Les Cahiers de la Chaire Economie du Climat

Information and Debates Series

n° 10 • August 2011

Carbon markets regulation: The case for a CO_2 Central Bank

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For political reasons, the European trading scheme was set up in a much decentralized framework. The Commission deliberately based its supervisory role on what seemed to it to be essential. It left considerable freedom to Member States as regards allocation, management of registries and organization of trading.

These initial choices made it possible to deploy a carbon market that has rapidly become a central instrument in European climate policy as well as an international benchmark. However, weak regulation led to major disruptions, which need to be corrected by more coordination and more centralization. The first step towards stronger regulation was taken by the European Commission with measures designed to avoid fiscal fraud, to secure the market infrastructure and to enhance market oversight. Yet political management of this transition remains complex, since by no means all the 27 Member States share a common vision of the carbon market.

Starting in 2013, the shift towards an auction-based allocation process will create a large primary market for allowances. The adoption of a far-reaching emissions reduction target by the European Council will help in managing the carbon market, with more attention paid to the long term. In order to tackle these new challenges, one promising option would be to speed up the creation of a new regulatory framework, inspired by the model of an independent central bank able to influence the expectations of private players. Such a CO_2 central bank should be set up as an independent European regulatory body, reporting to the European public authority (i.e. European Council, European Parliament and European Commission). It would oversee the carbon market independently of any short-term political consideration. Its main task would be to ensure that the carbon market prices emission reductions correctly and that economic agents take into account this price signal so as to move efficiently towards a low carbon society.

The author would like to thank Jean-Yves Caneill (EDF), Anais Delbosc (CDC Climat), Pierre Guigon (Bluenext), Boris Solier (CEC), Raphaël Trotignon (CEC) and Michael Westlake for their careful copy editing. He also would like to thank the participants in the workshop "Energy and Carbon markets regulation: what is at stake?" held in May 2011 at the European University Institute of Firenze for their valuable contributions.

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This study was implemented within the framework of the "Carbon Prices and Markets" Research Initiative, a long-term research programme analyzing the different carbon pricing mechanisms and the conditions for their international expansion.

This initiative is supported by Amundi (Crédit-Agricole), Bluenext, CDC-Climat, EDF, GDF-Suez, HSBC, Orbeo, Total and Veolia.

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Introduction

How does one steal billions of euros from fiscal authorities or embezzle millions from blue chip companies? Just use the European carbon market! The rapid development of this new market has attracted professional traders that have contributed to its success, but also criminal players that have undermined its reputation. After VAT frauds and unlawful recycling of CERs in 2009 and 2010, the EU ETS was disrupted by massive cyber attacks in January 2011. The European Commission reacted rapidly by blocking all spot transactions for several days, in order to restore confidence. These occurrences give rise to the question as to what type of regulation is needed in this new market.

Discussion on ways to enhance carbon market oversight was initiated by a European Commission communication in December 2010. So far the discussion has mainly focused on the issues of the market infrastructure security and the legal status of allowances. This paper recalls the main failings that have appeared in the carbon market, analyzes the ongoing decisions taken by the European Commission and stresses the need for a new independent body acting as a CO_2 Central Bank.

1. Carbon market failings: what went wrong?

At the time of the launch of the EU ETS, in 2005, most concerns about market failings were focused on the derivatives segment, which accounts for almost 85% of current transactions. This segment has been also the main concern in the US Congress when discussing federal trading schemes. However, no specific problems have occurred in this market segment, which is already covered by financial regulation, largely harmonized in Europe through the MiFID Directive. So far, all the failings have arisen in the spot market, which was established in a decentralized framework without strong common regulation. They involve VAT frauds, CER recycling and cyber attacks.

