

# The Kyoto Protocol and the Emerging Carbon Market

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## Background

The Kyoto Protocol puts a cap on the emissions of 6 greenhouse gases (GHG)<sup>1</sup> by industrialized countries (also called Annex I Parties)<sup>2</sup> to reduce their combined emissions by at least 5% of their 1990 levels by the period 2008-2012. In order to minimize the cost of reducing emissions, the Kyoto Protocol has provided for 3 mechanisms that will allow industrialized countries flexibility in meeting their commitments:

- International emissions trading (ET) – trading of emission permits (called Assigned Amount Units or AAUs) among the industrialized countries
- Joint Implementation (JI) – crediting of emission offsets resulting from projects among industrialized countries (called Emission Reduction Units or ERUs)
- Clean Development Mechanism (CDM) – crediting of emission offsets resulting from projects in developing countries (called Certified Emission Reductions or CERs)

The case of international emissions trading is a classic “cap and trade” approach similar to how Acid Rain was tackled in the US. In the case of joint implementation and CDM, industrialized countries are allowed to take credit for actions done offshore. The flexibility in the geographical dimension of the actions taken by industrialized countries to reduce GHGs is justified by the scientific fact that it is the concentration of GHG in the upper atmosphere that matters in the case climate change.

Developing countries do have commitments to reduce their GHG emissions under the UN Framework Convention on Climate Change (UNFCCC), even if this commitment is not presently quantified. In future commitment periods (beyond 2008-2012), it is anticipated that developing countries will have quantified limitation or reduction commitments.

## Status of the Kyoto Protocol

The package negotiated last November 2001 in Marrakech should allow countries to ratify the Kyoto Protocol by December 2002 in time for the 10<sup>th</sup> anniversary of the Earth Summit. In order to enter into force, the Protocol needs to be ratified by 55 countries that account for at least 55% of 1990 carbon dioxide emissions of the industrialized country group. With the withdrawal by the US, which accounts for 36% of CO<sub>2</sub> emissions by the industrialized world, the EU, Russia, Japan, Australia and Canada need to ratify the Protocol. Based on declarations made by these countries since Marrakech, it is likely that the Protocol will be

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<sup>1</sup> carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), pefluorocarbons (PFCs), sulfur hexaflouride (SF<sub>6</sub>)

<sup>2</sup> Includes Central and Eastern European countries undergoing the process of transition to a market economy and most of the OECD countries (minus Korea, Mexico, etc. which are considered developing countries under the UNFCCC). See [www.unfccc.int](http://www.unfccc.int) for complete list.

ratified but perhaps not in time for the 10<sup>th</sup> anniversary of the Earth Summit in Johannesburg, South Africa later this year. At 11 December 2001, the Protocol has been signed by 84 countries and ratified by 46 developing and transitional countries.<sup>3</sup>

### The emerging carbon market

Despite the uncertainties surrounding the Kyoto Protocol, a global carbon market has emerged, fuelled by a growing perception that the future will be carbon-constrained (environment) and/or will have to be less fossil fuel dependent (political economy). In the near term, the constraints are reflected in the Kyoto Protocol, which in turn motivate governments, corporations and international entities to take proactive measures to hedge against possible regulatory measures.

In the last few years, against the backdrop of the Kyoto Protocol, a market for carbon credits has emerged. Currently, the market features:

#### *Governments*

The European Commission is planning a EU-wide emission trading system that will impose caps on industries and corporations operating in Europe based on the Kyoto commitments of the EU. It is expected that this EU-wide emission trading system will harmonize the various national emissions trading schemes that have been established or currently being planned in individual EU countries such as Denmark, UK, Norway, Germany and France. Australia and Japan are also studying how a national emissions trading scheme will allow companies and industries in their jurisdiction to collectively implement Kyoto commitments.

In most of these “cap and trade” schemes, the regulatory pressure on private companies to reduce their emissions to meet domestic caps will create a demand for carbon offset credits offshore where it is presumed to be less expensive.

In the case of the Netherlands, the government has taken steps to begin acquiring carbon credits. The Netherlands, through Senter, an agency of the Ministry of Economic Affairs, launched carboncredits.nl in 2000. Carboncredits.nl through its ERUPT (Emission Reduction Unit Procurement Tender) programme for JI and its CERUPT (Certified Emission Reduction Unit Procurement Tender) programme for CDM has allocated about \$1.2 billion to acquire carbon credits to meet the Netherlands commitments under the Kyoto Protocol. Under its CDM programme, CERUPT pays about Euro 3-5 per tonne of carbon.

