

## Phase 1 Assessment of Emissions – Key Findings

Indonesia has initiated the development of a low carbon options study as an opportunity to evaluate and develop strategic options to address climate change mitigation issues without compromising development objectives. In Phase 1, a Technical Baseline Study of GHG (greenhouse gas) Emissions was undertaken to inform the Government of Indonesia (GOI) on the current emissions situation and the potential areas for further study and action. A second phase of the study will be designed to help inform the GOI about the main GHG emissions by source and category of use, to estimate the potential costs and benefits associated with movements toward alternative development paths, and to build consensus toward a national low carbon strategy.



### Summary of Findings on Emissions

Indonesia is among the top 25 GHG emitters from fossil fuel combustion, or ranked 16th when counting European Union as one country. However, if emissions due to deforestation and land use change are included, Indonesia rises to among the top emitters.

**Forests and Land Use.** Emissions from deforestation and land use change are currently greater than those from fossil fuel combustion. Though estimation methods vary, forest fires, land conversion by fire and conversion and degradation of peat lands are especially important sources of emissions. The GOI (Ministry of Forestry) recognizes this issue and is developing an initiative on Reduced Emissions from Deforestation and Degradation in collaboration with the Indonesia Forest Carbon Alliance, a coalition of donors, non-governmental organizations, and scientists working on supporting technical studies.

Based on estimates of the area and location of deforestation in recent years, it appears that forest loss is most extensive on production forest land (designated for sustainable harvest) and in areas planned for conversion into other land uses, mainly agriculture and plantations. In the last decade, timber estates and oil palm plantations have been among the fastest growing land uses. Both are important to regional economies. In comparison, forest loss in conservation and protection areas is relatively less of a concern from an emissions perspective (though loss of biodiversity in lowland forest habitats remains an important issue).

**Fossil Fuels.** Emissions from fossil fuel combustion are not as large as emissions from forests and land use, but are growing very rapidly, at 6 percent per year, faster than GDP. Overall emissions are growing even faster than energy use, implying inefficient use of energy and a shift to fuels with higher emissions.

Among fossil fuels, oil is currently the main contributor of emissions. However, emissions from use of coal have been the fastest growing for the last decade. The fast rise of coal (which produces more GHG emissions per unit than oil or gas) is attributed to its increasing use in electric power generation.

Among the consuming sectors, industrial activities have been the main source of emissions, but electricity generation is the fastest increasing. This is mainly due to the increases in electricity demand, being fed by expansion of coal-fired generating capacity in recent decades. Emissions from the transportation sector grew steadily but less so than the industrial sector. Residential sector emissions are relatively smaller and come mainly from the combustion of kerosene for home cooking.



**Emissions Intensity and International Comparison.** Emissions from fossil fuel combustion grew faster than GDP during the decade 1994 to 2004, so emissions intensity increased. In the period 1994-2004, energy intensity increased, but the rate of increase declined, which is progress in the right direction

In most countries, GDP has been growing faster than fossil fuel emissions, so emissions intensity declines over time. Indonesia's emissions intensity is similar to that of the world average, and still below the average for non-OECD (developing) countries.

Indonesia's GHG emissions per capita are still low in comparison with other countries, but are rising faster than energy use per capita. From 1994 till 2004, Indonesia's CO<sub>2</sub> emission per capita from fossil fuels grew faster than China's and India's.

**Future Scenario Comparisons.** Although forest, fire, and land use change dominate emissions currently, there is no reason to expect a major increase over time. As forests are depleted, or controls on deforestation and fire are implemented, emissions from these sources would decline.

In contrast, GHG emissions from fossil fuel combustion are expected to grow rapidly, doubling every 12 years. By 2030 these emissions would be four times higher, thus potentially off-setting any gains made through controlling Indonesia's forest and peat land destruction.

Energy and fossil fuel use issues in Indonesia have been analyzed for some time. There are governance challenges and underlying policy issues in both sectors that contribute to Indonesia's current greenhouse gas emissions profile. Climate change considerations – and potential access to carbon markets – provide a new angle for examining these issues, but not fundamentally different options than have been offered in the past.

**Low Carbon Development Options for Indonesia is a collaboration between:**



Ministry of Finance

**Fiscal Policy Office  
Ministry of Finance**

Jalan Dr. Wahidin No.1, 1<sup>st</sup> Floor  
Jakarta, Republik Indonesia  
Tel/Fax: +62 21 384 0059 (direct)  
Internal: 7004  
[www.depkeu.go.id](http://www.depkeu.go.id)

&



BANK DUNIA | THE WORLD BANK

**The World Bank**

Jakarta Stock Exchange Building Tower II, 12-13<sup>th</sup> Floor  
Jalan Jendral Sudirman Kav. 52-53  
Jakarta 12910  
Tel: +62-21-52993000  
Fax: +62-21-52993111  
[www.worldbank.org/id](http://www.worldbank.org/id)