1.1. The VAT carousel fraud: how to steal 5 billion euros in five months

VAT carousel frauds amounted to around €5 billion between late 2008 and summer 2009. This type of fraud, not specific to the carbon market, involves the purchase of allowances in country A and the reselling of them in country B, while charging the VAT to local buyers without repaying the tax authorities. This fraud is detected by observing cross-border allowances trading, which accelerates as allowances rotate in a carousel. The first signs of such an acceleration appeared in January 2009, and peaked in April, leading to national crisis measures such as changing the VAT rules applying to CO_2 emissions trading (in the Netherlands and Germany) or even suspending or abolishing it (in France, Belgium and the UK).

In absence of overall coordination, national measures were insufficient to prevent all further carousel fraud attempts. As a result, in May 2010, the European Commission adopted a Directive amending the method of levying VAT on CO_2 allowances, by introducing the "reverse charge mechanism", which requires the buyer to pay the VAT. However, at the end of 2010, in the absence of full implementation of this directive, new carousel fraud attempts were detected in Italy and suspected in some other countries.

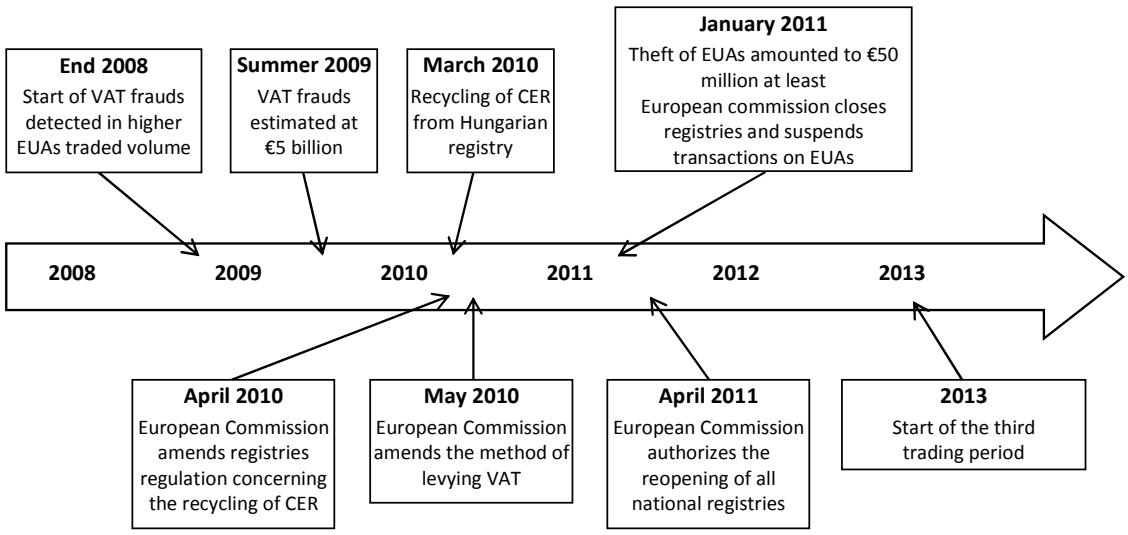
1.2. CER recycling: a threat to environmental integrity

CER recycling was detected in March 2010, when CERs that had already been used for compliance by installations in the Hungarian registry reappeared on the market. These CERs had been previously sold by the Hungarian government in the international market. With this type of fraud, specific to the carbon market, the environmental integrity of the trading scheme is affected, since a recycled CER (if it is recycled only once) covers the emission of not one but two tonnes of CO_2. Amendments to the Registries Regulation made in April 2010 by the European Commission (Article 53) should guard against the recycling of CERs, which now are held in "retirement accounts" once they have been used for compliance.

1.3. Organized thefts of allowances have undermined market player confidence

Thefts of allowances in registries use well-known cybercrime techniques involving the impersonation of another person in cyberspace ("phishing") or conducting direct attacks (using Trojan horse-type viruses). This type of theft probably amounted to at least 3 million tonnes of CO_2 in January 2011, or 0.15% of overall emissions allowances, representing probably more than €50 million. Fraud of this kind is detected when account holders either succeed in thwarting attacks or subsequently realize that they have suffered losses.

