

## Mainstreaming Climate Change For Sustainability

### Key Messages

1. Indonesia is highly vulnerable to climate change. Adaptation is needed to build resilience and protect both Indonesia's economy and its poorest citizens.
2. Indonesia currently emits significant levels of greenhouse gases (GHG) from forest loss and changing land use although rapidly growing fossil fuel emissions represent a greater concern going forward.
3. Today's trends in energy use and forest loss are not economically sustainable with high emissions leading to economic waste and high social costs.
4. Investments to control the volume of carbon emissions present a win-win opportunity: economic development driven by both socially and environmentally responsible goals.
5. New climate financing instruments create an incentive to tackle policy challenges, help to offset adjustment costs, and can leverage investment towards key development priorities.

### Where Indonesia Stands Now

**The development challenge posed by climate change is putting past gains at risk.** Specific areas of Indonesia are highly vulnerable to multiple climate change hazards. In fact warming is not the greatest risk as more intense rainfall and sea-level rise will adversely affect food security, health, water resources, farming and coastal livelihoods, and forest and marine biodiversity. Vulnerability studies show that the economically productive areas of Java, Bali, Sumatra, and Papua are especially vulnerable to these risks.

**Failure to adapt will hurt the economy and the poor.** The Asian Development Bank (ADB, 2009) projects that by the end of this century climate change will cost Indonesia between 2.5 percent and 7 percent of GDP<sup>1</sup>. The greatest impacts will fall on the poorest people, specifically those who live in areas susceptible to drought, flooding and/or landslides and who are dependent on climate-sensitive livelihoods, particularly in agriculture and fisheries. The poor lack the assets and flexibility to deal with the impacts of climate change on productivity, and the devastation wrought by natural disasters and extreme weather.

**Rapid deforestation, illegal logging, forest fires, and peat-land degradation cause emissions, deplete Indonesia's natural assets, undermine revenue generation potential, and undermine community livelihoods.** Indonesia emits significant amounts of greenhouse gases (GHGs), mostly from forest loss and land-use change. Deforestation and fires/haze reduce Indonesia's development potential and undermine its international reputation. Most deforestation and fire losses occur in just 10 provinces (78 percent of dry forest loss and 96 percent of swamp forest loss). Riau, Central Kalimantan and South Sumatra alone account for over half of all forest degradation and loss. While efforts to measure emissions more precisely continue, there is a broad consensus within the GoI that forestry and land-use are key targets for mitigation.

**Forestry and land-use issues are complex and challenging, but reasonably well understood.** Key issues contributing to deforestation are: (i) weak legal and political accountability; (ii) policies favoring large-scale commercial activity over small- and medium-sized businesses; (iii) distorted incentives for timber pricing and transport; (iv) an inadequate legal framework for

<sup>1</sup> ADB (2009), The Economics of Climate Change in Southeast Asia: A Regional Review. Manila.

protecting the poor and indigenous land-users; (v) undervaluation of forest assets and low revenue capture; and (vi) corruption (Figure 1). These underlying issues lead to more proximate causes that give rise to visible impacts on the landscape, as well as GHG emissions and societal losses.

**As Indonesia’s energy use grows rapidly, it is becoming more inefficient and using dirtier fuels (with higher emissions).** Oil use contributes most to current fossil fuel emissions, but coal emissions have grown fastest over the past decade due to the increasing use of coal in power generation. The manufacturing sector is the largest oil user and fossil fuel GHG emitter, partly due to inefficient energy use and weak environmental controls. Inefficient energy use also undermines competitiveness. The power sector is the fastest growing source of fossil fuel GHG emissions, due mainly to conversion from oil-fired to coal-fired power generation plants. Transportation is also a major emitter, due to the rapidly growing number of vehicles, poor fuel quality, and a lack of investment in mass transport systems. These sources of emissions could be reduced through a combination of policy changes and increased investment. For example, coal-fired power generation plants could be replaced by clean, secure and domestically generated geothermal power.

