

Putting a price on carbon

Accelerating the dialogue: a challenge for governments and a request from businesses

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INTRO

Today, the world's top greenhouse gas emitting countries are adopting a variety of policy instruments to regulate emissions in parts of their economy. The World Bank currently estimates that carbon policies generated almost \$45 billion in 2014. Cap-and-trade systems, as well as carbon taxes now represent a key means by which to finance the transition to a low-carbon economy by providing public authorities with a new source of funding via the additional levy or auctions of GHG emissions allowances.

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Putting a price on carbon is necessary to stay below 2°C

To finance the transition to a low-carbon economy, carbon pricing is one of the economic solutions to mobilize public and private finance.

At the global level, achieving the objectives of the transition to a low-carbon economy – i.e. satisfying energy and economic needs while limiting global warming to 2°C – requires estimated annual investments of some \$1,000 billion a year (World Energy Outlook 2014 by the International Energy Agency, World Economic Forum; New Climate Economy Report, 2014). This amount may seem high, but in reality, it only represents a small percentage of total global current investment, and a few hundred billion dollars a year more than the cost of a “business-as-usual” scenario. **The challenge is certainly to mobilize new funding sources, but more importantly to improve the way investment is channeled to meet the needs of a low-carbon economy rather than continue investing in carbon-intensive infrastructures.**

How can we redirect financing flows towards low-carbon technologies and mobilize new funding sources? In view of the pending international climate negotiations in Paris in December 2015, it is vital that an international climate agreement is reached for the post-2020 period. The UNFCCC's Paris agreement provides a framework to address the challenge of funding the global transition towards a low-carbon economy. However, it is also important to consider that **the quest for economic and financial solutions to manage this transition extends beyond the UN negotiating process** involving financial, public and business communities alike.

Despite the fact that carbon pricing does not fall under the mandate of UN climate negotiations, and as such cannot be expected as an outcome of the Paris Conference, **there is a growing consensus among both governments and business on the fundamental role of carbon pricing.** Putting an adequate price on GHG emissions increases the competitiveness of low GHG emission measures such as fuel switching, renewable energy deployment, and investments in energy efficiency measures. It can also help to enhance the development of low-carbon technologies in all the economic

sectors and orient consumer behaviors towards low-carbon options. Beyond short-term optimizations to reduce CO₂ emissions of existing capital stock, **a carbon price should provide a clear and credible long-term signal that can lead investors to progressively “green” their capital stock, and drive the necessary development of low-carbon technologies.**

In addition to reducing GHG emissions, **carbon pricing policies generate new proceeds for governments.** This new source of financing could be oriented towards low-carbon projects e.g. in sectors which are not directly covered by the carbon price (energy efficiency in buildings, development of electric cars, etc.). The revenue could also be used to compensate indirect carbon costs (e.g. the increase in power prices) for the most vulnerable and disadvantaged communities, or be spent on international climate actions or adaptation efforts. This new public source of finance could also be increased to channel public and private funding towards low-carbon investments.

How to put a price on carbon depends on national circumstances

Cost-effective and efficient emissions reductions will be achieved through the most appropriate carbon pricing policy for national circumstances.

There are several explicit carbon pricing mechanisms: regulatory instruments i.e. used by governments to lower their GHG emissions, this includes a carbon tax, emission trading schemes and GHG emission reduction mechanisms; voluntary instruments i.e. used by companies such as voluntary offsets or internal corporate carbon pricing that will drive their business model towards low-carbon developments. **Each of these mechanisms directly puts a price on carbon or leads to carbon price discovery.**

The choice of the implementation of a regulatory carbon pricing instrument depends on a large number of factors depending on countries’ unique circumstances (political context, GHG emissions profile, energy profile, monitoring reporting and verification framework for accounting national GHG emissions, etc...). The major challenge for governments is to demonstrate that carbon pricing policies, beyond the objective to reduce GHG emissions reductions, can **meet national considerations such as improving energy security, creating new jobs, or supporting economic growth.** In addition, whatever the nature of the carbon pricing instrument chosen by a government, in order for the instrument to be fully efficient and have a real impact on companies behaviors, the government needs to **set up a stable policy framework by defining a long-term decarbonization target and by setting a credible and appropriate carbon pricing trajectory.**

