Eight things your CEO needs to know to engage and shape carbon pricing policies

WBCSD Leadership Program 2015

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"Carbon pricing is a simple and powerful tool for businesses to integrate emissions reduction actions into their decisions. Convergence and connection of national pricing mechanisms over time will be key to scaling up reduction efforts worldwide in line with the 2°C target and to avoiding carbon leakage. The Paris agreement needs to pave the way for the next stages of carbon pricing and climate action."

Jean-Pierre Clamadieu,
Chairman of the Executive Committee and CEO of Solvay and Member of the WBCSD Executive Committee

"The evolution of carbon price determines the way companies channel investments, operate assets and shape R&D programs. There is a wide consensus among business leaders: companies need to have a consistent carbon price signal because they need to integrate it in their investments decisions, which are often long term decisions."

Jean-Bernard Levy,
CEO and Chairman of EDF

"This report gives a clear overview on the key things to know on carbon pricing, a crucial issue in the climate debate."

Gérard Moutet,
Vice-President of Climate-Energy at Total

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Introduction

The phrase "put a price on carbon" has become increasingly common as the discussions on climate change move from concern to action. Limiting carbon dioxide (CO_2) or other greenhouse gas (GHG) emissions is essential in order to limit global warming and its impact on societies. In this context, requiring producers or consumers to pay a price per tonne of CO_2 emitted is often seen as the most powerful and cost-effective mechanism available to trigger actions to reduce GHG emissions and build a more robust and sustainable economy. A carbon price can send important signals across the economy, helping to guide consumption choices and investments towards low-carbon activities and encourage investments in low-carbon energy.

The momentum for carbon pricing is growing around the world: 12% of global emissions are covered by an explicit carbon price and some 40 countries have adopted or scheduled a price on carbon. In 2014 alone, China, South Korea and Chile adopted or scheduled carbon pricing policies. Many governments, investors and major businesses, including in high-emitting sectors, are now supporting carbon pricing after years of doubt and resistance.

Regardless of these encouraging elements, a global price on carbon is not going to be adopted soon and concerns that pricing carbon will hurt industrial competitiveness continue to restrain action; businesses and investors require a level playing field across international markets and clear signals in their path towards a low-carbon economy.

During this transition period, business leaders should proactively drive the change in the ongoing discussions with governments and policymakers. Engaging on carbon pricing policies is not only about maintaining a level playing field; it is also about building a long-term competitive advantage.

Several business leaders are already taking action. For instance, in June 2015, the CEOs of six major oil and gas companies signed a letter to the United Nations Framework Convention on Climate Change (UNFCCC) calling for the establishment of carbon pricing mechanisms: *"We call on governments, including at the UNFCCC negotiations in Paris and beyond, to introduce carbon pricing systems where they do not yet exist at the national or regional levels [and] create an international framework that could eventually connect national systems."* In July 2015, 13 of the largest American companies urged the UNFCCC to deliver a sound framework at the 21st Conference of the Parties (COP21) to the climate change convention: *"We applaud the growing number of countries that have already set ambitious targets for climate action. In this context, we support the conclusion of a climate change agreement in Paris that takes a strong step forward toward a low-carbon sustainable future."*

This report is a practical guide that aims to support business leaders in their journey towards carbon pricing policies. It is based on literature reviews, interviews and the results of an online survey[1] sent in June 2015 to collect the positions of WBCSD member companies with respect to carbon pricing strategy and policy. Understanding *why* and *how* companies should engage in shaping carbon policies can actually be as simple as following the eight steps described below.

1. The survey represents a sample of 46 companies that operate on a global scale across various sectors, including materials, energy, industries, utilities, consumer goods and finance, and covering a large range of GHG emissions, from a few kilotonnes of CO2 equivalent to more than 50 million tonnes per year.

1. Start with the economic theory

Economists and investors have long argued that a price on carbon is the best way to reduce GHG emissions since it requires all market participants to properly account for their contribution to climate change.