FIGURE 1- MAIN FAILINGS ON THE EUROPEAN CARBON MARKET



Source: Climate Economics Chair, Adapted from CERA (2011)

To prevent further attacks, on 19 January 2010, the Commission decided to freeze all transactions between registries. Registries have been re-opened on a gradual basis, with the Commission authorizing this only when it considered the security level to be adequate (not all the criteria have been made public). By the end of April, all national registries had been authorized to re-open, though without leading to a significant recovery in spot trading of allowances. As long as there are still weak links in the registry system, one cannot be sure that an allowance purchased on the market has not been stolen, nor indeed whether the thefts have completely stopped. As a result, these thefts have had a lasting impact on market players' confidence. In reaction to these disruptions, the European Commission has been considering a number of ways of enhancing market oversight.

2. Enhancing carbon market oversight

In December 2010, the Commission released a communication addressing the main issues raised by the need for more regulation on the carbon market, most of which were discussed in May 2011, during stakeholder sessions. To restore confidence, decisions have to be taken rapidly, since the new regulatory framework needs to be functional by 2013, the first year of Phase 3 of the EU ETS. It will aim to prevent future market failings by increasing market infrastructure security, harmonizing the legal status of allowances and providing market transparency.

2.1. Market infrastructure security: towards a single registry

The carbon market is designed to achieve environmental targets at the least cost. It is a compliance market. Once a year, industrial players are required to surrender as many allowances as the number of tonnes of CO_2 they have emitted. Thus the 11,000 capped installations have had to open an account in their national registries, the backbone of the spot market, and each spot transaction is recorded in two accounts in the registries network. These national registries are connected to the Community Independent Transaction Log (CITL), which checks and consolidates all information on transactions at the European level. The national registries were set up to guarantee the environmental integrity of the market, i.e. the emissions reduction target. In addition, they now have to protect the market against fraudsters or cyber criminals.

Despite the tightening of the original rules set up by the European Commission, this decentralized framework has revealed many weaknesses in terms of security. Consequently it has been decided to replace the 27 existing national registries by a single European registry from 2013 onward. This centralization seems to be a pre-condition for achieving high security standards for market infrastructure. It will need to be complemented by suitable rules aimed at making it much more difficult for new players to enter the market. Up until now it has been very easy to open accounts in the registries network, because the initial rules were set up with the naive idea of guaranteeing every European citizen the right to enter the carbon market. Unfortunately, criminals have taken advantage of these rules for their own purposes.

2.2. Two possible ways of harmonizing the legal status of allowances

The second level of carbon market regulation deals with the legal status of allowances. These allowances are new compliance assets that have been introduced through a public policy aimed at creating scarcity on the right to emit CO_2. So far, there is no single, or common, definition of this asset in Europe. For instance, a CO_2 allowance is considered as a financial product in Luxembourg or Romania, whereas this is not the case in either France or Germany. Yet in these two countries, their respective national legislation has different implications: using a stolen allowance for compliance is liable to criminal prosecution in France but not in Germany. It is therefore important to have a common legal and fiscal definition of a CO_2 allowance (and of other carbon assets traded through the EU ETS).

- One possibility, favoured by the European Commission, is to characterize them as financial products. Such a characterization would place all segments of the carbon market under financial market supervision, which is already partially harmonized at the European level through the European Securities Markets Authority (ESMA). The fact that a regulatory framework already exists is the major advantage of this route. Nevertheless, some rules would have to be adapted to the specificity of the ETS, which is a compliance market for industrial players, and there is no reason for these players to conform to all the obligations imposed on the market's financial intermediaries. Another difficulty would be explaining it to a public opinion that tends to distrust financial markets.

