

## Providing reliable, affordable and sustainable energy while mitigating contributions to climate change is a development challenge for Indonesia.

Indonesia needs power and transport to grow. Sustained economic growth is driving the demand for electricity to grow at over seven percent per year. Yet electricity supply is not keeping pace with this strong rate of growth – electricity production has only been rising at around six percent annually. Even higher growth is foreseen if progress is made in providing household connections to the 70 million people currently without access to electricity. Indonesians' access to and consumption of electricity remain the lowest among large developing countries in East Asia.

Current power generation methods – increasingly based on coal – are a growing contribution to greenhouse gas emissions. As electricity demand continues to rise, Indonesia's greenhouse gas emissions due to fossil fuel combustion are expected to rise rapidly also.

Following current trends in the energy and transport sectors, Indonesia's fossil fuel-based emissions are likely to triple by 2030. Much of the increase will originate from the use of fossil fuels in the power generation sector. Although forest degradation and land-use conversion now dominate Indonesia's emissions, fossil fuel emissions will constitute a rapidly increasing share if business continues as usual.

**The challenge is how to meet growing demand for electricity while curbing emissions from the power sector. To**

reduce dependence on oil, current GOI plans would significantly increase the share of coal in the power generation fuel mix, doubling from 35 to 70 percent by 2020. In terms of carbon emissions, coal is about twice as 'dirty' as natural gas. This shift to coal means that greenhouse gas emissions from fossil fuel combustion (1994-2004) have grown faster than the economy. Rather than becoming more energy efficient and cleaner, Indonesia is using more energy and creating more emissions for every unit of economic growth (GDP). Per capita emissions from fossil fuel consumption have grown faster than in China and India, countries with higher GDP growth than Indonesia in recent years. Beyond climate effects, the rapid expansion of coal use raises concerns about the likely environmental and health impacts on heavily populated Java and Bali, and environmentally sensitive areas in some outer islands.

Indonesia has very rich renewable energy resources, especially geothermal, hydropower and biomass. Yet, these resources are still largely unexploited or under-developed, despite their high potential as clean domestic energy resources.

### **Energy sector subsidies and unsustainable policies harm both the economy and the environment**

Fossil fuel subsidies hurt the Indonesian economy through impacts such as fiscal deficits, unpredictable budget outlays and inequitable benefits for rich consumers. The same subsidies also harm the environment. By keeping fossil fuel prices low, consumers continue to use energy and electricity inefficiently and excessively. This consumption pattern causes high levels of greenhouse gas emissions along with significant environmental and health costs.

Significant public and private sector investment is needed to meet growing demand and improve access. However, current pricing policies do not allow PLN to cover the cost of supply, do not provide a strong incentive to private investors and create costly government subsidies to support PLN's public service obligation.

Subsidies also hinder the development of Indonesia's abundant renewable energy resources. Indonesia has the world's largest potential for geothermal energy production which, if developed, would put the country on a more sustainable energy path. Major efforts to expand renewable energy development that began in the 1990s have been impeded by the high up-front capital cost of technology, lack of incentives, regulatory uncertainty, and inadequate institutional capacity.