- **A carbon tax** is an additional levy set by the government and added onto the distribution, sale, or use of fossil fuels based on the carbon intensity of an activity or product. **The carbon tax provides certainty as to the price level.** By making fossil fuels more expensive to use, a carbon tax can encourage utilities, businesses and individuals to

reduce the carbon content of their activities by increasing energy efficiency, switching to cleaner energy sources or changing organizational habits. A carbon tax can be applied at different stages of the supply chain and can target producers at the top of a supply chain, utility companies or even end-users. The rate of a carbon tax depends on the type of fuel being used and its relative global warming/pollution potential.

- **An Emissions Trading Scheme (ETS) or a Cap-and-Trade Scheme** is a market-based mechanism that limits the amount of GHG emissions that can be emitted over a set period of time. **The price signal given by an ETS arises from a restriction of the quantity of emissions allowances, this market-based mechanisms provides a certainty on the achievement of the emissions reductions target over time.** The government defines the emission reductions effort to be shared among participants and distributes or auctions emissions allowances that correspond to the quantity of carbon dioxide equivalent a covered entity may emit during a trading period. It is crucial that the emissions cap provides a long-term trajectory to drive the decrease of GHG emissions over time. Some existing cap-and-trade programs incorporate safeguards to protect the market from price shocks by implementing a price ceiling or a price floor. This helps define the highest and lowest price that an allowance can be traded for and allows for further certainty amongst those participating. The positive benefit of an ETS is largely that covered entities are offered temporal (with banking and sometimes borrowing provisions) and sectorial/geographical (with offsets provisions) flexibility in terms of how they meet their emission reduction targets reducing the long term costs of decarbonization.
- **Offsetting emissions** is another tool which can provide flexibility to emitters in how they generate emission reductions and can be offered as a standalone practice or as a complementary policy to a carbon tax or carbon trading scheme. Where GHG emission reductions are expensive to achieve, GHG emissions from a certain activity can be offset by funding emission reductions that are more cost effective elsewhere. Offsetting is currently being used as a means by which participants under a cap-and-trade program can purchase (offset) credits to satisfy part of their emission reduction obligation.

Established by a carbon tax or an emissions trading scheme, an efficient carbon price will be a price that reflects the long term decarbonization target and not only (for instance in the case of emissions trading scheme), the short-term balance between supply and demand. To mitigate the longer-term costs of the decarbonization efforts, **a carbon price much follow a pathway that is efficient at inducing sufficient changes in energy use and provide a credible framework for investments in low-carbon technologies.** In the opposite case, even if they are indicative of the achievement of short-term objectives at a low cost, low-carbon prices limit the impact of having a price on carbon and will likely be detrimental to the cost effectiveness of the mechanism. With low-carbon prices, early cost-effective abatement opportunities may be disregarded by

businesses, which will in turn raise their abatement costs in the long run. Low-carbon prices delay investments in low technologies development, meaning that fewer options may be available to fight climate change in the future, and at higher cost. Additionally, low-carbon prices are likely to give rise to investments in high carbon technologies referred to as carbon lock-in, steering an inefficient allocation of capital. Later on, the rise of carbon price is likely to devalue high carbon assets before the end of their economic lifetime.

Carbon prices already cover 12% of global GHG emissions

Whatever their stage of development, the overview of pricing mechanisms around the world reveals how governments must overcome technical, political and legal challenges, to ensure their credibility and the emergence of an effective price signal. The outcome is a patchwork of carbon prices around the world, which will hopefully provide useful feedback to policy makers and businesses.