- Another possibility, favoured in a French report coordinated by Michel Prada, is to define an allowance as a “tradable administrative authorization” that does not fall within the strictly defined field of financial products. Logically, this leads to specific market regulation, straddling financial market law on one hand and energy and competition rules on the other. This route is probably more difficult to implement rapidly. It has two major advantages: being in accordance with the specificity of this new market and creating a dedicated framework which could be used for other environmental markets that might be developed in the future, for instance to provide economic efficiency in the use of halieutic, fresh-water or biodiversity resources.

In both cases, it is essential to have common rules to replace the existing superimposition of national rules among 27 countries. It is also important to use existing regulations as much as possible in order to avoid “re-inventing the wheel” (in the words of European Parliament member Lena Ek at the stakeholder meeting in May 2011).

2.3. Ensuring market transparency: the information challenge

Many people, including some compliance players, have limited information on the carbon market. For instance, one often hears blanket assertions such as “carbon prices are extremely volatile” or “carbon prices don’t react to economic fundamentals”, whereas empirical observations show precisely the opposite: carbon prices are less volatile than most other energy commodities and they fell sharply in reaction to the economic crisis in 2008-09. To ensure market transparency, the public authority faces a major “information challenge”.

In the financial market, issuers are responsible for the information released to the public, under the supervision of the regulator whose task it is to define and check the rules. These rules are designed so that all investors have transparent information as to the risks involved. In addition, the regulator has to make sure that no market players can take advantage of their position to benefit from confidential information.

In the carbon market, the public authority is the single issuer of allowances, transactions of which are tracked by the registries network. Thus the registries could provide the market with exhaustive information on spot transactions, almost in real time. Under the current rules, this information cannot be released to the public for five years. It remains “sleeping information”. In contrast, Internet addresses and background information on installations subject to caps could easily be found in the registries, and were in fact only recently removed from CITL information disclosed to the public. This availability very much helped hackers. Information management of this kind has proved to be counterproductive and needs to be reconsidered.

Until now, the only public use of the information “sleeping” in the registries is provided once a year by the European Commission when it releases exhaustive data on real emissions and on allowances and credits that have been surrendered by installations covered. Such information is closely monitored by market players. To improve market transparency, the public authority should strengthen its role in consolidating existing market data, by releasing basic information more often and with more analysis. It should make sure that all players have access to the same public information. As well as basic data on emissions and mitigation from the registries network, this also covers standard pre-trade and post-trade data from marketplaces.

Addressing this information challenge will be essential for the credibility of the carbon market regulator, as it is for a central bank in the monetary market: all central banks share sovereign prerogatives such as printing money or setting the overnight interest rate. But what really makes the difference in term of credibility is the capacity of a central bank to take the lead in terms of market insight through its ability to collect, analyze and release all the relevant information.

3. A regulatory framework inspired by the central bank model

In many respects, the carbon market works like a monetary market. As with other carbon assets, CO_2 allowances may be viewed as a new currency, which is created through the allocation process by the public authority and which is destroyed when capped entities use it for their compliance. The specificity of this new money is that it can buy only one good: the right to emit one tonne of CO_2. Taking into account these similarities between carbon markets and monetary markets could help in designing the appropriate carbon market regulatory framework.

3.1. Several similarities with a monetary market

CO_2 allowances have been created by a public authority to restrict the right to emit greenhouse gases into the atmosphere. Allowances are like a new currency that carbon emitters have to use to pay for their annual emissions. This currency is created each year when the public authority allocates allowances to capped entities or sells them by auction. And it is destroyed when these entities surrender their allowances for compliance. In the event of oversupply, the value of the currency is eroded: just as inflation weakens the economy, so over-allocation reduces the capacity of the carbon price to induce abatement. Symmetrically, in the event of a liquidity crisis, the scarcity of central money can lead to systemic crisis: if there is no lender of last resort, the financial system can collapse at the macroeconomic level. In the carbon market, in the absence of a "safety valve", a rocketing carbon price could seriously damage the economy.