While the concept of carbon pricing dates back to economic theory from the early 20th century, in practice, carbon-pricing programs were first developed in the early 1990s when Finland, Sweden and Norway implemented taxes on CO_2 emissions.[2]

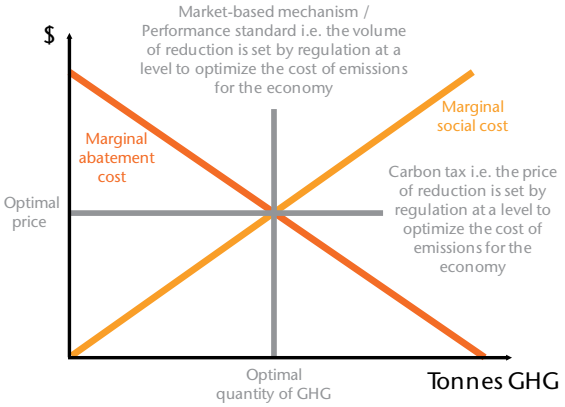
Pricing carbon is related to the need for a society to consider what are called the social costs of carbon emissions (or externalities)—costs that the public pays for in other ways, such as damage to crops and health care costs from heat waves and droughts, or to property from flooding and sea level rise—and to link the costs to their sources through a price on carbon.

Instead of dictating who should reduce emissions where and how, a carbon price gives an economic signal and emitters decide whether to discontinue the activities that cause CO_2 emissions, reduce CO_2 emissions, or continue to emit and pay for the carbon. It is argued that, in this way, the overall environmental goal is achieved in the most flexible and efficient manner.[3]

From a global economy and welfare point of view, with all else being equal, the economic equilibrium is found when the carbon price is set equal to the marginal benefit of emissions reduction that is derived by estimating the marginal social cost of carbon as shown in figure 1.

To be cost-effective, such a carbon price would cover all sources and over time increase to reflect the incremental damage from one

Figure 1: Static internalization of the cost of carbon



Source: authors

additional tonne of CO_2 accumulating in the atmosphere.[4] An economy with an explicit carbon price is directly influenced by the relative cost of most goods and services as a function of their carbon footprint.[5] The price will have an impact and, over time, may result in product substitution, changes in the size of certain sectors, adjustments in production techniques, and in a shift in long-term investments.[6] Therefore it is often recognized that a carbon price also incentivizes clean technology and market innovation, promoting new low-carbon drivers of economic growth.

The economic theory states that (i) not pricing carbon is the worst situation and (ii) pricing carbon through the various instruments has the same economic impacts, all else being equal. But this is theory. In practice, each instrument to set a price on carbon has its own strengths and weaknesses (see section 2 below).

2. World Resources Institute, 2015.
3. See the Carbon Pricing Leadership website at **http://www.carbonpricingleadership.org.**
4. Aldy, Joseph E. et al., 2012.
5. The carbon footprint of a product is the net change in global carbon emissions as a result of the production and use of that product.
6. WBCSD, 2011.

2. Understand the different carbon pricing mechanisms

A carbon price can be established explicitly through carbon taxes or emissions trading systems, or implicitly via emissions performance standards. The effectiveness of any carbon pricing mechanisms should be assessed not only through its capacity to reduce carbon emissions but also through the consideration of additional criteria. The ultimate choice of carbon pricing instruments is based on national circumstances and political realities.

Table 1: pros & cons of various carbon pricing mechanisms

Criteria	Emissions trading systems (ETS)
1. Cost-efficiency in carbon reduction —Will the carbon reduction be achieved at the lowest cost possible/the optimal value?	**Greater flexibility** to achieve emissions reductions in a cost-effective manner. **Greater certainty that environmental objectives will be met.** Risk of giving a **wrong price signal** to the market by focusing only on direct emissions and omitting the **overall carbon footprint of products.**
2. Impacts on the economy —How will the mechanism affect the economy?	**Can generate revenues for the government.** For example, some ETS revenues in Guangdong (China) will be channeled to a low-carbon development fund that will support energy savings and emissions reductions, while a portion of the EU ETS post-2020 will finance an energy system modernization fund and a low-carbon innovation fund. Sectors that cannot pass on the additional costs and/or are exposed to international competition can be at **risk of carbon leakage**.[8] However, this risk can be managed through policy design such as free allowances for specific sectors. Energy intensive industries will face an **indirect cost impact** from increased electricity prices.
3. Simplicity, clarity and transparency —Can all economic agents understand the mechanism? Will the mechanism be fair and equitable for society? Can the pricing mechanism be easily monitored and controlled?	Robust, transparent, consistent and accurate **monitoring, reporting and verification (MRV)** required. ETS requires setting up a **separate administration responsible for managing the scheme** that is more costly than a tax or a regulation. Potentially difficult to explain to non-specialized public.
4. Stability and consistency —How can the mechanism ensure stability over the long run?	**Price volatility** is endemic to cap and trade systems. A price floor or ceiling can be established to limit volatility, but would also limit freedom of the market response. Some mechanisms, such as the Market Stability Reserve[13] in the EU-ETS, have been introduced with the objective of keeping a stable price signal over time (as a Central Bank role for money stabilization). However, by interfering in the market, it risks disturbing the market rationale of the price signal. Interfering in the markets often requires political decisions (such as in the case of EU ETS), which can add uncertainties for market participants.
5. Compatibility —How well does the pricing mechanism align with other policy measures to reduce carbon emissions?	**Risk of overlapping policy** with renewables and energy efficiency targets and/or with national climate policies in the case of the EU ETS, for example.[15] In addition, the use of offset mechanisms can lead to distorted market prices and create price volatility (ref. above). Increasing number of examples of **successful complementarity between ETS and targeted carbon tax.**

