

Climate Change Issues and Mitigation Actions in Indonesia

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Relevant climate change issues for Indonesia

When discussing climate change, for Indonesia, there are at least four important issues relevant to be discussed: (1) Indonesia is among the most vulnerable to climate change impact; (2) Indonesia is the second biggest contributor to global GHG emissions from land use change or deforestation; (3) As the fourth biggest country in term of population, Indonesia is also the candidate to become among the most important carbon emitters from energy consumption; (4) Indonesia is still struggling in economic development, particularly poverty alleviation. The first three issues are sufficient reasons for Indonesia, together with the rest of the world, to take necessary actions against climate change and the fourth issue is 'the number one' priority in Indonesian development and the element that must always be the prime consideration in any of those actions.

Indonesia's vulnerability to climate change impact

As many recent studies reveal, Indonesia is among the countries most at risk from climate change impact. The Asian Development Bank (2009) concluded that Southeast Asia is highly vulnerable to climate change. It was estimated that Southeast Asia, where Indonesia is its biggest country, would lose 6.7% of GDP in 2100, 3 times of global average. Indonesia's long coastline makes it particularly vulnerable to sea-level rise, as millions of its people live in coastal zones - many of them in densely populated cities. It is estimated that a one-meter sea-level rise could displace around 10 million people in Indonesia (Dasgupta, et al, 2007). Yusuf and Francisco (2010) devised and calculated an index of climate change vulnerability for 590 sub-national regions in seven Southeast Asian countries. They found that Jakarta is the most vulnerable city in Southeast Asia, and that many other big cities in Indonesia, particularly in Java, are also among the most vulnerable in the region. These cities not only face a high risk from climate change but also are densely populated. However, as most of this vulnerability will be manifested in the distant future, again, it will require a visionary political will to incorporate them into concrete today's policy making.

Indonesia's importance in global mitigation actions

Indonesia is an important country in the concerted global mitigation action against climate change for two accounts: first, for its current and future contribution of emissions from

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deforestation; second for the future contribution of emissions from energy consumption due among others, to its being the fourth biggest country in terms of its population size and its growing economy.

According to the Climate Analysis Indicator Tool (CAIT) database, Indonesia's total emissions of GHG account for 5.9 per cent of global emissions in 2005. At a global level, emissions from land use change and forestry account for 16.3 per cent of total emissions, but at 1,459 million metric tonnes per year, Indonesia's estimated emissions from land use change account for 27.1 per cent of global emissions from land use change. Indonesia's emissions from land use alone thus account for 4.7 per cent of global emissions from all sources.² As a result, Indonesia ranks fourth in the world in terms of its total emissions in 2005.

It is worth to mention that Indonesia's emissions from energy consumption are not insignificant. When land use change is excluded, Indonesia is still in the top 20 emitters (rank 16) revealing its importance in the global mitigation action. If the trend for the last two decades continues, Indonesia will overtake US in the mid of this 21st century. It is understandable that most discussion is focused on emissions from deforestation due to its current size, yet the emissions from energy consumption cannot be under-prioritized for at least two reasons. First is its size in the foreseeable future, as stated before, and second is to its more direct linkage to Indonesia's aspiration for industrialization, employment creation for its growing population, and poverty reduction.

Climate change mitigation and other development agenda

Indonesia is still facing a problem of poverty and under-employment. The Asian financial crisis, to some extent, has decelerated the pace of poverty reduction in Indonesia. The poverty incidence in Indonesia is 14.15% (March, 2010) equivalent to more than 32 million people and in term of number of population and its rate, after more than a decade since Asian financial crisis, this is still worse than in 1996. If we use a more decent \$2 poverty line, the poverty incidence rises to above 50%³. More than half of Indonesian population still lives below the 'decent' standard of living.

The other related critical problems are underemployment and low absorption of formal labor market. Almost 60% of labor working in low-wage informal sector works below normal working hour. This structural problem can be the root cause of poverty incidence in Indonesia.

The lesson from the fast economic growth including its manifestation in poverty alleviation in the past is that it was fueled by rapid industrialization where fossil-based energy played an important role. A sudden or abrupt limitation to fossil-based energy consumption through internalization of its climate change impact will most likely have adverse impact on the Indonesian economy. Therefore, the transition to a low-carbon economy, despite its urgency, needs to be well-planned.

² Its importance in this respect is exceeded only by Brazil, which accounts for 6.6 per cent of total emissions from all sources and 34 per cent of total emissions from land use change alone.

³ Human Development Report 2007/2008.

Mitigation actions

Mainstreaming climate change into development agenda

After the President's promise to reduce emissions by 26%-41% (relative to the BAU) in 2020, Indonesia is considered the most progressive developing countries in terms of the commitment for climate change mitigation⁴. For the last two years, Indonesian government, in such a short period of time, has demonstrated serious commitment and several concrete steps and this has been well praised⁵.

