

Climate Regime beyond 2012: Carbon Market as a Mean To Combat Climate Change

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BACKGROUND

Today, the issue of climate change is discussed worldwide because the impacts of climate change will not only affect developing countries, but also developed countries. We witness how climate change has caused floods in Indonesia, Bangladesh, China and other parts of the world, has increased the sea level rise in the island states, and has induced extreme weather events occurred in some parts of the world. For Indonesia, climate change can be considered both as a challenge and an opportunity. Therefore, Indonesia is committed to the Kyoto Protocol and to adhere to its targets.

To respond to the climate change, a long term climate change regime should support sustainable economies of the future. Countries will have to produce goods and services that meet the demands of domestic and global markets while generating low levels of waste and pollution, including emissions of greenhouse gases. One of the means to reduce emissions of greenhouse gases is through the carbon market.

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The implementation of carbon market stipulated by Kyoto Protocol encompasses three mechanisms, namely Joint Implementation, Emissions Trading, and Clean Development Mechanism (CDM). In terms of Joint Implementation and Emissions Trading, developed countries which have reduced their emissions below their allowances will be able to trade some part of their surplus allowances to other developed countries. In the meantime, Clean Development Mechanism (CDM) involves both developed and developing countries in reducing emissions. For developing countries, the implementation of CDM could generate investments and funding. Its effectiveness is indicated in the OECD's estimate which has projected that the value of the Certified Emission Reduction (CER) trade resulted from CDM, will reach the amount of US\$ 1 billion in 2012.

Based on the 2006 Report of the World Bank's State and Trends of the Carbon Market, the value of the global carbon market in 2005 reached US\$ 10 billion, while the value of transaction in the first quarter of the year of 2006 amounted to US\$ 7.5 billion. The report also predicted that at the end of 2006, the value of the global carbon market will reach to US\$ 25 - US\$ 30 billion.

The highest value resulted from the emission trading in the European Union caused by the increase of carbon price. Accordingly, the international carbon market is presently dominated by the EU emission trading schemes. This fact evidently shows us that carbon market not only can help developed countries reduce emissions at the lowest cost, but also provide significant flows of finance and technology transfer to developing countries.

For developing countries, reducing emissions should support the economic development and poverty alleviation goals. For that purpose, we need much stronger collaboration among governments and private sectors in improving the Clean Development Mechanism (CDM) under the Kyoto Protocol. These collaborations can be accentuated through research, development, and deployment of low carbon technologies.

The 13th Conference of Parties to the United Nations Framework Convention on Climate Change (UNFCCC) held in Bali, December 2007 is expected to discuss the options of climate change regime after 2012. The discussions on alternatives of climate change regime after 2012 has been conducted by various international institutions. International Institute for Sustainable Development reported that market mechanism approach is considered as an effective means to address climate change. Therefore, year 2007 is a crucial year for deciding the future of the earth. All parties are expected to have a common understanding on the basic elements of a post-2012 framework to respond to the challenges of climate change.

This paper is aiming to elaborated on how Carbon Market can contribute in combating climate change and what are Indonesia interests in emission trading issues. This paper generally develop based on opinion and presentation by the speakers at expert meeting on The Role of Carbon Market in Combating Climate Change done in Bogor on August, 20 - 21, 2007.

The Scientific Evidence Points To Increasing Risks Of Serious, Irreversible Impacts From Climate Change

The scientific evidence on the causes and future paths of climate change is strengthening all the time. In particular, scientists are now able to attach probabilities to the temperature outcomes and impacts on the natural environment associated with different levels of stabilisation of greenhouse gases in the atmosphere. Scientists also now understand much more about the potential for dynamic feedbacks that have, in previous times of climate change, strongly amplified the underlying physical processes.

The stocks of greenhouse gases in the atmosphere (including carbon dioxide, methane, nitrous oxides and a number of gases that arise from industrial processes) are rising, as a result of human activity. The current level or stock of greenhouse gases in the atmosphere is equivalent to around 430 parts per million (ppm) CO₂, compared with only 280ppm before the Industrial Revolution. These concentrations have already caused the world to warm by more than half a degree Celsius and will lead to at least a further half degree warming over the next few decades, because of the inertia in the climate system. Even if the annual flow of emissions did not increase beyond today's rate, the stock of greenhouse gases in the atmosphere would reach double pre-industrial levels by 2050 - that is 550ppm CO₂e - and would continue growing thereafter. But the annual flow of emissions is accelerating, as fast-growing economies invest in highcarbon infrastructure and as demand for energy and transport increases around the world. The level of 550ppm CO₂e could be reached as early as 2035. At this level there is at least a 77% chance - and perhaps up to a 99% chance, depending

on the climate model used - of a global average temperature rise exceeding 2°C.