**Indonesia’s per capita fossil fuel GHG emissions are still low compared with other middle-income countries. However, emissions are rising faster than energy use**

**per capita, which is not the case for most of its peers.** Indonesia consumes 240kg of oil equivalent per US\$1,000 of GDP (2005 PPP US\$) (ESCAP Statistical Yearbook, 2008), about 10 percent more than other ASEAN neighbors and 67 percent more than European nations.

**Energy pricing and policy issues are challenging, but well understood.** And climate considerations provide new angles but do not alter the fundamental conclusions. Issues of concern include: inefficient use of energy resources; over-consumption; ineffective targeting of subsidies; under-development of alternative energy sub-sectors; and adverse environmental and health impacts (Figure 2). As with the forestry sector, there is now a greater incentive to tackle these issues in the energy sector, using carbon markets and climate financing instruments.

**The GoI recognizes these climate change challenges and has made major advances.** Indonesia achieved global visibility as host of the 2007 UN Climate Change Conference in Bali. National action plans have been integrated into the development planning and budget process. A National Council on Climate Change (with representation from 15 ministries) was established by the president to coordinate Indonesia’s climate change policies. The GoI is establishing a climate change trust fund and developing climate policy papers and a low-carbon development strategy.

Figure 1. **Forest & Land Use Sector:**  
**Upstream Policies & Distortions Impede Progress and Impose Costs on Society**