In 2015, according to the World Bank, 40 national and over 20 subnational jurisdictions had established a carbon pricing policy via cap-and-trade systems or carbon taxes, covering approximately 7 GtCO₂e, or almost 12% of global GHG emissions. These included 16 cap-and-trade systems currently operating representing 8.8% of annual global GHG emissions, a scope higher than carbon taxes' scope which covers 4.3% of annual global GHG emissions and emission standards covering 4.2% of annual global GHG emissions.

Since 2013, the expansion of carbon pricing mechanisms has accelerated: since then, 12 emissions trading schemes – Beijing, California, Guangdong, Kazakhstan, Québec, Shanghai, Shenzhen, Tianjin and Switzerland in 2013, Chongqing, Hubei in 2014 and South Korea in 2015, and three carbon taxes – Iceland in 2013, Mexico in 2014, Portugal in 2015 – have been implemented. In addition, South Africa is preparing a carbon tax for 2016 and Chile plans to have one set up for 2017.

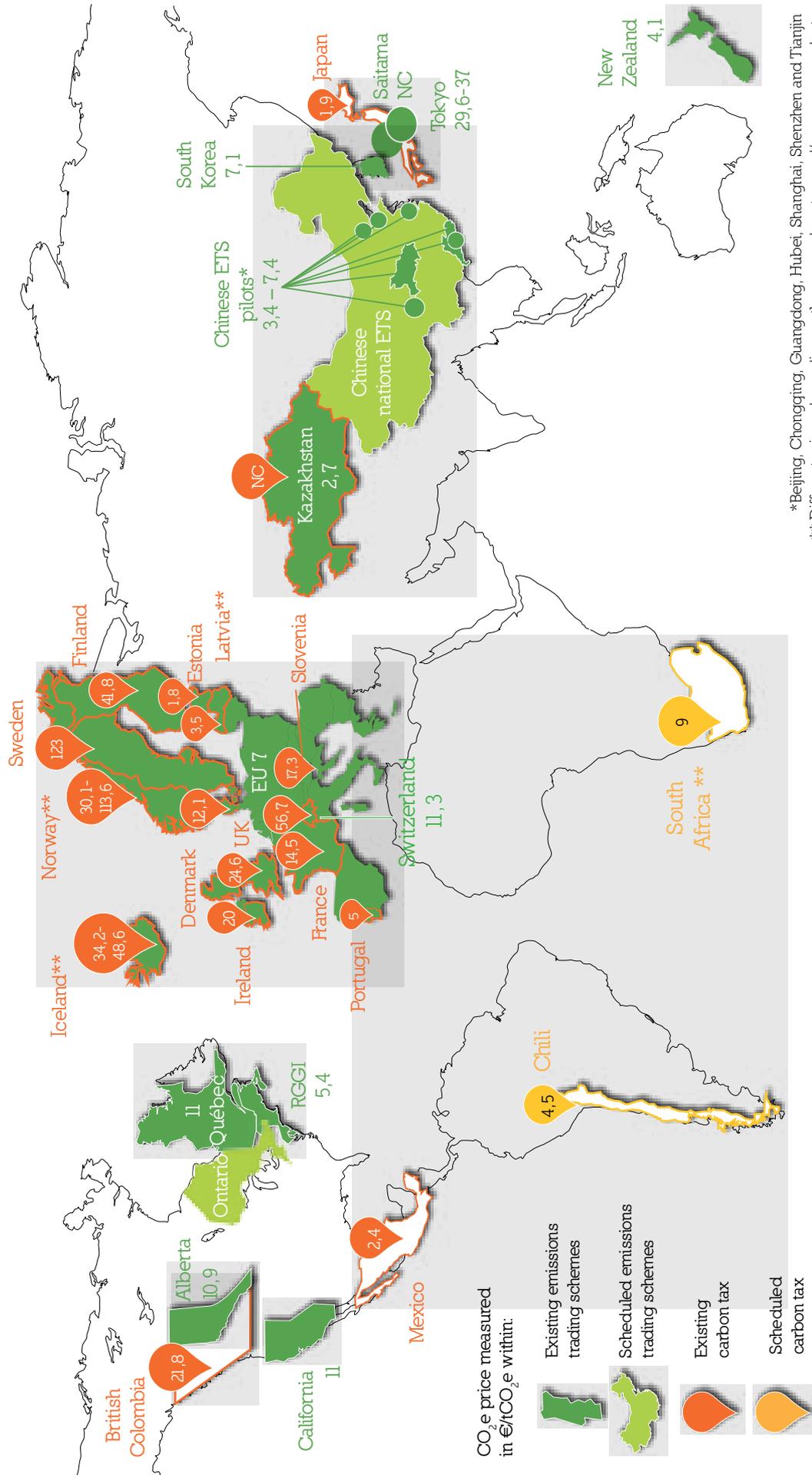
Carbon pricing policies are currently developing under different dynamics due to the political, economic and social circumstances of the region or the country where they are being implemented.

