

“The role of renewable energy and energy efficiency in addressing climate change in Indonesia: Policy recommendations for the United States and Indonesia”

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It is clear that Indonesia will be significantly affected by climate change; from rising sea levels to changing weather patterns, the country will face serious challenges if action is not taken to reduce carbon dioxide emissions. In Jakarta on July 27, 2009, USINDO brought together experts from the government, private sector and civil society to discuss how Indonesia can use- and increase the usage of- renewable energy, and how it can improve energy efficiency to reduce carbon dioxide emissions and therefore mitigate the effects of climate change.

USINDO President Ambassador David Merrill and Acting Assistant Secretary

of Commerce for Market Access and Compliance Steve Jacobs opened the event with an observation that both the United States and Indonesia face severe consequences from global warming. Mr. Jacobs also noted that Indonesia needs to balance the fight against global warming with the fight against poverty, and emphasized that the United States will partner with Indonesia to develop the country’s renewable energy potential.

Mr. Gatot Prawiro, Country Executive for Southeast Asia at GE Energy, noted that global demand for electricity will likely double between 2005 and 2030, and triple by 2050. Most of the increase will come from emerging markets-

especially from Southeast Asian countries. Since power generation is the largest contributor of greenhouse gas emissions, cleaner power generation will have a markedly positive effect on the environment. Power generation can be made more sustainable through cleaner fossil fuel generation and by investing in next-generation technology. However, such improvements will only be possible through increased government support for research and development, and through the commercialization of technology. Different incentives can be applied depending on the development growth objective, such as a feed-in-tariff, a minimum quota for clean or renewable energy within the total energy mix, capital expenditure subsidy, tax credit and carbon trading mechanism.

Several renewable energy technologies can be harnessed in Indonesia. For instance, biomass waste-to-energy application is a common source of renewable energy generation. The growth in biomass is driven by several factors, including the availability of traditional fuels, electricity shortages and laws promoting the use of renewable energy. Additionally, the cost of energy

generated by wind power has fallen in recent years, making it more competitive. Solar power also has tremendous global potential.

Mr. Fazil Alfitri, President Director of Medco Power, remarked how Indonesia's current power dynamics indicate a serious gap between the projected future demand for electricity and the planned increase in generating capacity. Moreover, the largest gap will be found in western Indonesia where a large majority of the population lives. To increase generation, the government has announced several programs to promote private sector investment in power generation. In order to sustainably meet Indonesia's growing energy needs, Mr. Alfitri proposed a "green" Independent Power Production (IPP) strategy that involves cleaner and more responsive power projects. Gas-fired and combined-cycle power plants are suitable for western Indonesia, as are geothermal power plants, given the vast geothermal resources potential in the region. He argued that biomass and biogas power plants are better suited for eastern Indonesia. While biomass has long been used as feedstock, its potential

as source of energy was only considered once the price of oil passed the \$100 USD/barrel threshold. Biomass originates from wood chips, sawdust, empty fruit bunches and rice husks. Still, technological challenges remain to large-scale biomass energy production: it has to be environmentally sound; it has to be easy to operate; and it needs to be technologically cutting-edge. Commercial challenges include the long-term supply of the feedstock, fiscal incentives to develop environmentally friendly power generation, and the economic value of the power project, which will depend on the feedstock pricing and power sales.

Mr. Agus Purnomo, of the Indonesian National Council on Climate Change, stated that to keep global temperatures from rising over two degrees – an increase that may lead to many environmental disasters – the concentration of CO₂ in the atmosphere must not rise above 450 parts per million (ppm). This means that, worldwide, CO₂ emissions need to halved by 2030. In Indonesia, CO₂ emissions are currently expected to grow from 2.8 gigatons (GT) in 2005 to 4.4 (GT) in

2030. Emissions from the energy sector are relatively small today, but are projected to increase sevenfold by 2030 under the current “business as usual” scenario. Consequently, Indonesia’s efforts to prevent global temperatures from rising more than two degrees means that the country must reduce its emissions by 2.6 GT by 2030. Using geothermal energy is one potential way to reduce emissions; other options have also been considered. Increasing energy efficiency through the use of high-efficiency appliances, light-emitting diodes (LEDs), and better car engines, while initially more expensive, will pay for themselves in the long run. Land management, reforestation projects and biomass energy are costlier options that could present alternative ways to mitigate climate change.