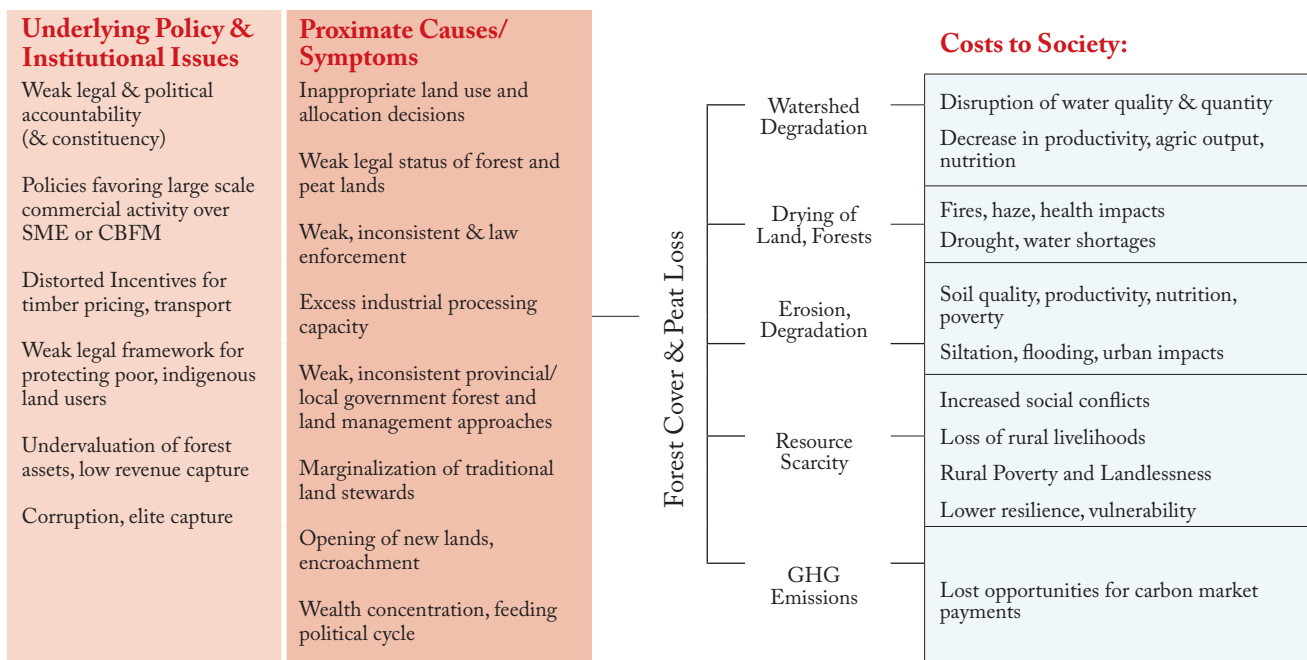
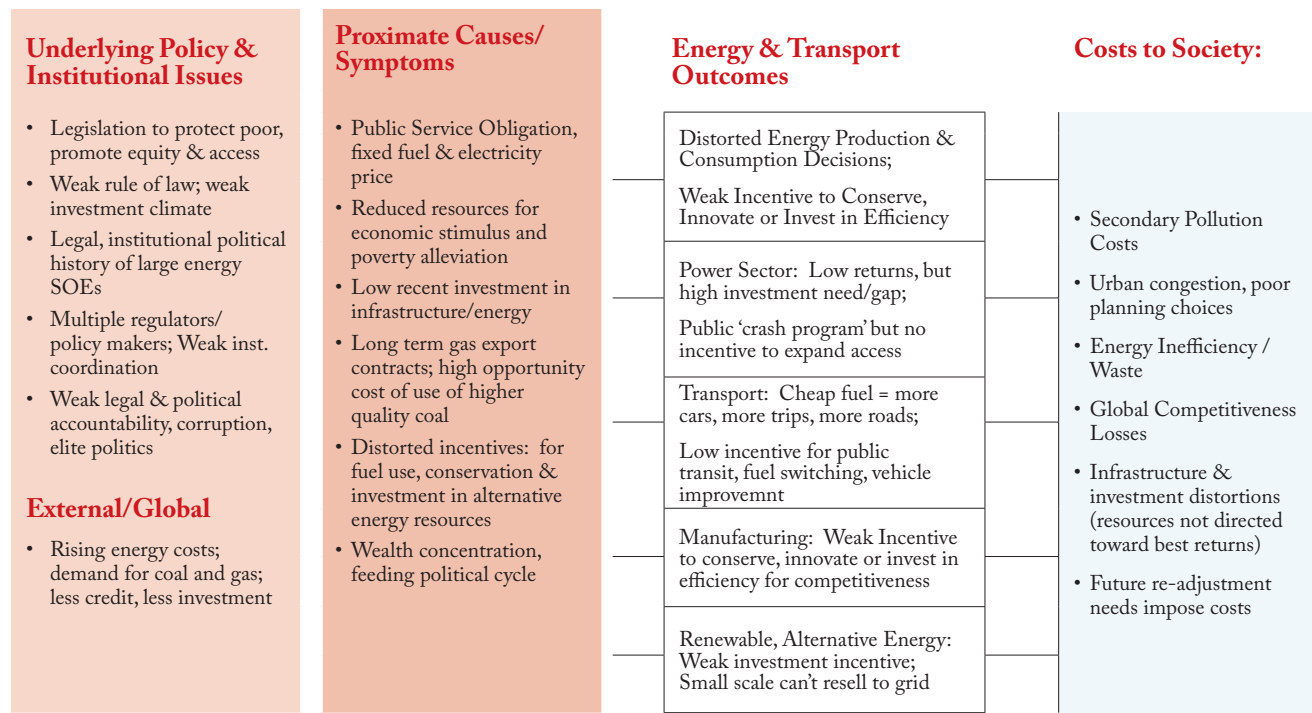


Figure 2. Energy and Transport Sectors: Upstream Policies & Distortions Impede Low Carbon Potential & Impose Costs on Society



**Indonesia has put forward three consistent messages:** (i) climate change cannot be addressed at the expense of the poor; (ii) climate investments must be consistent with development goals; and (iii) climate assistance must be on top of past development assistance commitments. Development partners can help Indonesia to hasten key reforms, scale up investment and use new climate financing instruments to build institutional capacity and leverage investment by attracting investors.

