

International Climate Policy & Carbon Markets

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BI-MONTHLY REPORT

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International Climate Policy and Carbon Markets is a bi-monthly report aimed to provide a clear analysis of the worldwide evolution of the carbon market, and the international and domestic climate policies.

The report is drafted in four sections focused on i) international negotiations and national policies, ii) European and international energy policy, iii) flexible mechanisms and developing countries, and finally, iv) the valuation of the carbon price in the European and global market.

The information and data presented in each section are not only an update of recent events but also an extrapolation of the **quantitative implications** of recent events, based on a detailed analysis of academic papers and recently published reports (i.e. how will the carbon price be impacted by changes in the demand or supply side, etc). Every two months for each section we will briefly introduce and analyse the most important policies (proposed or applied) and actions.

Each article will include boxes, figures and graphs in order to provide in-depth examinations and data exemplifications; all papers and reports used for the analysis will be cited in the final reference section.

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INTERNATIONAL NEGOTIATIONS AND NATIONAL POLICIES

To tax or not to tax?

In July, France has outlined plans to impose a carbon tax with the **Rocard Proposal [1]**. This aims at leaving a CO₂ tax on non-ETS sectors, especially on final consumption of fuels. Under this plan, France would charge non-ETS sectors 32 euros for every tonne of carbon dioxide emitted in 2010 and lift to 100 euros per tonne in 2030, in real terms.

However, the Constitutional Court **rejected** last December the government's original plan [2] because the large number of exemptions for big emitters already covered by the EU ETS in the legislation would put an unfair burden on consumers.

A new bill is expected to be presented to the French parliament soon which will consider the possibility to put into force the carbon tax on July 1 2010 and to subjects industrial installations under the ETS to a carbon tax until 1 January 2013 [3].

The European Commission is also considering to impose an EU-wide tax on CO₂ emissions by 2013 on sectors such as transport and agriculture, which are currently not covered by EU ETS. This could be done through the amendment of the 2003 Energy Taxation Directive [4]. According to the draft, **motor fuels**

BOX 1. CARBON TAX AROUND THE WORLD

IN ACT

- **Norway** introduced a tax on carbon pollution in 1991. Today, activities that burn fossil fuels are subject to a carbon tax in the range of \$16 to \$63 per tonne of carbon emissions.
- **Sweden** enacted a carbon tax, on January 1, 1991, which is currently \$150 per ton of carbon, but no tax is applied to fuels used for electricity generation and industries are required to pay only 50% of the tax.
- **Finland** established a carbon tax in 1990, making it the first country to do so. The environmental tax component, based on the carbon content of fuels used for heating and transportation is, since January 2008, €20 per tonne of CO₂.
- **British Columbia**, on July 1, 2008, introduced a carbon tax of CAN\$10 per tonne of CO₂-eq emissions. The tax rise by an additional \$10 per tonne each year, reaching CAN\$40 per tonne within four years.

PROPOSED AND ABANDONED

- **Canada:** in the Green Shift Plan, Liberal party proposed a carbon tax, but it was abandoned after the 2008 election when the Conservative party won.
- **New Zealand:** In 2005, the Labour Government proposed a carbon tax in order to meet obligations under the Kyoto Protocol setting an emissions price of NZ\$15 per tonne of CO₂. The planned tax was scheduled to take effect from April 2007 and applied across most economic sectors; however, in December 2005 the tax was abandoned and substituted with the New Zealand Emissions Trading Scheme.

would be taxed either €0.01 or €0.03 per kg/CO₂, depending on where they are used while a minimum levy of €0.01 per kilogramme of CO₂ could be added to the price of **heating fuels** like gasoil, kerosene and natural gas. Finally, biomass would be exempt from CO₂ taxation under the directive as carbon neutral at end use.

So far, **carbon tax** is not a new tool. It has been implemented since the early 1990s in some Scandinavian countries (**Box 1**) as complementary to ETS.

Copenhagen was not a failure

Climate change and its effects on the planet are one of the most debated topics at national and international level. Despite the scientific consensus on it is increasingly consolidated, the path towards a post Kyoto international agreement is **slow**. The debate on climate policy after 2012, reached its peak in December (7-18 December) in Copenhagen during the 15th Conference of the Parties (**COP 15**) of the United Nations.