Indonesia’s government has considered a range of policy options, including energy and carbon trading, end-use energy efficiency, emission trading, reduction of fossil fuel subsidies, regulations and standards, and voluntary agreements. However, each country needs to develop its own “policy matrix” to achieve a reduction in emissions without also

sacrificing development goals. Overall, despite efforts to promote renewable energy, fossil fuels remain Indonesia's main energy source. However, the country can continue to improve the national energy mix, diversifying supply, and defining the strategic linkage between independent energy security and climate change. Indeed, the government is preparing a policy to promote low-carbon economic development, and will negotiate internationally for innovative financing mechanisms to help implement low-carbon development.

Mr. Fitriani Ardiansyah, Program Director for Climate and Energy at WWF-Indonesia, stated that Indonesia's greenhouse gas emissions have been growing steadily at around seven percent annually due to fossil fuel-based power generation. However, by identifying appropriate targets for energy efficiency, the potential for CO₂ reduction is significant.

Both the government and the private sector need to develop innovations to reduce emissions and to promote energy efficiency. A fuel-switching mechanism

should be developed depending on the kind of plant that PLN (Indonesia's state-owned utility company) uses. Geothermal energy has enormous potential, and while challenges may arise from its pricing and other components, government policies can facilitate investment to accelerate geothermal development. Biomass energy is already being used, but the government needs to work more efficiently to identify areas suitable for bio-energy development, as it often involves clearing forests – another significant contributor to CO₂ emissions. The possibility of rural renewable energy, including solar panels and small-scale hydroelectric plants provide important links between energy provision, nature conservation and poverty alleviation.

Mr. Ardiansyah offered several recommendations for how different sectors of the economy can work together to reduce emissions. Firstly, citizens can contribute by leading a more environmentally conscious lifestyle; for instance, by driving hybrid cars and taking public transportation. The commercial and industrial sectors can contribute by developing “green”

offices, and can work to bring about a reduction in overall energy consumption.

Questions and Answers

Q: Inter-ministerial coordination for various energy projects in Indonesia require forestry permits that are much shorter-term than what banks would require for the loan. Who in the Indonesian government can address these types of issues?

A: The National Council will be able to help in that matter.

Q: You mentioned that the government is working on innovative financing mechanisms. What are the ideas and processes?

A: We have decided to create the Climate Change Trust Fund to manage financial aid from other countries for Indonesia to mitigate the effects of global warming. Another financing mechanism involves combining public and private sources.

Q: Are you ruling out change to feed-in tariff mechanisms so it would be friendlier to investors in renewable projects?

A: We are going through a government transition, so whether the tariff will be applied will depend on who will be in charge of the policy and the agency.

Q: Solar energy is a major industry for tropical countries like Indonesia. What is the country doing to promote it?

A: We are focusing on large-scale solar projects, but price is still the limiting factor. Furthermore, solar panels only produce power when there is sun, so the development of storage systems is also critical. Solar thermal generator is not yet commercially available.

A: In rural areas, solar panels only produce small amounts of energy for lighting. However, certain microfinance schemes are being considered to promote the grouping of solar panels in a way that will be more cost effective. We are discussing with the national banks ways to provide loans for the grouping of solar panels for households.

Q: What is PLN's actual selling price per kilowatt hour once all the subsidies have been factored out?

A: Indonesia's electricity tariff is probably the lowest in the world, but this is not sustainable since PLN is

subsidized. One solution would be for the government to raise the consumer tariff for PLN.

A: There should be a gradual increase or lifting of the subsidy. The government still needs to identify who needs to get a subsidy and whose subsidy should be lifted.

Q: The Indonesian government has created regulations that enable small power producers to connect to the grid. Solar panels, though, is still the domain of the government. These panels are not sustainable due to their cost and since people may not know how to take care of them. Thus the government should create a concentrated solar power generator and get the electricity – not the technology - to the community.

A: That is what we are trying to do. We concentrate on solar farms and provide the electricity to the people. We can use hybrid engines that run on cow dung and chicken dung so the machine is owned by a cooperative and maybe the local government.

A: Many of the energy challenges faced by local, small, or remote communities will be more efficiently handled by the community or the private sector rather than the government.