As well as using domestic money for compliance, capped entities may also use offsets that have been created outside the scheme. These offsets are similar to foreign currencies, the use of which can affect the value and the stability of the CO_2 domestic money. This raises the classical issue of the convertibility of the money into foreign currencies and of exchange rate management.

Despite these similarities, carbon markets and monetary markets are very different as regards their ultimate objectives. The aim of a classical central bank is to combine monetary stability with economic growth; it therefore controls the money supply, which has to increase in the long term to achieve this target. The aim of the CO_2 regulator is to engender short- and long-term greenhouse gas abatement at the lowest cost; the extent of such abatement depends on the ambitiousness the climate policy, as determined by the public authority that sets the cap and thus controls the overall amount of allowances to be created. Here the independent regulator – the CO_2 European central bank (CO_2-ECB) – does not control the overall money supply in the long term: this has to be reduced in accordance with the climate policy goals. In short, the public authority sets the cap, and the CO_2-ECB regulates the market to achieve the cap efficiently. To do so, the CO_2-ECB needs to have a number of prerogatives.

3.2. What would a CO_2 central bank look like?

As well as the traditional tasks of market oversight discussed above, the CO_2-ECB would need to manage the supply of allowances on the primary market, which will play a growing role as from 2013 with the shift towards auctions during the third trading period. These auctions should be organized at the European level and as soon as possible become the only way of introducing the currency into the market. The revenue from auctions should be returned to the European and national public authorities, and these authorities should retain their fiscal prerogatives.

The CO_2-ECB should also be in a position to intervene in the secondary market, withdrawing or adding allowances in order to diminish price fluctuations, provide liquidity, and avoid excessive volatility. Clear provisions should be in place to enable the CO_2-ECB to counteract undesirable price hikes in extreme situations. In this situation, if the CO_2-ECB is permitted to create additional allowances *ex nihilo*, like central banks in the monetary market acting as lender of last resort, the environmental integrity of the market could be at risk. The right way to

deal with undesirable carbon price hikes is to let the carbon central bank auction additional allowances borrowed from subsequent periods. In order to achieve the long-term abatement goals, the CO_2-ECB would need to pay back its loan in the following periods, by reducing by the supply of allowances by the same amount.

TABLE 1- THE TASK OF A CO_2 CENTRAL BANK COMPARED TO A STANDARD CENTRAL BANK

	Monetary Market	**Carbon Market**
Final objective	Long-term monetary stability	Short- and long-term emissions reduction at lowest cost
Market oversight	Integrity and liquidity of transactions	Integrity and liquidity of transactions
Price instrument	Interest rates	Carbon prices
Quantitative regulation		
Primary market	Supply of central money (M_0)	Allowances auctioning
Secondary market	- Open Market (sell and buy monetary assets) - Exchange rate	- Sell and buy carbon assets - Links with other markets (offsets, other cap and trades, etc.)
Lender of last resort	Refinance banks in the event of liquidity crisis	Additional allowances supply used as a "safety valve"
Reporting to public authorities (European Council, European Parliament and Commission)	- Annual and quarterly reports on the monetary and economic situation - Public hearings in the EU Parliament	- Annual report on the carbon price and on the GHC emissions reduction long-term path - Quarterly reports on EU-ETS and carbon price

In return for its independence, the CO_2-ECB would report regularly and transparently to the public authority. The reporting rules should precisely define the accountability of the CO_2-ECB to European citizens and their elected representatives. Such reporting should stress the links between market conditions, prevailing carbon prices and the abatement attainable in the short and the long term. The aim would be to provide the public authority with relevant information on the progress toward a low-carbon economy.