Warming will have many severe impacts, often mediated through water:

- Melting glaciers will initially increase flood risk and then strongly reduce water supplies, eventually threatening one-sixth of the world's population, predominantly in the Indian sub-continent, parts of China, and the Andes in South America.
- Declining crop yields, especially in Africa, could leave hundreds of millions without the ability to produce or purchase sufficient food. At mid to high latitudes, crop yields may increase for moderate temperature rises (2 - 3°C), but then decline with greater amounts of warming. At 4°C and above, global food production is likely to be seriously affected.
- In higher latitudes, cold-related deaths will decrease. But climate change will increase worldwide deaths from malnutrition and heat stress. Vector-borne diseases such as malaria and dengue fever could become more widespread if effective control measures are not in place.
- Rising sea levels will result in tens to hundreds of millions more people flooded each year with warming of 3 or 4°C. There will be serious risks and increasing pressures for coastal protection in South East Asia (Bangladesh and Vietnam), small islands in the Caribbean and the Pacific, and large coastal cities, such as Tokyo, New York, Cairo and London. According to one estimate, by the middle of the century, 200 million people may become permanently displaced due to rising sea levels,

heavier floods, and more intense droughts.

- Ecosystems will be particularly vulnerable to climate change, with around 15 -40% of species potentially facing extinction after only 2°C of warming. And ocean acidification, a direct result of rising carbon dioxide levels, will have major effects on marine ecosystems, with possible adverse consequences on fish stocks.

Carbon Market and Emission Trading

Emission Trading

Emissions trading, as set out in Article 17 of the Kyoto Protocol, provides for Annex I Parties to acquire units from other Annex I Parties and use them towards meeting their emissions targets under the Kyoto Protocol. This enables Parties to make use of lower cost opportunities to reduce emissions, irrespective of the Party in which Party those opportunities exist, in order to lower the overall cost of reducing emissions.

Only Annex I Parties to the Kyoto Protocol with emission limitation and reduction commitments inscribed in Annex B to the Protocol may participate in such trading. Such Parties may therefore be prepared to transfer units when they do not require them for compliance with their own emission targets.

The units which may be transferred under Article 17 emissions trading, each equal to one metric tonne of emissions (in CO₂-equivalent terms), may be in the form of:

- An assigned amount unit (AAU) issued by an Annex I Party on the basis of its assigned amount pursuant to Articles 3.7 and 3.8 of the Protocol.
- A removal unit (RMU) issued by an Annex I Party on the basis of land use, land-use change and forestry (LULUCF) activities under Articles 3.3 and 3.4 of the Kyoto Protocol.
- An emission reduction unit (ERU) generated by a joint implementation project under Article 6 of the Kyoto Protocol.
- A certified emission reduction (CER) generated from a clean development mechanism project activity under Article 12 of the Kyoto Protocol.

Clean Development Trading

The clean development mechanism (CDM) defined in Article 12 provides for Annex I Parties to implement project activities that reduce emissions in non-Annex I Parties, in return for certified emission reductions (CERs). The CERs generated by such project activities can be used by Annex I Parties to help meet their emissions targets under the Kyoto Protocol. Article 12 also stresses that such project activities are to assist the developing country host Parties in achieving sustainable development and in contributing to the ultimate objective of the Convention.

The current modalities and procedures for the CDM focus on activities that reduce emissions. A CDM project activity might involve, for example, a rural electrification project using solar panels or the installation of more energy efficient boilers. Annex I Parties are to refrain from using CERs generated through

nuclear facilities to meet their emission targets.

EUROPEAN UNION EMISSION TRADING SCHEMES (EU-ETS)

General Eu Views On Climate Change

- Why shall we deal with climate change? The EU considers that the change is now unequivocal. The 11 warmest years on record have all occurred in the last 12 years, and it is extremely likely that man made greenhouse gas emissions, rather than natural climate natural variability, are the cause of the change.
- Best estimates of the projected rise by 2100 range from 1.8 to 4.0°C if no further action is taken to limit emissions. Why is this rise a problem? The impact of climate change is still assessed and subject to debate. The rapidity of the change however, and the expected impact on agricultural production, water availability, or human migrations for example is likely to represent unprecedented challenges in the near future. Economic costs will also be significant, as outlined in the Stern review of 2006.
- The main elements of the EU's strategy to fight climate change are formulated in the EU's energy and climate change package that was adopted in March 2007. The main objectives of this package are:
 1. A strategic objective of limiting the global average temperature increase to not more than 2°C above pre-industrial levels;