- **In North America: towards the establishment of a regional (not federal) platform?** The United States and Canada have not yet implemented a federal climate strategy. However, **carbon pricing instruments have been developed at the sub-national level.** In practice, three emissions trading schemes came into force in California (2013), Québec (2013) and in the North-East of the United States – the Regional Greenhouse Gas Initiative (RGGI - 2008). In April 2015, Ontario announced its will to join the linked Californian-Québec scheme. British Columbia developed a carbon tax (2008) and Alberta drew up a GHG emission reduction mechanism called the Specified Gas Emitters Regulation (2007). In the United States, this trend may accelerate in the next years, supported by the implementation at the US Federal level of the Clean Power Plan (CPP) disclosed last August 2015. The CPP defines

a 2030 GHG emission reduction target of -32% below the 2005 levels for the power sector. New carbon emissions standards are designed for new and existing power plants. To comply with this federal standard, States can choose their own compliance mechanisms such as carbon tax or emission trading schemes, energy efficiency measures or renewable energy deployment. The Clean Power Plan should boost the development of carbon policies by encouraging other States to join an existing cap-and-trade scheme or to create a new one to meet their new obligations. Thus, **a regional platform composed by several carbon cap-and-trade schemes could emerge in the United States by 2022, potentially linked with Canadian carbon schemes.** Among the uncertainties that could either guarantee or undermine the implementation of carbon pricing policies in North America, the outcome of the presidential elections in 2016 could greatly change current ambitions.

- **In Asia and Oceania: (big) green dragons are experimenting carbon pricing mechanisms without demonstrating any ambition to coordinate.** The first government that decided to go ahead was New Zealand in 2008, launching its ETS. Asia was the first region to host an ETS at a city level with Tokyo's ETS in 2010, which was followed by the establishment of an ETS in Saitama in 2011. Since 2013, Asia and Oceania sheltered twelve carbon markets, the latest scheme coming into force was the South Korean ETS in January 2015. In June 2015, Taiwan adopted the GHG Reduction and Management Act and announced its consideration to implement an emissions trading scheme. Among these various initiatives, one interesting experience also comes from China, the locomotive of the global low-carbon transition, and their learning-by-doing approach. Having launched seven ETS pilots in two provinces and five cities to experiment different legal designs to put a price on carbon emissions, China is currently in preparation to implement a national carbon market in 2016.
- **Other emerging or developing countries** have or are in the process of establishing carbon pricing instruments using innovative and hybrid options. Mexico's carbon tax came into force in January 2014. In the scheme, natural gas is acknowledged as the reference base with a carbon price set at zero, other prices for fossil fuels are set against this price. South Africa announced a carbon tax for 2017 that will provide the possibility for the use of offsets for compliance. For all emerging and developing countries, the World Bank plays a key role with its program "Partnership for Market Readiness" to help countries introduce carbon pricing instruments, by providing financial and technical supports.