Carboncredits.nl is interested in investing in the following fields: renewable energy (solar, wind, biomass, hydro etc.), the replacement of CO<sub>2</sub>-intensive fuels by fuels generating less pollution, energy efficiency, waste processing, afforestation/reafforestation (only in Central or Eastern Europe).

In April 2001 ERUPT purchased NLG 79 million (US\$32 million) worth of emission reductions, including the procurement of more than 4 M-tons of reductions in CO<sub>2</sub>

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<sup>3</sup> <http://unfccc.int/resource/kpstats.pdf>

emissions in 5 years (about 0.8 M-ton per year.) The reductions will be realized through a 60 megawatt wind-power park in Poland, a hydro-power plant in Romania, a series of biomass-fuelled boilers in the Czech Republic, and two urban heating projects in Romania.<sup>4</sup>

Other governments of industrialized countries are considering programmes similar to the Dutch.

### *Corporations*

Many large corporations have committed to GHG reduction targets on a voluntary basis. Companies like ABB, Dupont, Entergy, IBM, Shell, Ontario Power Generation, Toyota USA, Marubeni, United Technologies Corp., TransAlta and others have voluntarily committed to reduction targets and welcome the emergence of carbon credit market to meet these commitments. Multinational companies like Shell and BP have instituted internal emission trading schemes within their organizations that compel their operating units to internalize the cost of carbon emissions in their operations. For the most part, these companies are driven by forward-looking investment strategies, changes in regulatory environment, and the realization that sustainable development and corporate citizenship on environmental issues make good business sense.<sup>5</sup>

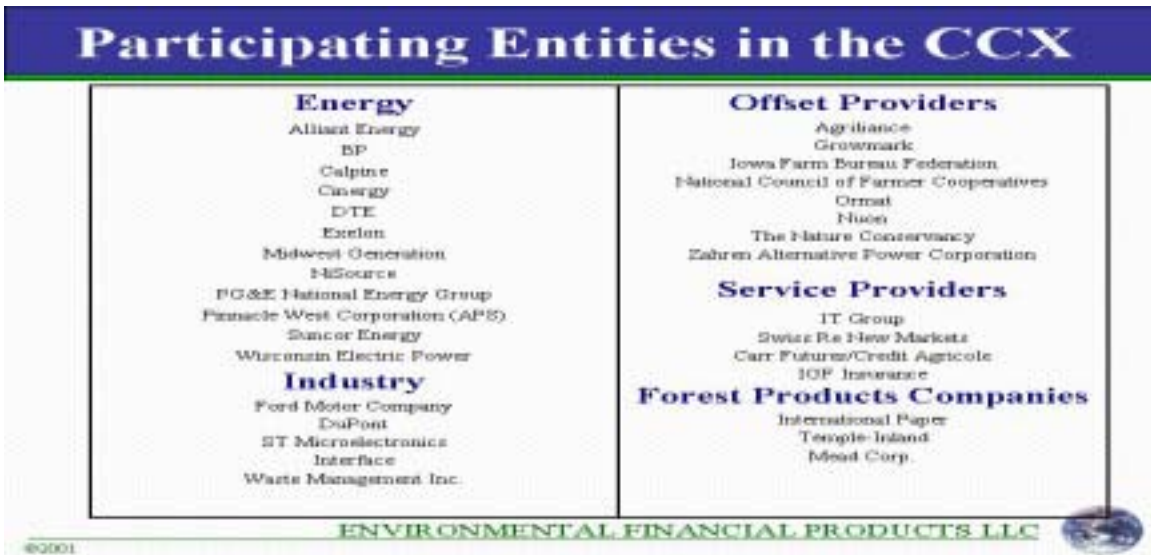
In many cases, these companies are investing in carbon offset projects in developing and transitional countries where the abatement cost is much lower. While these investments are driven not only for their GHG reduction and remain relatively small, these investments are creating a market for carbon credits.

While the process of creating carbon credits is still being standardized, corporations and other entities in 7 Midwest States in the US have banded together under the Chicago Climate Exchange (CCX) to begin trading carbon emission credits. Brazil is one developing country that has joined the voluntary programme which uses a cap and trade system which allows for offsets gained through the CDM of the Kyoto Protocol.