2. A binding target to slash the EU's emissions by 20% in 2020 compared with 1990 levels. EU leaders agreed that the objective should be pursued "unilaterally" even if there is no international agreement on reducing emissions after 2012 when the Kyoto targets expire;

3. A commitment to reduce emissions by 30% provided that other industrialised nations, including the US, commit themselves to comparable emission reductions and that advanced developing countries (i.e.: China and India) contribute as well in the framework of a post-2012 agreement.

- This last commitment underlines the EU's leading role to promote international climate action. However it is understood that the EU, which is responsible for about 14% of the world's greenhouse gas emissions, will not be able to combat climate change on its own.

- Measures proposed by the EU to achieve its objectives include, among others, a binding target to raise the EU's share of renewables to 20% by 2020, an obligation for each Member State to have 10% biofuels in their transport fuel mix by 2020, boosting energy efficiency. Although these are internal EU measures, some have an international dimension which may be of interest for countries like Indonesia: this is the case of the biofuels target or the proposal for an international agreement on energy-efficiency standards for example.

- The EU Trading Scheme (ETS) is one of the instruments existing in Europe to address the climate change issue. While it is a major initiative, it must be clear that, in the EU context, the ETS is only an instrument to be articulated with other measures. The formulation of a strategy and clear objectives remain the main driver of our response to climate change and they should be seen as a pre-requisite before the design of measures and instruments.

Lessons From The Eu's Emission Trading Scheme Experience

Principles

- What is the EU's Emission Trading Scheme (ETS)? The ETS was launched on 01 January 2005. Under this scheme, the major industrial installations contributing to greenhouse gases in Europe are allocated a certain number of CO₂ emission allowances by their governments per year.
- The principle is that installations that keep their emissions below their total of allowances -for instance by investing in more energy-efficient equipment- can sell their surplus allowances to those that emit more than their allocated allowances. This 'cap and trade' approach ensures that emissions are cut wherever it is cheapest to do so.
- A key aspect of the EU scheme is that it allows companies to use credits from Kyoto's Clean Development Mechanism. This means the system not only provides a cost-effective mean for EU industries to cut their emissions

but it also creates additional incentives for businesses to invest in emission-reduction projects elsewhere, for example in Indonesia.

Methodological issues

- The methodology to implement the ETS is a crucial factor that determines its effectiveness. Key methodological questions include: How to determine emissions allocations? How to monitor and report emissions from the installations participating to the scheme? Which gases are included in the scheme? How are transactions registered?
- The ETS was initially focused on the major industrial installations³ which emissions are, practically, easier to monitor and manage. The complexity of the system will increase as other emission sources will be included, such as aviation emissions. The question of the initial allocation and the monitoring of emissions in particular should not be underestimated, in particular for a market that would include emissions produced or avoided from forestry activities, which is of interest to Indonesia.
- The main difficulties faced by the EU authorities during the early stages of the ETS concerned mainly the registry system and the initial allocation process. An illustration of it is the slump of the carbon market in 2006, which occurred after several installations revealed that their emissions were lower than the allocation they had received, leading to a dive in demand for credits. The main reason was an inadequate initial

² Representing approximately 40% of EU total GHG emissions

allocation, as many installations had exaggerated their production of carbon to make targets easier to reach. This problem is now being solved with a stronger control of the EU authorities over the allocation quotas.

Impact generated

- The EU target in the context of the Kyoto protocol is to reduce emissions to 8% by 2012 below 1990 levels. Our last projections indicate that this objective can still be achieved, although we need to intensify our efforts to reach this target. The EU has successfully reduced its emissions however in the last decade: in 2004, EU emissions were 0.9% lower than in 1990, while our economy has expanded 32% during the same period.
- This is a very important achievement. It remains difficult to demonstrate the contribution of the ETS to this success as the scheme remains new and several other initiatives have been implemented in parallel.
- Independent studies have already been conducted on the ETS and, in spite of shortcomings such as the initial allocation, the EU is convinced that the ETS is major tool which shall not only continue but shall be expanded in the future.
- Companies, government and NGOs consulted in these studies indicate that they see the ETS as a major tool which is already having an impact on corporate behaviour. Companies expect clear rules for entrance, monitoring, allocations. Many of them report including the CO2 value for example to decide whether or not developing new technologies.