Even if the implementation of a binding global agreement is still far, in Copenhagen a first step towards the successor to the Kyoto Protocol has been taken. The parties were, in fact, able to reach a first agreement, known as the **Copenhagen Accord (Box 2)**.

This is a **satisfactory** result since the tense atmosphere and the exaggerated expectations created by media and public opinion. In light of these circumstances, not having reach a political agreement is certainly not a failure, but a starting point. In addition to this, the **U.S. position** did not help the negotiating process; especially, its stalemate in the domestic policy. In fact, a binding agreement should come when the U.S. approve the **energy and climate package**, which might not even happen in 2010 because of the midterm elections.

BOX 2. COPENHAGEN ACCORD FEATURES [6]

1. **Long-term objective:** stabilize GHGs concentration in the atmosphere below 2 degrees Celsius
2. **Adaptation:** establishment a comprehensive programme to cope with climate change potential impacts for countries particularly vulnerable and predictable and sustainable financial resources, technology and capacity-building provided by developed countries.
3. **Target: Annex I** Parties commit to implement individually or jointly the quantified economy-wide emissions targets for 2020 and **Non-Annex I** Parties will implement voluntary mitigation actions to be submitted to the UNFCCC by 31 January 2010 while **LDCs and small island** states may undertake actions voluntarily and on the basis of support.
4. **REDD:** need of positive incentives for reducing deforestation and forest degradation in developing countries through the immediate establishment of a mechanism which mobilize financial resources from developed countries.
5. The use of **markets** to enhance the cost-effectiveness of, and to promote mitigation actions.
6. **Financing:**
 - a. Developed countries will provide new and additional resources approaching USD 30 billion for the period 2010-2012 with balanced allocation between adaptation and mitigation.
 - b. Developed countries commit to a goal of mobilizing jointly USD 100 billion dollars a year by 2020 to address the needs of developing countries.

The Copenhagen Accord, proposed **December 18, 2009**, had as main protagonists the U.S., China, India, Brazil and South Africa, while the rest of the countries merely to take note of its existence, without having formally adopted. In this context, the **EU** lost its leading position in climate policies. Indeed, due to the lack of international agreement required it may opted for a reduction in emissions by **20%** and not the more ambitious target of 30% [5].

ENERGY POLICY

Sustainable Biofuels

Last December, all **biofuels-producing nations** have sent a letter to the European Commission of Transport and Energy in order to implement **sustainability criteria** for biofuels within EU. In particular, the letter emphasized the fact that there is **no internationally agreed methodology** to calculate indirect land-use change associated to bio-fuels production. This is even more difficult because of the **lack** of appropriate data at global level.

Thus, it will be necessary to build a well-designed and comprehensive **methodology** in a very short time and such issue should be addressed in an **international framework**, such as the UN Framework Convention on Climate Change (UNFCCC).

On this regard, the **European Commission** is preparing a report detailing how "indirect land-use change" is caused by biofuel production and whether it needs to be tackled. The deadline is the end of 2010, but a release is planned for next March [7].

The literature has suggested different ways to overcome the problem related to biofuel emissions. In particular, two issues are identified **(i) additionality**: whether growing biofuel feedstocks

BOX 3 THREE-PART APPROACH

1. correct specification of the transportation sector point of regulation with careful **carbon accounting** at the point of finished fuel distribution. It requires refiners to submit allowances sufficient to cover the conventional fuel equivalent carbon content for the energy value of all transportation fuel distributed, regardless of fuel type.
2. voluntary fuel and feedstock GHG accounting standards to track CO₂ uptake and uncapped GHG emissions throughout the fuel supply chain. For instance, establishing **Fuel and Feedstock Accounting Standards** (FFAS) for rating fuels and feedstock based on uncapped GHG emissions throughout their supply chains.
3. Address market-mediated impacts (indirect GHG emissions versus those in the direct supply chain) through a **Land Protection Fund** (LPF) for purchasing international forest carbon offsets commensurate with induced fuels-related GHG emissions not otherwise accounted for mitigating leakage

absorbs more CO₂ than would have otherwise occurred when cultivating plants for other purposes or leaving land to unmanaged **(ii) emissions leakage**: an effect tied to the economic coupling of biofuels from an uncapped sector substituting for fossil fuels in a capped sector.

On this regard, DeCicco (2009) [8] explores one approach for addressing this problem through mechanisms integrated into cap-and-trade policy (**Box 3**).