Carbon pricing world map 2015



*Beijing, Chongqing, Guangdong, Hubei, Shanghai, Shenzhen and Tianjin
 ** Different prices depending on the covered sectors and/or energy products
 Source: I4CE - Institute for Climate Economics, June 2015.

The pioneer experience of the European Union: carbon pricing as the cornerstone of climate policy

The European Union constitutes a real mishmash of carbon prices with a central piece from the EU Emissions Trading Scheme (EU ETS). The EU ETS is on track to achieve its 2020 emissions reductions target; however, due to a growing surplus of allowances and a low-carbon price, its cost-effectiveness needs to be improved to achieve the European long-term decarbonization target at lower cost.

The European Union was pioneering the first emissions trading scheme when it implemented the EU ETS in 2005. **The EU ETS is presented as the central piece of the climate policy** defined at the European level. In addition to this European carbon price, **14 Member States have adopted national carbon taxes**. The European Union therefore constitutes a real patchwork of carbon prices.

Having begun with a learning period up to 2007, followed by a second phase from 2008 to 2012, it is now operating in the third phase leading up to 2020. Due to a low-carbon price since 2011, not in line with the indicative long-term emissions reductions target, **the EU ETS is currently being reformed to convey a price signal in line with the proposed 2030 GHG emissions reduction target by 40%**.

- **The overachievement of the 2020 EU ETS target since 2014.** EU ETS' emissions decreased by 24% since the beginning of its Phase II (2008-2014) whereas the 2020 EU ETS target is -21% compared to 2005 levels. The decrease of CO₂ emissions has been particularly sharp in the power sector driven by a decrease in demand with the major role of the deployment of renewable energies. The economic downturn has also played a role: around one third of CO₂ emissions reductions have been estimated come from the decrease of economic activity in Europe.
- **Without a credible long-term climate target, the growing surplus of allowances undermines the functioning of the EU ETS.** As a consequence of the decrease of CO₂ emissions, and in the context of an inflexible emissions cap to additional abatements driven by complementary policies or exogenous economic shocks, **a large surplus has been building on in the EU ETS without any perspective to decrease before 2030** – amounting to 2.1 billion in 2014, expected to achieve 2.6 billion in 2020 and more than 3.0 billion in 2030. Conducting to increase this surplus of allowance and its price, **interactions with complementary policies, which lead to emissions reductions not taken into account in the cap when it was calibrated in 2008, have undermined the ability of the EU ETS to drive efficiently CO₂ emissions reductions.** Even if renewables energies deployment has had a strong impact on CO₂ emissions reduction, it has a low impact on the allowances surplus, estimated to account for 120 million tonnes CO₂e in Phase III (2013-2020). Abatements linked to the Energy efficiency Directive are estimated to amount to roughly 500 million tonnes CO₂e and the cumulative inflow of international credits will amount to 1.6 billion of tonnes CO₂e in Phase III.

- **The EU ETS reform package set up three pieces to be implemented from 2014 to 2030.** The first step of the reform was **the backloading measure**, voted in 2014, that postpones 900 million allowances in the auction timeline between 2014 and 2019. The second step of the EU ETS reform is the implementation of **a Market Stability Reserve**, voted in 2015, whose objective is to regulate the short-term surplus. Under this system, intervention rules, defined as quantity thresholds, are applied on level of total allowances circulating in the market.. The last step of the reform was kicked off on July 15th when, the EU Commission released **a legislative proposal to revise the EU ETS Directive post-2020**. It enforces the change of the linear factor to 2.2%, compared to 1.74% from 2013 to 2020, in order to meet the 43% reduction for ETS sectors by 2030 compared to 2005. This revised EU ETS legislation will be adopted after a negotiations process among European Member States that will likely take more than eighteen months.

Carbon price(s) in the foreseeable future: a medley of CO₂ prices rather than a single price

In the “bottom-up” approach of the ongoing international climate negotiations, the convergence of different carbon prices to a single global carbon price cannot occur without ensuring the comparability of the abatement efforts of countries. The ability to compare efforts through more transparent and standardized communication between countries is therefore the primary issue that the Paris agreement should address.