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<sup>4</sup> <http://www.senter.nl/erupt/>

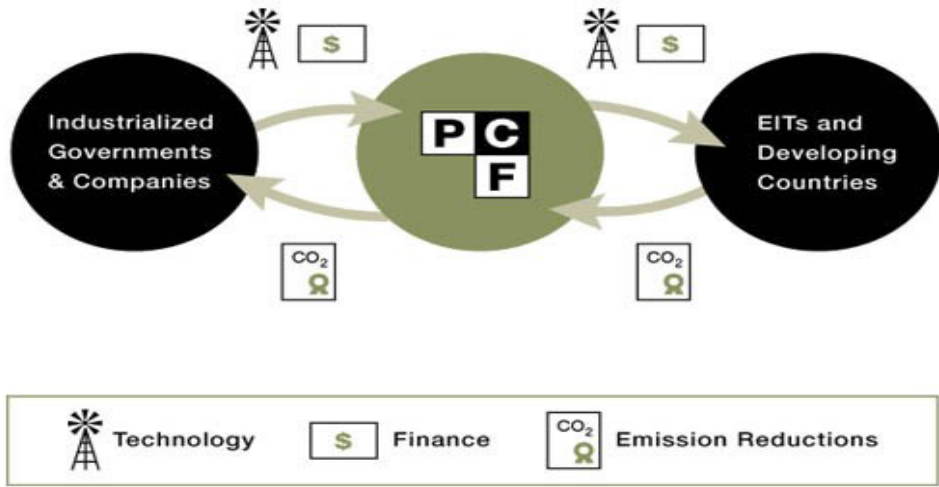
<sup>5</sup> See Michael Margolick & Doug Russell, "Corporate Greenhouse Reduction Targets". Pew Center on Climate Change (November 2001).



*Other entities*

Against this backdrop of governments and corporations beginning to take action and move significant resources, there are entities that can be considered market makers.

International organizations like the World Bank for example have created a Prototype Carbon Fund, which is aimed at learning how to make GHG reduction projects work. Restricted to \$180 million and terminating in 2012, the PCF has gathered about \$100 million from public and private entities and has invested in several renewable energy and biomass projects. PCF pays about \$3-12 per tonne of CO<sub>2</sub>.



A variation on the PCF, is the Climate Trust. “The Climate Trust's mission is to initiate, encourage, and fund projects and educational activities to reduce the greenhouse gas emissions that will result in the damaging effects of climate change on future generations. The Trust will hold rights to any carbon dioxide or other greenhouse gas reduction credits

resulting from projects it funds or implements in trust for the citizens of Oregon.” Based on Oregon legislation requiring new power facilities in that State to meet a net emissions rate of 0.675 pounds of CO<sub>2</sub> per kilowatt-hour, new plants are offered the possibility of paying mitigation funds to a qualified non-profit like the Climate Trust. In 2001, the Climate Trust was “seeking from 3 to 10 projects to meet a need of contracting for a minimum of \$5,500,000 from projects involving *carbon dioxide offsets*”.

Other market makers include brokers, traders, financiers, consultants, verifiers, which are growing in number and size. Companies like the big accounting firms, NatSource, CO<sub>2</sub>e.com and non-profit organizations like the Climate Trust are bringing new procedures, practices, methods, techniques and resources to lower transaction costs and break down market barriers. The Emissions Market Development Group for example is looking at developing a common currency to facilitate the trade of carbon credits across the various mechanisms of the Kyoto Protocol.

Industry groups like the International Emissions Trading Association (IETA), Emissions Marketing Association (EMA) together with knowledge hubs such as the Climate Change Central, Pew Center on Climate Change, Weathervane, CDM Central, CDM Group, and others are pushing the market and creating new opportunities for the carbon market to flourish.

#### *Developing countries and their private sector*

Proactive action is not limited to actors in the industrialized world. Governments and private entities in developing countries are increasingly participating in the emerging carbon market. Large companies in Brazil have joined the Chicago Climate Exchange like Petrobras and CVRD. Energy companies like Korea Gas and PLN Indonesia are actively considering engaging in several projects. Government agencies in Costa Rica, Ecuador, Vietnam and other countries are engaged in the Dutch programme and the World Bank’s PCF. Entities like the Costa Rican Office on Joint Implementation have been established in many South American countries. Governments and private sector in developing countries are increasingly being pulled into the emerging carbon market. In transitional countries, these advancements are more pronounced.

While the pull for developing and transitional countries has been the additional revenue streams that the Kyoto Protocol mechanisms provide to *ex ante* economically feasible projects, the opportunities to leap frog technology streams has been an equally attractive proposition.

#### Conclusion

The prospect that the Kyoto Protocol will be ratified and will enter into force, while still uncertain and delayed, is advancing the emerging carbon market. As the carbon market moves forward, the certainty that the future will be carbon-constrained is no longer a question of if but when. The economic benefits of resource productivity makes protecting the climate a sound business proposition.