INDONESIA, CDM AND CARBON MARKET

Benefits of the CDM for Indonesia - Country's Perspective as Way to Optimize Carbon Market

- Promote commitment and contribute to address global concern
- Increase the opportunity for the implementation of environmentally friendly projects
- Contribute to the achievement of sustainable development
- Promote international cooperation on environment conservation
- Stimulate capital inflow to the country
- In the area of energy : promote development of renewable energy
- Support project financing
- Revenue from CER : increase attractiveness of the whole project
- Receive technical assistance
- Increase access to technology
- Promote good image of the company
- Together with global community : participate in environmental conservation

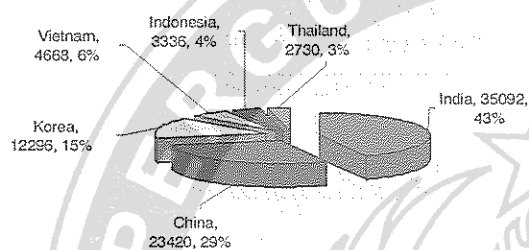
Are the potentials there?

- Indonesia is blessed with abundant renewable energy sources (geothermal, hydro, solar, biomass, biogas, wind) - plenty are still un-harnessed
- Driving forces:
 - Political campaign on climate change
 - Increasing power demand
 - Gradual removal of oil price subsidy
 - Response from capital market : emerging of clean technology

- Will create enabling environment for:
 - renewable energy development
 - energy efficient technology
 - fuel switching opportunities

Estimated Contribution by Asia Countries in Carbon Market

(kt CO₂-eq per year)



Source: BAPPENAS, August 2007

INDONESIA INTEREST ON CARBON MARKET AND CDM: CLIMATE REGIME BEYOND KYOTO PROTOCOL

Emission trading provides by the Kyoto Protocol allows Certified Emission Reduction (CER) from the CDM Project to be transfer under Emission Trading mechanism. In this context as a non-Annex 1 Parties and the receiver on CDM Projects from the Annex 1 Parties, Indonesia need to gain more information on the trading and carbon market, in terms of how far the Annex 1 Parties uses this mechanism to meet their emissions target under Kyoto Protocol? How many CER had been transfer under the emission trading mechanism? how effective this trading mechanism in reducing greenhouse emissions? What are the obstacles to implement this mechanism? etc.

Those question are very important to Indonesia, to have a clearer view on how Annex 1 Parties sees CDM Project as an important mechanism under the Kyoto Protocol and how significant the Emission Trading Scheme can contribute in reducing emission?. CDM is one of the important tools for Annex 1 Parties to be able to meet their emission commitment, therefore is in Indonesia interest to pull more CDM project from Annex 1 Parties. Unlike India and China, Indonesia is unable to pull CDM project as many as China and India. If India and China are managed to transfer many of their CER under the Emission Trading Scheme, Indonesia need to follow the track in order to combat the climate change. Therefore, Indonesia may analyze should Indonesia pushed the enlargement of Emission Trading Schemes in order to make Indonesia and other developing countries can invites more CDM Project and or how Indonesia can gain benefit from the Emission Trading Scheme?.

Obstacles of the Establishment of CDM Projects in Indonesia

To contribute in Carbon Market after Kyoto Regime 2012, Indonesia must optimize its potential on CDM project. Nevertheless, Indonesia are faced many obstacles in CDM, those obstacles are:

- Capital source for CDM investment are hard to find since there are no FDI CDM;
- Domestic finance industry are not played a significant role to support the CDM project neither insurance or credit facilities;
- CDM project is very complicated, high risk, high on transactions costs, and have little revenue expected;

- The CEO's are not aware about climate change issues and its economic opportunity;
- There are no strong political will from the government on CDM;
- Climate change issues is not even consider as a national development priority, climate change now only considers as environment issues only,

Pre-Condition to Establish Carbon Market Policies

1. The key success of the negotiations for Climate regime post 2012 will depend on:
 - a. Certified Emission Reduction (CER) price;
 - b. Number of CDM Projects;
 - c. Motivation to lower green gas emission.
2. The simplification and flexibility of CDM Projects.

CONCLUSION

Domestically, Indonesia should have a comprehensive set of regulation regarding the climate change and CDM on national level and autonomous regions. These regulations including, among others: financial, technical, legal assistance, transfer of technology, etc. These regulations are very important in order for Indonesia to gain benefit from Carbon Market and Climate Regime beyond Kyoto Protocol on 2012.



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