One of the schemes under consideration is REDD. Through REDD, **Indonesia has the potential of earning USD 0.5 – 2 billion per year; this, however, will depend on how well Indonesia performs in reducing deforestation and land degradation.** REDD payments can create an incentive and a revenue stream that offsets the costs of making changes in the forest and land sectors. Indonesia is now pursuing a two track strategy, advocating for REDD in the international climate negotiations and developing a domestic REDD initiative with some donor support.

The international schemes will require the commitment and cooperation of many stakeholders. For example, the role of the local communities, the private sector, the Ministries of Finance and Environment, the National Climate Change Council, and BAPPENAS will be needed to help **produce solid, verifiable emissions reductions for sale on the international carbon market.** Careful steps must be taken to select and survey suitable sites, implement proper action to modify behavior or change incentives, monitor and verify data, and find appropriate buyers to share both financial benefits and risks.

In addition to REDD, other sources of carbon financing can be tapped as well. Some examples include the Forest Investment Program, a multi donor fund within the World Bank's Strategic Climate Fund, and bilateral government support (which could provide financing in exchange for verified reduction of deforestation). **The Indonesian Government and other stakeholders should familiarize themselves with the potential benefits and mechanisms to access the new financing schemes.**

### Background information on CEA Report

The Country Environmental Analysis (CEA) report highlights underlying challenges to Indonesia's environment and management of its natural resources. The initial purpose in preparing the report was to guide World Bank support to Indonesian institutions for more sustainable development. However, the report also provides information that may contribute to the Government's medium term development plans under the policies of the new administration.