3.3. Helping the public authority find the "right" carbon price

It is often said that the EU ETS does not produce the "right" carbon price. Environmental NGOs complain that the CO_2 market cannot induce low-carbon investments. Given the time it takes to build facilities in the energy sector, it is difficult to make a definitive assessment of what has been driven by the carbon price in terms of new investments. Nevertheless, economic

studies, based on cost-efficiency approaches, often conclude that the carbon price should exceed its current level to achieve ambitious emissions abatement. Assessments of this kind can lead to undesirable national measures, such the decision taken by the UK government in March 2011 to set a price floor, ensuring that the country's utilities will pay a minimum rate for their emissions. As the cap on emissions is set at the European level, the result will be to transfer rights to emit CO_2 from the UK to the Continent and to induce downward pressures on the equilibrium market price. It will not give rise to further CO_2 emissions reduction at the European level.

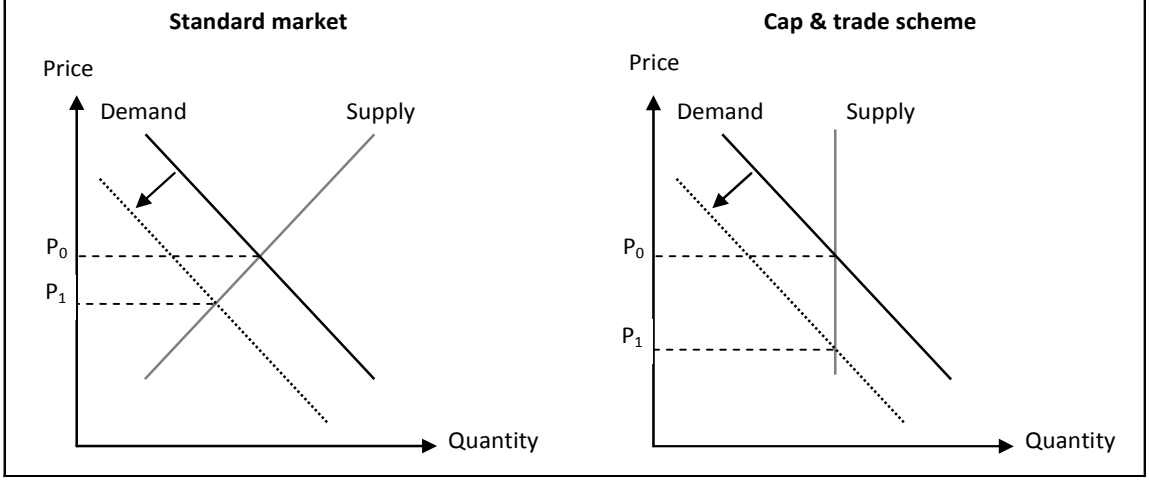
Another possibility would be to introduce a "price collar" at the European level, obliging the market price to fluctuate between a floor and a ceiling. If the market price reached the floor, unlimited allowances purchases by the public authority would be triggered. A price cap, on the other hand, would be technically easier to set up: when the market price reached the ceiling, the capped entities could comply by paying a tax per tonne of CO_2 emitted (at the level of the price ceiling) instead of surrendering allowances. But such direct price regulation could be costly for governments and could undermine the environmental integrity of the trading scheme. In addition, it would probably disturb the functioning of the market, stimulating and abetting speculation, as it did in the currencies market when the European Union tried to keep the fluctuation of exchange rates fluctuation within the "monetary snake" during the 1970s.

If the carbon market is to deliver the required abatement, the best answer is to enhance its supervision under the aegis of the CO_2-ECB. If the economy operated under perfect competition, the task would be easy: the public authority would simply have to cap emissions at the ultimately desired level, and the "right" carbon price would spontaneously emerge in the market. In the real world, however, the CO_2-ECB would have to cope with two major market imperfections: uncertainty as to short- and long-term abatement costs, as analyzed by Weitzman in his seminal 1974 paper; and imperfections in the capital market which make it impossible for firms to fully incorporate long-term relative price shift anticipations into their current investment decisions. The CO_2-ECB would therefore have to help society gradually find the "right" carbon price in both the short and the long term.