The political will and the seriousness of SBY government can be seen from their actions in mainstreaming climate change issues in the development planning in a relatively such a comprehensive manner. The "National Development Planning: Indonesia Responses to Climate Change" officially published by BAPPENAS⁶ (2008) in mid 2008 was first set to be the guidelines to integrate climate change programs into national development process, especially for RPJMN⁷ 2010-2014. It was then followed by the release of "Indonesian Climate Change Sectoral Road Map" or ICCSR in March 2010, BAPPENAS (2010). The ICCSR is a very comprehensive document covering vulnerability assessments, prioritized actions including capacity-building and response strategies. However, whether this strong political will and comprehensive guidance will be effective in its implementation especially at the local level of administration remains to be seen.

How to achieve the 26% reduction target?

After the President commitment of emissions reduction by 26% relative to BAU as first stated in Pittsburg in late 2009, international and domestic community has been eager to hear the answer to the questions on how to exactly achieve this target. In its letter to the UNFCCC in January 2010 as part of the Copenhagen Accord, the GOI list 7 actions⁸, yet without detail. The exact detail of the official planned actions would be stated in the national action plan document to be released this year. As of today, the draft is still with the cabinet secretary to be signed by the President as the Presidential Decree⁹. However, the official ICCSR document released in March 2010 may give us a clue on how that actions would look like. Table 1 below summarizes sectoral mitigation action until 2020 to achieve the 26% target as reported in the ICCSR document.

⁴ Brazil has in fact set a little bit higher target by committing to reduce emissions by at least 36.1% lower than BAU (Who's on board with the Copenhagen Accord, www.usclimatenetwork.org)

⁵ Ahmad (2010) for example, listed at least the following steps taken for the period of 2008-2009: (1) the establishment of the National Council for Climate Change or DNPI; (2) the Law no 32/2009 on the protection and management of the environment; (3) the establishment of Indonesian Climate Change Trust Fund; (4) the publication of Indonesian Green Paper; (5) the release of official second national communication on climate change; (6) the release of the official document on "The National Development Planning: Indonesia Responses to Climate Change" and its subsequent "Indonesian sectoral road map to climate change"; (7) the preparation of the national action plan (due this year) to achieve the target of the 26% emissions reduction.

⁶ Indonesian National Development Planning Agency.

⁷ Medium Term Development Plan.

⁸ (1) sustainable peat land management; (2) Reduction of deforestation and land degradation; (3) carbon sequestration project; (4) promotion of energy efficiency; (5) development of alternative renewable energy; (6) reduction in solid and liquid waste; and (7) shifting to low emissions transportation mode.

⁹ "Pemerintah Siapkan Perpres Emisi Rumah Kaca" [Tribunnews.com](http://tribunnews.com) - Rabu, 20 Oktober 2010.

Table 1. Indonesian plan for mitigation actions until 2020 based on ICSSR

Sector	Actions	Share in the target	Relative to baseline
Forestry and Peatland	Improvement of forest and peat land management, land rehabilitation, avoiding deforestation, and plantation ¹⁰	89%	27%
Energy and transport	Development of renewable energy (Geothermal), energy efficiency in transportation ¹¹	5%	9%
Industry	Improvement in the cement production and energy efficiency	1%	8%
Waste	Improvement of waste management ¹²	5%	36%
Total	Cummulative emissions reduction (MTCO2e)	4,433	

Source: BAPPENAS (March, 2010), ICSSR

Note: Based on cumulative emissions up to 2020.

The following are the key summaries and comments of the GOI plans:

1. In order to achieve the 26% emissions reduction target (using domestic resource) in 2020, the action plan that Indonesia will be proposing will rely very heavily on forestry sector (LULUCF). It will contribute almost 90% of the emissions reduction target. Most of this will come from better peat land management (41%), sustainable forest management (34%), avoiding deforestation (18%), and forest plantations (8%)¹³. There is optimism in this effort as many estimates suggest that the cost of reducing emissions from LULUCF is relatively cheap. However, there is also a risk in over-relying on LULUCF emissions given the uncertainty on the emissions estimates. As the Ministry of the Environment (MoE) indicates in its second national communication, estimates from various different studies¹⁴ can vary by significant amount. For example, the emissions

¹⁰ In detail, these includes (1) Law enforcement and best management practices in existing land under production use including forests and agriculture crops; (2) Peat land rehabilitation and prevention of uncontrolled fire. (3) Revision of land allocation, forest conversion and land swaps, possibly using REDD as an incentive, that direct future development away from peat lands. (4) SFM – Law enforcement and sustainable forest management will depend on the consistency of national policies to protect forests and the development of forest management units at local level. These combined efforts will enhance forest carbon stock in protected and production forests with forest cover. (5) REDD - Avoiding emissions linked to planned deforestation. (6) Plantations - Increasing carbon sink capacity thanks to plantations on non forest cover lands would add another 37 MtCO₂/year from 2010 to 2019.