According to some economists, setting a single, global price for carbon, regardless of the source or the country in which a tonne of carbon is emitted, would in theory be the basic ingredient for effective global action. Since the damage caused by one tonne of CO₂ is the same regardless of its location, a single carbon price would give the necessary signal to allocate the distribution of efforts at an international level. The underlying economic assumption is that the broader the scope of the carbon policy, the greater the opportunities for cost-effective emissions reductions.

However, **for some other economists, the carbon value has no reason to be equal in the world**, given the huge differences in economic and social situations and between countries (population, GDP, energy mix). Therefore, the solution maximizing global welfare would be an equilibrium of differentiated prices by country (Godard, 2015). **In such a case, the first condition for a single carbon price which maximizes the global welfare would be to eliminate economic development inequalities.** Such a proposal is unrealistic in the context of negotiations of the COP21: this fact severely undermines the credibility of a future unique global carbon price. Beyond theory, some modeling results also support the idea that **differentiated carbon pricing policies could lead to higher benefits** by considering pricing co-benefits such as health damages. According to the IMF (2014), co-benefits varying dramatically across countries (with population exposure to pollution), and

differentiated pricing of CO₂ emissions therefore yields higher net benefits than uniform pricing. Another condition for a single carbon price which maximizes the cost-effectiveness of the global GHG emissions reductions policy would be the international harmonization of fiscal regimes on energy inputs. Such a proposal is also unrealistic in the context of national sovereignty over energy taxation regimes.

In practice, putting a price on carbon at the international level could be achieved in a “top-down” approach by implementing a global tax or a global emissions trading system shared among the participating States, as in the case of the Kyoto Protocol. It is worth noting that the Kyoto Protocol has not managed to implement an efficient, global and unique carbon price at the international level. Likewise, a scenario with an international carbon tax is unlikely to happen, as it would also not allow each country to regulate their GHG emissions in the appropriate political trajectory. It would force those countries with limited ambition to do what they do not want to do; and prevent others, with more ambition, to move forward. Linking pricing schemes would provide more freedom for countries to regulate GHG emissions; this freedom would however be obtained at the cost of massive transfers.

Thus, in a “bottom-up” approach, putting a price on carbon at the international level could also be achieved by linking e.g. local carbon pricing instruments to lead to a common carbon price. Although a vast array of academic material can be found on the linking issue, in practice, only one illustration of a direct linking has emerged: the linked California-Québec ETS (2014). Linking carbon markets between countries with very heterogeneous conditions (living standards, exposure to climate risk and political choices, etc...) raises numerous political and technical issues. **The experience of California and Québec reveals that a convergence of the emissions reduction ambition and homogeneous economic circumstances is desirable to link domestic carbon markets.**

Today, each system has its own carbon price, established according to the GHG emissions reduction target set by government and the demand for allowances from the operators concerned. Therefore, economic players must now factor this patchwork of carbon prices developed at a global level, into their decision, ranging from €2.4/tCO₂ in Mexico, €2.7/tCO₂ in Kazakhstan, €3.7 to €7.4/tCO₂ in China, around €7/tCO₂ in Europe and up to €11/tCO₂ in California and Quebec. **In this fragmented climate policies framework, the major concerns for businesses deals with the carbon leakage issue. Such carbon leakages would reduce the environmental benefits of the policy and would have a negative impact** upon the economy. To tackle these concerns, governments also have to provide compensation measures to mitigate the risk of carbon leakage in economic sectors that are facing higher direct and indirect costs after implementing carbon prices and are exposed to the intensive international competition.

Carbon pricing is necessary but far from sufficient to drive the low-carbon transition of business

Beyond carbon pricing, other signals will facilitate the transition towards a low-carbon economy, which will become all the more credible for businesses as domestic and international political, economic and financial signals multiply and are aligned on climate goals.