In the short term, compliance markets can face instability for obvious reasons: in a pure cap-and-trade scheme, the supply of allowances is totally inelastic. Small shifts in the supply or demand curves can induce large fluctuations in the equilibrium price (see figure 2). That is exactly what happened when the carbon price collapsed during the first trading period with the surplus of allowances and the provision preventing allowances to be banked for the second period. The introduction of full banking between trading periods has considerably helped reduce carbon price volatility since 2008. The possibility of using offsets can also smooth price fluctuations in the short term, since it makes the supply more elastic.

A big step toward better carbon market regulation will be possible with the introduction of auctions as from 2013: intelligent centralized auctions management would enable an independent body to match the supply of allowances to market conditions, thus avoiding any unwelcome instability.

FIGURE 2- SUPPLY AND DEMAND EQUILIBRIUM



Untying the Gordian knot of finding the appropriate carbon price will involve understanding the links between short-term abatement and the long-term emission paths leading to the decarbonisation of the economy. The main problem is that nobody knows with any certainty what the potential future abatement is or its cost. Despite this uncertainty, European governments have agreed on a long-term emission target to mitigate global warming: the reduction of European greenhouse gases emissions by at least 80% by 2050 (compared to 1990 levels). This long-term target has been detailed in the European Commission's "Roadmap for moving to a competitive low carbon economy in 2050". Efficiently achieving this long-term target will be a major challenge for governments, and will require testing various policies and tools.

The carbon market, together with the associated carbon price, should be the main instrument helping governments find an efficient route towards a low-carbon economy. It is therefore important to link these long-term targets with the existing cap defining the market condition by 2020 and to clarify who is responsible for what. For instance, if the CO2-ECB were already in charge, its task would be to make sure that the observed carbon price was high enough to encourage the capped industries to produce the required abatement by 2020 and thereafter. If need be, it would have the capacity and credibility to intervene in the market by restricting the supply of auctioned allowances so as to change market players' expectations. As the market is currently organized, the European Commission does not have such credibility, despite its repeated calls for a set-aside of allowances during the third trading period.

Another important point to clarify is the link between the long-term emissions reduction targets adopted by the European Council and the future rules in the carbon market. Since its inception, one particularity of the EU-ETS has been the absence of an explicit long-term objective, in contrast to the US sulphur dioxide market where the cap is fixed for thirty years. One priority of the CO2-ECB would be to express the new long-term target adopted by the European Council in the form of precise rules setting the emissions cap in the trading scheme for 2020 and subsequently. Such predictable rules would enhance the credibility of European climate policy and encourage firms to invest rapidly in low-carbon technologies in order to avoid the anticipated carbon price increases.

Conclusion: forthcoming regulatory challenges

The first step towards stronger carbon market regulation has been taken by the European Commission with measures designed to avoid fiscal fraud, to secure the market infrastructure and to enhance market oversight. This task implies more centralisation, a sensitive political issue with the 27 Member States, which share common long-term climate policy goals but often disagree on the best ways of achieving them.

Starting in 2013, the shift towards an auction-based allocation process will create a large primary market for allowances. The adoption of a far-reaching emissions reduction target by the European Council will help in managing the carbon market, with more attention paid to the long term. This is likely to speed up the creation of a new regulatory framework operating at the European level.

To counter the opposition of Member States reluctant to transfer a part of their existing prerogative at the European level, it would be worthwhile considering the option of a new regulatory framework, inspired by the model of an independent central bank. Such a regulator would receive a mandate guaranteeing its independence of any short-term political considerations. Its system of governance would also guard against pressure from private lobbies. The main task of such a regulator would be to ensure that the carbon market correctly prices emission reductions. Its credibility would influence the expectations of private and public players and encourage them to move efficiently towards a low carbon society.

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Information and Debates Series

n° 10 • August 2011

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The Climate Economics Chair is an initiative of CDC Climat and Paris Dauphine University under the aegis of Europlace Institute of Finance

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