CSP: new energy source to achieve the European emission target

Concentrating solar power (CSP) system is one of the few renewable supply options that can provide base-load and dispatchable power. These clean energy technologies, through the use of mirrors, focus sunlight onto receivers that attain very high temperature. They are appropriate in **desert areas** where direct solar radiation is high. For this reason, some governments and private firms are exploring the expansion potential of CSP in North Africa in order to use such imported electricity to achieve the European 2020 GHG emission reduction target. According to IASA (2009) [9] the cost of producing electricity by CSP technologies currently ranges from **12 to 20 € cents/KWh** and its global installed generating capacity is 0.5 GW (**Fig.1**). IASA modelling suggests that, to

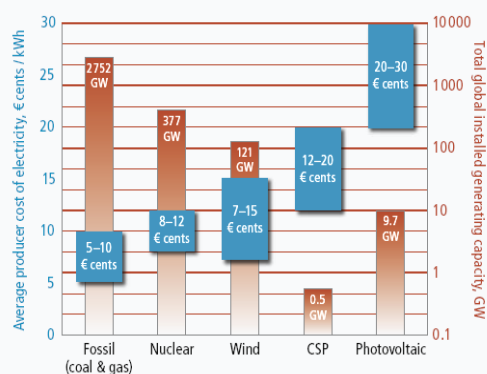
Box 4

To stimulate investment in CSP, cooperation need to address three challenges:

1. to plan international transmission high voltage direct current (HVDC) **lines across Europe** and the Mediterranean Sea;
2. to create the **financial incentives** for project and supply channel developers;
3. to ensure that CSP projects in North Africa **benefit North Africans**:
 - a. to leverage investment from Europe and CDM,
 - b. to generate direct and indirect employment

leverage **private sector investment** and become competitive with fossil fuels, CSP would require government or consumer subsidies totalling **€ 65 billion**. These would cover the costs difference between CSP and the other energy alternative, and could be generated through national quotas, the EU Emission Trading and a feed in tariff. Assuming the same rate of growth observed for wind, cost parity would be reached **by 2035**. In addition, higher **R&D spending** could reduce the amount of subsidies required to **€ 10 billion** and accelerate the point cost parity to 2020. However, it is important to note that some risks are linked with large-scale CSP development in North Africa: major concerns are related with the **energy security** associated with importing electricity from African countries, the changing regulatory environments, as well as slow and unpredictable permitting processes.

FIG. 1 COMPARING COST AND INSTALLED GENERATING CAPACITY OF MAIN ENERGY TECHNOLOGIES



Source: IASA Policy Brief #7 (2009)

FLEXIBLE MECHANISMS AND

DEVELOPING COUNTRIES

The Indonesian commitment

During the last UNFCCC climate negotiating Talks, the issue concerning the future reduction **commitments from developing countries** was one of the most heated. In this context, Indonesia was the first developing country to announce an emission **reduction target of 26%** from Business as Usual level by 2020, or 41% if an ambitious climate agreement would be reached. At the beginning of January Indonesian State Environmental Minister reiterated the promise to submit to the United Nations a report outlining the country's emission cuts by the stipulated deadline, January 31, 2010. The Minister also announced that this target will be met through an **ambitious reforestation plan** to rehabilitate more than **21 million hectares** of land over the next 10 years. Under this plan, 500,000 **hectares of new forest** would be planted annually at a cost of \$ 269 million per year [10]. This objective appears ambitious since Indonesia is the world's largest emitter of CO₂ from deforestation and forest land use change. With the world's third largest area of tropical forest and extensive carbon-rich peatlands, reducing emission from deforestation and forest degradation (REDD) offers a big opportunity for this country. A report published recently by the Centre for International Forestry Research (CIFOR) [11] highlights that reducing Indonesia's deforestation rate by 5 % could generate

BOX 5 SIX RECOMMENDATIONS TO STRENGTHEN INDONESIAN REDD+

- Build capacity for financial management and revenue administration;
- Strengthen institutions to eradicate corruption and fraud;
- Support financial monitoring, reporting and verification;
- Adjust policies to remove misaligned and perverse incentives;
- Impose robust due diligence and accountability mechanisms for recipients of public finance;
- Promote equitable distribution of benefits and mitigate negative impacts on smallholders.