The transition towards a low-carbon economy must be supported by a wide range of political, economic and financial signals from government and regulatory agencies, and also through better alignment between energy policy, public finances and climate goals.

In addition to explicit carbon prices, other climate policies such as subsidies for renewable energy sources, preferential tax rates for investments in energy efficiency, can complement carbon pricing instruments, by introducing an implicit price signal on carbon. It is generally accepted that **it is necessary to use complementary carbon policies which create a climate of confidence for investors and businesses to drive their investments decisions.** Such complementary policies need to be properly designed in order to avoid overlaps.

At the international level, in the context of the COP21, several countries mention in their intended Nationally Determined Contributions (iNDCs) the introduction of additional domestic climate policies potentially based on carbon pricing and the use of international carbon credits to help achieve their domestic emissions reduction target: Canada, China, Dominican Republic, Ethiopia, Europe, Japan, Ivory Coast, Liechtenstein, Mexico, Morocco, New Zealand, Russia, South Korea, Switzerland and the United States. **All these voluntary post-2020 involvements from and by Parties can also deliver incentives for businesses to decarbonize.**

Furthermore, beyond positive carbon prices, existing fossil-fuel energy subsidies correspond to a negative carbon price. Hence, **an obvious step towards global carbon pricing would be to remove fossil fuel energy subsidies to provide strong political and economic signals to business and industry.** According to the International Energy Agency, fossil-fuel consumption subsidies worldwide amounted to \$548 billion in 2013, already \$25 billion down on the previous year. Those subsidies were over four-times the value of subsidies for renewable energy and more than four times the revenue invested globally towards improving energy efficiency. Three months before the opening of the COP21, in September 2015, France announced that they will be removing export credits for coal plants devoid of capture and CO₂ storage devices.

Finally, as noted by the OECD, beyond all economic and political signals that support the low-carbon transition, **a better alignment between climate change objectives and policy and regulatory frameworks across a range of policy domains (investment, taxation, innovation and skills, trade, and adaptation) and activities at the heart**

of climate policy (electricity, urban mobility and rural land use) could create a better investment climate for businesses. Indeed, companies and investors regularly call for a clear direction in the development of future regulations, in addition to coherence between sectoral policies affecting the climate. At present, there is little or no coherence between policies. On the one hand, energy-climate policies set targets – sometimes even ambitious ones – while on the other hand, incentives exist to extract and consume fossil fuels. This contradiction blurs political signals and stands in the way of the private sector committing the investment required to meet the 2°C target. However, coherence does not mean uniformity. While the long-term signal is based on general principles, issues of financing differ according to the actors and sectors involved. Thus, there is no single choice of tools and policies to be recommended, rather only a combination of instruments is conceivable. For instance, support policies for renewable energies must be accompanied by regulatory and tax policy reform across all sectors – including the financial sector – to produce a coherent regulatory framework capable of achieving this transition.

The 2015 Paris Climate Agreement could facilitate the emergence of carbon pricing

Carbon pricing does not fall under the mandate of UN climate negotiations, and as such cannot be expected as an outcome of the Paris Conference. However, the Paris climate agreement can facilitate the emergence of carbon pricing policies. The appropriate negotiating path that can help stimulate the implementation of cooperative carbon pricing mechanisms is yet to be found.

In contrast with the Kyoto Protocol approach, based on effort or burden sharing between Parties, the Paris climate agreement negotiated in 2015 will not seek to establish an international carbon pricing mechanism. Instead, in order to be successful, **this Paris climate agreement will have to foster the emergence of long-term national, regional or sectorial economic signals** that encourages public and private decision-makers to participate in the transition to a low-carbon economy. **In its preamble the Paris agreement could recognise all the policies and efforts already implemented, including carbon pricing and those planned for the next decade.** This could help gain support for the legitimacy of these practices in facilitating the transition to a low-carbon economy that is compatible with the 2 degree trajectory.