## How Indonesia Can Rise Further

**Indonesia should prioritize and mainstream climate change concerns in its development agenda and evaluate what actions make the most economic, social and environmental sense.** New climate financing instruments and markets can provide an important source of investment or incentives to achieve development objectives that also have climate benefits.

**Indonesia can capitalize on carbon finance opportunities that create new incentives to implement targeted policy reform and investments.** Indonesia has the opportunity to make environmentally friendly long-term choices in energy, transportation, forestry, and manufacturing, with developed countries and carbon markets picking up the

bill. Indonesia is a global leader in developing market payments for Reduced Emissions from Deforestation (REDD), and these payments could yield earnings of up to US\$1 billion annually. In the energy sector, Indonesia is poised to access low-cost financing from the Clean Technology Fund and expand the use of carbon market innovations (streamlined programs) to generate revenues from emission reductions.

**Better control of forest loss, peat land and fires will contribute to Indonesia's development and poverty reduction goals.** The country will gain by reducing watershed degradation, fire/haze, adverse health impacts, and soil erosion and degradation, all of which impose costs on society, especially the poor. Emission reductions could also create a stream of forest carbon payments that would offset the costs of policy reforms, new technologies, compliance and compensation.

**Better management and control of energy use will increase Indonesia's efficiency, competitiveness, and energy security.** The country will benefit by reducing inefficient energy use, pollution and behavior-distorting subsidies — all of which impose costs on society. It will also gain by developing its own abundant renewable energy resources, reducing dependence on expensive imported energy, and stimulating economic efficiency and

competitiveness. Emission reductions can tap directly into existing carbon markets —markets that have doubled in value each year. Soft financing instruments can be used to stimulate and leverage investment and to reduce the cost of more innovative approaches.

**Addressing energy sector issues will help to meet growing demand, reduce expensive imports and improve the quality of life in Indonesia.** Energy diversification through the use of renewable energy, energy efficiency incentives, and policies to increase domestic fuel production will increase the available domestic energy supply and reduce waste (e.g. gas flaring). Improving energy use, efficiency and lowering emissions will also generate secondary development benefits, such as cleaner air in cities and homes, reduced congestion, better waste management, and more competitive production processes.

**In order to mainstream climate change issues into its development agenda, Indonesia needs to undertake strategic policy decisions including:**

- ◆ **Adopting climate change policies as part of a larger strategy consistent with Indonesia’s development path.** Climate-change issues are complex, cut across most sectors and jurisdictions, and attract international attention. Indonesia has the resources to pursue its development goals while also reducing climate risks. “Climate-smart” actions and policies can be adopted incrementally by different sectors, while climate financing can reduce financial barriers.
- ◆ **Sending a strong signal to markets and investors through incremental policy shifts and key investments, leveraged with climate financing.** Policy changes will pave the way for investments that benefit Indonesia’s economic development and the welfare of its people. Project investments can be used to demonstrate new approaches, develop new technologies, and reduce transactions costs. Climate financing can help to minimize financial hurdles, shift the balance of incentives, and pay for adjustment costs.
- ◆ **Setting clear institutional mandates and integrated strategies, while strengthening capacities.** Institutional roles and authorities for energy and forestry issues need to be clarified in order to implement key reforms and attract investment. Coordination and prioritization of policies, investments and financing instruments will need high-level attention if competing sectoral and institutional interests are to be kept in check.