REDD+ payments of US \$ 765 million a year, while a **30 % reduction** could generate more than **US \$ 4.5 billion a year**. The report also analyses the financial management and governance with which the Government of Indonesia has administered the country's **Reforestation Fund** over the past two decades, underlying how the use of the Fund for its intended purpose – reforestation and rehabilitation of degraded forests – has been undermined by **financial mismanagement**, corruption and weak governance practices. From the analysis of this experience authors outline some recommendations in order to **strengthen** the implementation of Indonesia's future REDD+ payment mechanism (**Box 5**). However REDD+ scheme are still being negotiated: even if in Copenhagen all countries agreed on the **crucial role** of stopping deforestation, it remains unclear how and when REDD+ will be incorporated in the future international climate regime.

Africa is waiting for CDM reforms

At the beginning of the new year, the Clean Development Mechanism (CDM) passed **2000th registered projects**, with the registration of a biogas extraction and utilization project in Thailand. So far, CDM has generated more than **365 million** Certified Emission Reductions (CERs) and it is estimated that more than **2.9 billion CERs** will be generated before the end of the first commitment period of the Kyoto Protocol in 2012 [12]. However, considering the overall trend, it emerges that, after the record of submissions in October 2008, the number of projects under the pipeline began to fall. In addition both sectoral and regional distribution of CDM projects are

BOX 6 IMPROVING CDM PROJECTS

- to amend **timelines** of the EB decision-making process;
- to allow direct interaction between project developers and the EB;
- to revise EB decisions periodically;
- to replace project-specific baselines with **country-specific** benchmarks;
- to provide **grants** for methodology development;
- to remove the requirement to link a particular project to a specific methodology;
- to provide **high qualified** Designated Operational Entity (DOE) personnel;
- to re-certify DOE personnel periodically, after updating courses;
- to allow that, once a project has been validated, other projects, with the same environmental/socio-economic conditions and the same technology and methodology, should not be required to be validated;
- to reduce the confidence interval for the monitoring of transport projects to 90%.

BOX 7 REFORMS TO IMPROVE CDM IN AFRICA

- developing **local expertise**;
- integrating CDM in implementation strategies;
- promoting CDM awareness and **information** programmes among companies, farmers and local financial institutions;
- encouraging project cycle and benefits of CDM in business;
- requiring the use of **insurance mechanism** to reduce risk for project participants and obtain finance from international sources
- simplifying methodologies for agriculture and **LULUCF** based projects.

very unequal. Indeed, Latin America and Asia-Pacific host 96% of the projects while Least Developing Countries host only a little percentage. To face these problems the CDM Executive Board (EB) will have to implement broad **procedural and operational reforms**, as mandated by the last UNFCCC meeting in Copenhagen. On this regard, Michelowa et al (2009) [13] consider in which ways CDM might be improved (**Box 6**). Using data by several studies, they also affirm that African countries have a significant **CDM potential**, especially in the energy **and agriculture/forest** sectors. In particular they estimate that, despite the current low GHG emissions of Sub-Saharan area, its total CER potential would reach **740 million** per year. However the realisation of this potential will largely depend on the reforms that the future climate change regime will adopt to remove the current investment barriers (**Box 7**).

THE CARBON PRICE

The structure of the analysis

This section is dedicated to the presentation of the most recent carbon price estimations for an hypothetical International carbon market. The **Table 1** presents the long-term estimations (after 2020) as calculated through economic models. For each evaluation collected we will define the source (AUTHORS) and the publication year (YEAR).

Information will be provided on the **scenario** assumed in the models, which may be useful in order to understand the achieved results (assumptions on the policy, allowed use of flexible mechanisms, geographic area reference, etc), and on the **variability** observed in the group of models analysed monthly, in particular in terms of **mean** and **variance**, showed at the bottom of the table.

The stabilization scenario at **450** parts per million (ppm) of CO₂ in the atmosphere will involve higher carbon prices compared to less ambitious stabilization scenarios such as the 550 ppm CO₂. Taking into account that the present CO₂ concentration is around 380 ppm, it is easy to understand that in order to keep the concentration under a certain level such as 450 ppm (this is the level needed in order to avoid a 2°C temperature increase by the end of the century according to many authoritative

sources) a strict policy with a high CO₂ price is required.

Finally, the **new average** and **variance** will be included in the last rows of each table below the average and the standard deviation of **previous estimations**, which are computed taking into account all estimations from previous reports, in order to reach an increasingly reliable price value.