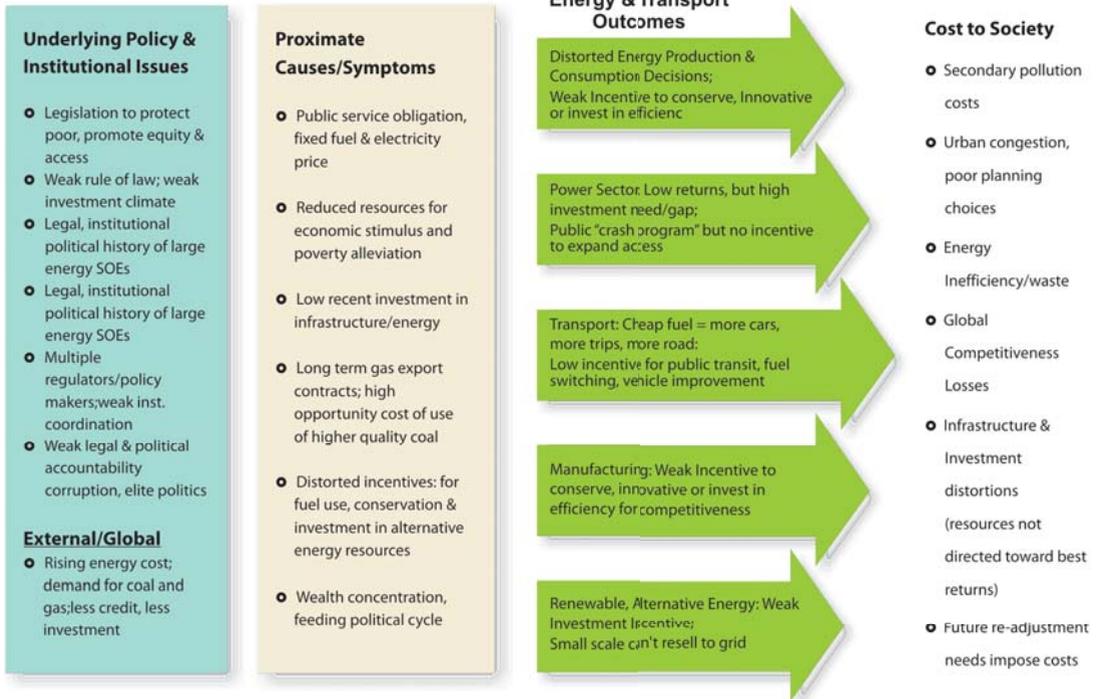
Trends in the power sector clearly show the immediate effect of unsustainable policies. With increased global oil prices and low domestic coal prices, Indonesia's power sector has switched from oil to coal. Since 1994, there has been a five-fold increase in the use of coal. In addition, many industries have installed their own, costlier electric power generating capacity due to slow expansion and uneven reliability of the national power supply system. Many of these independent plants use coal as their primary fuel.

The figure on the next page illustrates how upstream policy distortions and pricing policies result in downstream disincentives and harmful or unsustainable environmental outcomes.

### **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. 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. To promote renewable energy, Indonesia can also capitalize on carbon finance opportunities.

## Key Policy Distortions Impede Potential for Low Carbon Options in Energy Sector



Summarized and Adapted from WB IDPL (2007) and from WB CEA (2009)

As part of a lower carbon development agenda for the energy sector, Indonesia could adjust prices to opportunity costs and use low-cost climate financing to create incentives for renewable energy, reduce unhealthy emissions, stimulate new investment and jobs, and improve energy security. Pricing and fiscal incentives (e.g. depreciation) could also help industries/exporters become more energy efficient and competitive. Building capacity in energy service companies could create jobs and provide benefits to manufacturers. Trade policies could promote the importation of cleaner technologies and stimulate Indonesia's own clean technology exports such as compact fluorescent lamps. Improving fuel quality could help to reduce health costs and productivity losses from urban air pollution. Expanding affordable

transit bus systems could reduce urban congestion, contribute to labor mobility, and improve the quality of life in Indonesia's rapidly growing urban centers.

The GOI is already working on three areas for electricity sector reform: **system expansion, household access and environmental sustainability**. This includes a plan for a shift in the energy mix, with an increased role for renewable energy sources such as geothermal, biofuels, hydro, biomass, wind and solar. A second program to develop an additional 10,000 MW power generation is under development and will rely to a greater extent on geothermal and other renewable energy sources. Energy conservation measures have already been identified with the potential to offset the need to install power generation capacity of over 2,500 MW.



In addition, many policy options are under consideration for reducing Indonesia's emissions. The GOI has developed a National Action Plan for Climate Change and a National Development Planning Response to Climate Change. The Ministry of Finance has commissioned several studies, and BAPPENAS is integrating climate change into the medium term development planning framework.

## **Towards a sustainable energy strategy**

**A more sustainable, lower carbon energy strategy would send a clear message to investors, producers and consumers.** Such a strategy would also encourage renewable energy for power generation and energy efficiency in industry, transport and households. This could be achieved by putting in place the right policies and incentives to encourage investment in renewable energy resources. An integrated policy approach could include a more in-depth look at banking sector policies, tax and depreciation incentives, and trade policies that help the use of cleaner technologies. The strategy would also revisit energy pricing to improve energy efficiency, conserve on increasingly expensive fossil fuels and reduce greenhouse gas emissions.

Many international financing schemes have been set up to assist developing countries to deal with challenges in anticipating and preventing increased carbon emissions. Indonesia has full access to these schemes. For example, the international carbon market can provide payments to offset or lower costs to help Indonesia meet its climate change mitigation objectives. Indonesia has already requested support from the Clean Technology Fund to facilitate development of clean energy sources. Indonesia's major development partners are actively involved in such international financing schemes and are ready to assist Indonesia in realizing its sustainable energy goals.

### **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.

### **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.