**Indonesia can also take incremental steps towards a lower carbon economy through the following sectoral actions and investments by:**

- ◆ **Improving forest management and governance** to increase forest asset values, reduce state revenue capture, and develop local livelihoods, as well as Indonesia’s competitiveness and international stature. Action should be taken to improve monitoring systems, law enforcement, local governance and land-use decisions, and fire control.
- ◆ **Adjusting prices to opportunity costs and making low-cost climate financing available for renewable energy** (e.g. geothermal power) would contribute to power-sector goals, reduce unhealthy emissions, stimulate new investment and jobs, and improve the stability and security of Indonesia’s energy supply. More realistic energy pricing would also result in greater efficiency in the industrial, power, manufacturing and transport sectors.
- ◆ **Implementing energy price changes and fiscal incentives (e.g. depreciation) in the manufacturing sector** that could help industries/exporters become more energy efficient and competitive. Building capacity in energy service companies would create jobs and provide services to manufacturers. Trade tariff policies would promote the importation of cleaner technologies and stimulate Indonesia’s own clean technology exports, such as compact fluorescent lamps.
- ◆ **Improving fuel quality to reduce health costs and productivity losses from urban air pollution.**
- ◆ **Expanding affordable transit bus systems to reduce urban congestion,** contribute to labor mobility, and improve the quality of life in Indonesia’s rapidly growing urban centers.

**Indonesia should also invest in adapting to the coming changes, as this will pay off in the long term.**

The agriculture and health sectors, as well as coastal communities, require immediate action to reduce their vulnerability to climate change. Analyses indicate that the benefits of reducing climate-change related damage will exceed the costs by 2050.<sup>2</sup> Indonesia’s adaptation priorities should include enhancement of agricultural productivity threatened by changing rainfall patterns, insurance measures to mitigate and spread risk, and the protection of coastal populations and infrastructure. While much of the financing will need to be mobilized domestically, international financing mechanisms (e.g. the Adaptation Fund managed by the Global Environment Facility) are developing, such that transfers from developed countries could help to reduce Indonesia’s financial burden.

## How The World Bank Can Help

**The World Bank is helping the GoI prioritize climate actions that yield the greatest development benefits.**

These engagements can be scaled up strategically over time in line with Indonesia's development priorities.

**On forestry and land use issues, the World Bank is currently mobilizing grant support to:** help implement the GoI's REDD initiatives from the Forest Carbon Partnership Facility; improve approaches to reduce emissions from peat lands through water management; improve forest management and conservation in Aceh and develop sustainable revenue sources through forest carbon payments; demonstrate and scale up ecological restoration for forest carbon storage. Going forward, the World Bank will explore grant mechanisms to pay for implementation actions and purchase forest carbon credits for (REDD) in Kalimantan, and provide soft financing through the Forest Investment Program.

**In the energy sector, the World Bank is currently expanding support to GoI priorities by:** promoting development of geothermal energy resources through policy reforms and the removal of investment barriers; developing methods to allow geothermal investments to access carbon markets more effectively; developing investments in power generation through pumped storage and geothermal; and assessing low carbon development options that will contribute to the GoI's development strategy. In the near future, the World Bank will support (together with ADB and IFC) the GoI as it develops an investment plan for accessing climate financing under the Clean Technology Fund (potentially US\$300 million of concessional funds and leverage for further investments).

**On the issue of adaptation, the World Bank is currently helping GoI to map climate vulnerability** and link the results to the country's broader disaster risk reduction agenda for adaptation purposes. **Going forward,** the World Bank will support the GoI to mainstream climate resilience into critical future investments.

---

The World Bank Office Jakarta  
Indonesia Stock Exchange Building Tower 2, 12th floor  
Jl. Jenderal Sudirman Kav. 52-53, Jakarta 12190, Indonesia  
ph. + 62 21 5299 3000 | fax. + 62 21 5299 3111  
<http://www.worldbank.org/id>

for more information, please contact:

**Mr. Timothy H. Brown**  
Senior Natural Resources Management Specialist  
[tbrown2@worldbank.org](mailto:tbrown2@worldbank.org)



Investing in Indonesia's Institutions  
for Inclusive and Sustainable Development



THE WORLD BANK | BANK DUNIA