Furthermore, carbon pricing mechanisms could be empowered as a central piece to the funding of the transition towards a low-carbon economy that is compatible with the trajectory of 2°C.

Several aspects of the agreement could facilitate the emergence of economic signals for economic and industrial players.

- Firstly, **a GHG emissions accounting system for all States, harmonized at the international level,** will be

vital to assess changes in each Party's GHG emissions with confidence and accuracy.

- Secondly, to allow the development of national, regional and even sectoral carbon price signals, the Paris agreement must encourage and grant States **flexibility in the choice of economic instruments they may use to achieve their GHG reduction objectives.** Some aspects of the Lima agreement include the possibility of using additional market mechanisms to complement national initiatives. The establishment of flexibility mechanisms (CDM, new market mechanisms, etc.) – currently discussed in the text of the future agreement – would be expected to create a framework that would facilitate the connection between national systems.
- Thirdly, **identifying and recognizing each State's efforts by monitoring and reviewing its INDCs could eventually promote the convergence and use of some economic instruments such as carbon pricing and help to enhance their transparency.** The ability to compare efforts through more transparent and standardized communication between countries is therefore the primary issue that the Paris agreement should address.

In light of the growing number of carbon pricing policies and as part of the construction of a new international climate agreement in December 2015, the issue of the coordination of carbon pricing mechanisms and their carbon prices will be increasingly important to ensure the environmental integrity of these policies and to optimize their economic efficiency.

How can the Paris agreement play a role in this coordination? How can the different units – allowances, credits, tax rates etc. – become compatible? All these questions are currently under discussion among players involved in developing carbon pricing policies, although it is unlikely that all the political and technical responses will have been found in time for the COP21 conference. **The appropriate negotiation path for international cooperation still needs to be identified. However, two options could be considered: a cooperation between Parties built under the umbrella of the UNFCCC which would provide “standardized components of market infrastructure”; and secondly a decentralized voluntary platform or “club” of countries outside the framework of the UN.** Whatever its organization, international cooperation on carbon pricing mechanisms should deal with the crucial issue of financing between developed, emerging and developing countries.

In addition to numerous technical issues, a political willingness also needs to emerge to officially begin the journey down this new path. It is also important to consider which discussion bodies would allow several States to call for the launch of an internationally coordinated initiative: the G7, the G20, the Major Economies Forum or a coalition of countries forming a “Climate Club” of sorts? After the Paris Climate conference in 2015 and following the declarations by G7 countries in June 2015 in favor of decreasing carbon intensity over the coming century, the governance of these carbon pricing policies is set to accelerate in 2016.

References

Afriat M., Dahan L., Alberola E. and Vaidyula M., “19 cases studies on emission trading schemes in the world”, IETA/EDF/ CDC Climat Research, May 2015.

Alberola E. and Leguet B., “Carbon pricing: a necessary tool on the agenda of solutions for climate funding”, ClimasCOPE #1, CDC Climat Research, April 2015.

Godard O., “Un prix mondial du carbone ? Les idées fausses de « bons économistes »”, op-ed, 17 September 2015.

International Energy Agency World Energy Outlook 2014, November 2014.

IETA, “Streamlined Market Provisions for the Paris 2015 Climate Agreement”, IETA Policy Brief, July 2015.

IMF working paper “How much carbon pricing is in countries’ own interest?”, 2014.

Keohane N. and Petsonk A., “Creating a Club of Carbon Markets: Implications of the Trade System”, The E15 initiative, August 2015.

Morel R. and Cochran I., “Financing the low-carbon transition: the need for coherence between regulations and ambition”, ClimasCOPE #2, CDC Climat Research, May 2015.

New Climate Economy Report, 2014.

World Bank, “Carbon pricing watch 2015: an advance brief from the State and Trends of carbon pricing 2015 report”, May 2015.

World Bank, Fay and Hallegatte, dir., “Overview of Decarbonizing development”, 2015.