Tab.1 ECONOMICS MODELS FOR THE LONG-TERM CARBON PRICE EVALUATION

MODEL	AUTHOR	YEAR	SCENARIO	CO2 PRICE ESTIMATION (€/tCO2)															
				2020	2030	2050	2100												
ETSAP	Clarke et al. [14]	2010	<p>Two options on overshoot are explored:</p> <ul style="list-style-type: none"> - a not-to-exceed formulation in which the long-term target cannot be exceeded at any point - an overshoot formulation in which the long-term target must be met by 2100, but in which concentrations can temporarily exceed the target prior to 2100. <p>Two assumptions regarding international participation in emissions reduction are explored:</p> <ul style="list-style-type: none"> - full initial participation assumes that all countries begin emissions reductions, in a coordinated fashion, in 2012 and that mitigation is undertaken where it is least costly - delayed participation scenario in which the majority of the developed regions begin mitigation as a group in 2012 (includes the Annex 1 countries minus Russia) and the remaining regions enter at different points in the future after 2030. <p>Possible combinations:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th colspan="2">550 CO2</th> </tr> <tr> <td style="text-align: center;">Full not-to-exceed</td> <td style="text-align: center;">Delayed not-to-exceed</td> </tr> </table> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th colspan="4">450CO2</th> </tr> <tr> <td style="text-align: center;">Full overshoot</td> <td style="text-align: center;">Full not-to-exceed</td> <td style="text-align: center;">Delayed overshoot</td> <td style="text-align: center;">Delayed not-to-exceed</td> </tr> </table>	550 CO2		Full not-to-exceed	Delayed not-to-exceed	450CO2				Full overshoot	Full not-to-exceed	Delayed overshoot	Delayed not-to-exceed	2.32 3.86 6.18 7.72 10.03 18.53			
550 CO2																			
Full not-to-exceed				Delayed not-to-exceed															
450CO2																			
Full overshoot				Full not-to-exceed	Delayed overshoot	Delayed not-to-exceed													
FUND							15.44 33.19 39.37 40.14 113.47 184.48												
GTEM							10.81 12.35 20.84 20.84 21.61												
IMAGE							0.77 0.77 8.49 12.35 9.26												
MESSAGE							4.63 27.02 5.40 20.07 27.02												
POLES							5.40 6.95 20.84 31.65 39.37												
SGM				7.72 8.49 30.88 30.88 51.72 51.72															
WITCH				2.32 4.63 3.09 16.98 27.79 101.12															

MODEL	AUTHOR	YEAR	SCENARIO	CO2 PRICE ESTIMATION (€/tCO2)			
				2020	2030	2050	2100
G-Cubed	McKibbin et al. [15]	2009	<p>Two scenarios considered:</p> <ul style="list-style-type: none"> - OA policy: every OECD country Emissions in 2020 and 2050 would be reduced by 14 percent and 83 percent, respectively, from 2005 emissions levels. - DD policy: sets year-by-year reduction targets for 2020, 2030, and 2050 of 20, 40, and 83 percent, respectively, relative to 2005 emissions. <p>Each of the non-OECD regions in the study (China, the Former USSR, Other LDC's, and OPEC) take on obligations later than the OECD countries and in the form of a price on carbon and they take on no climate policy until 2025, at which time they each take a real price on carbon of \$30.</p> <p>No banking or borrowing, nor offsets or international trade in emission permits are assumed-</p>	30.88 42.45	61.75 69.47	100.35 100.35	
AVERAGE OF MODELS ANALYSED THIS MONTH Stabilization at 450 or 550 ppm				34.84 9.17	65.61	100.35	--
STANDARD DEVIATION OF MODELS ANALYSED THIS MONTH Stabilization at 450 or 550 ppm				37.74 9.21	5.46	--	--
AVERAGE OF PREVIOUS ESTIMATION Stabilization at 450 or 550 ppm				42.60 17.66	76.15 22.97	211.66 41.78	1059.83 108.84
STANDARD DEVIATION OF PREVIOUS ESTIMATION Stabilization at 450 or 550 ppm				36.45 9.18	45.44 11.22	129.52 25.62	763.54 85.59
NEW AVERAGE ESTIMATION Stabilization at 450 or 550 ppm				42.22 14.64	75.61 22.97	205.80 41.78	1059.83 108.84
NEW STANDARD DEVIATION Stabilization at 450 or 550 ppm				35.43 9.98	44.30 11.22	128.46 25.62	763.54 85.59

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