¹¹ For transport, the detail includes improvement of public transportation system, promotion of non motorised transport, Campaign/Education Programs, Congestion Charging/Road Pricing, Parking Management, Bus Modernisation, Traffic Impact Control and Integrated Land Use and Transport Planning, Promotion of modern logistic system and truck modernisation, CO₂ Emission Standard for Car and Motor Cycle, Fuel Efficient Government Fleets, Mandatory Inspection and Maintenance, Car Labelling and Training Program for Smart Driving) and Biofuel (Low Carbon Quota, Fuel Taxation and Vehicle Taxation based on Emissions).

¹² For waste management, the detail includes converting 30 sites of open dumping to sanitary landfill sites each year, develop electricity generator facility from Sanitary Landfill, promoting 3R (reduce, reuse, recycle) and composting in waste management.

¹³ Source: ICSSR (March, 2010).

¹⁴ Even between DNPI and MoE's estimates could differ substantially.

estimates in the Second National Communication¹⁵ is only a third of the World Bank (2009) estimate. The national action plan to be submitted to the UNFCCC will contain quantitative estimates of the emissions reduction for each action. It is better to be aware of the uncertainty of this target.

2. It is most likely that we won't be seeing that the emissions reduction proposal from the energy sector will be comparable in size as the forestry sector. Emissions reduction target from energy/transport and industries contributes less than its proportion of its current and future emissions. The reduction target of the two sectors is 9% and 8% than its business as usual respectively. They are a lot less than the average emissions target of 26% lower than BAU.
3. Most of the mitigation actions that will be proposed will be carried out through government programs and projects. This, to some extent, reflects the commitment that the 26% will be financed by domestic resources. The dominance of the government initiative in this endeavor needs to be praised but also pose a challenge. The question is whether the intervention of this kind is effective without changing the economic incentives - the root cause of the high-carbon market economy. In a market-driven economy, it is hard to imagine lowering the economy's carbon intensity, without adjusting the carbon price. Carbon pricing, or many other economic instruments necessary for an effective emissions reduction strategy is hardly elaborated in any of the official government documents. This is very important at the grass root where all actions are taking place. Deforestation has been driven by lucrative profit from estate crops plantation such as oil palm. As some of the authority in land use management has been shifted to local government and the risk of illegal activity remains high, central government initiative needs to compete with the stronger market incentives. For the energy sector, it is also hard to see sufficient expansion of renewable energy such as geothermal when fossil fuel-based energy is still subsidized.
4. Another specific question related to the government plan is that, let's say that the government is strongly willing to pull financial resource domestically to fund all of those programs, has its effectiveness in reaching the target been robustly predicted and its opportunity cost been carefully assessed given there are many more pressing problem in Indonesian development agenda?

Challenges and what still needs to be done

After announcing the voluntary commitment of reducing 26%-41% emissions to the world, Indonesia has made a progress in planning the detailed actions in a relatively such a comprehensive manner. There is a heavy emphasis on program/projects approach overlooking the importance of incentive system in the actions proposed for the 26% emission reduction. Both for the forestry and energy sectors this questions the credibility over the effectiveness of the actions proposed.

Especially for the energy sector, carbon price is important for effectively reducing carbon intensity of the economy, yet the removal of energy subsidy is not discussed in greater detail in any of the government plan, not to mention how and when this subsidy will be phased out. Removal of fossil-fuel and energy subsidy (including electricity subsidy) is a pre-requisite for the internalization of carbon externality, yet in 2009, Indonesian government still spent more than US\$ 6 billion to subsidize fuel consumption. It was almost 8% of total

¹⁵ MoE, (2009).

government spending¹⁶. One study¹⁷ suggests that removing all energy subsidy in Indonesia (including fossil fuel and electricity subsidy) can reduce Indonesian CO₂ emission by 6.7% than BAU¹⁸. Almost all of the target of emissions reduction which is part of the 26% commitment spelled out in various government recent government documents could have been achieved by this action alone.

Except for mentioning vehicle fuel taxation based on carbon emissions as part of the action in the transport sector, carbon tax in particular in the energy sector is not mentioned in the ICCSR and hence most likely won't be mentioned too in the national action plan document. The implementation of the carbon tax is strongly recommended by the Green Paper studies¹⁹ as an effective instrument to smooth transition to low-carbon renewable energy (especially geothermal). The possibility for its implementation in the near future, then, seems remote.

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¹⁶ Today, fuel consumption is still subsidized in many parts of the world. It is estimated that fossil-fuel-related consumption subsidies amounted to US\$ 557 billion in 2008 (IEA, 2010). A recent assessment projected that if these subsidies were phased out by 2020 it would result in a reduction in primary energy demand at the global level of 5.8% and a fall in energy-related carbon-dioxide emissions of 6.9%, compared with a baseline in which subsidy rates remain unchanged (IEA, OPEC, OECD, The World Bank, 2010, p. 4).

¹⁷ Yusuf, et al, (2010).

¹⁸ This is more or less comparable to IEA, OPEC, OECD, The World Bank's (2010, p. 4) study that suggests that phasing out energy subsidy globally will reduce CO₂ emissions by 6.9%.

¹⁹ Ministry of Finance, (2009).