7. See glossary.
8. See glossary.
9. Revenue neutral: Instead of government receiving additional revenue, the tax money collected is returned back as an equivalent cut in other taxes, hence revenue neutral.
10. At the same time, Costa Rica's GNI per capita has risen from $6,380 in purchasing power parity terms (PPP) in 1997 to $13,570 PPP in 2013, a 213% increase during the period.
11. In some cases, part of the revenues can be used, for example, to boost renewable energy, to add to environmental resilience in the economy by building energy-efficient buildings, or for zero waste systems and forest conservation.

Carbon tax	Emissions performance standard (EPS)
Not as effective in providing the market with flexibility to choose emissions reduction actions with the least costs compared to an emissions trading system. More effective when enforced globally and on fuels (thanks to pass-through[7]) rather than on carbon emission sources. Offers options to take into account imported and exported emissions but difficult to assess the overall carbon footprint of specific products.	Not as effective in providing the market with flexibility to choose the emissions reduction actions with the least cost as an emission trading system. Focuses only on domestic emissions.
Generates tax revenues for the government that can be used to reduce income and/or corporate taxes, which can lead to a spill-over effect of improved employment in the economy (revenue neutral carbon tax which creates a double dividend for society). In 2008, **British Columbia** introduced a revenue-neutral[9] carbon tax on fossil fuel products based on their associated carbon emissions. The tax began at C$10 per year, rising by C$5, resulting in a 16% reduction in petroleum products over a five-year period, while the rest of the country increased by 3% during the same period. In 1997, **Costa Rica** introduced a 3.5% carbon tax with revenues collected to promote sustainable development and forest conservation among land owners. The carbon tax has successfully increased forest cover from 42% in 1997 to 52% in 2010, while creating 250,000 jobs locally per year[10] and having spill-over effects of poverty reduction and using forests as an eco-tourism asset to boost GDP. Price inelasticity of energy and electricity: some economies may suffer as they cannot absorb any increase in energy costs. In these cases, carbon tax revenues can be used to subsidize part of energy efficiency investments/the consumption bill of lower-income households.[11]	Low direct cost to the government but no direct revenue. **If the threshold for the emissions performance standard is not well designed, it may lead to unintended consequences and eventually hurt the economy more than needed.** The economic impacts are only taken into account when defining the threshold for the EPS with limited possibility to adjust afterward (except when emissions standards are redesigned over a long time period).
Compared to other mechanisms, incorporating a carbon tax could be relatively easy as an existing tax administration can be used as a resource[12]. A carbon tax offers a direct and transparent way to inform economic agents about carbon prices, which creates transparency around decision-making. The public is familiar with the concept of a tax.	Predictable results and simple mechanism, easy to understand by the different stakeholders and often easier to monitor when applied to new installations and products.
A gradual and predictable increase of the tax can be beneficial to the political economy, allowing consumers, companies and governments to get used to the policy. A change of government may lead to the modification of the tax system, which could create mid-term uncertainty for business (as seen in Australia, for instance[14]).	**Can provide clear signals and policy certainty for the private sector** that can drive investments and innovation in low-carbon technologies, as seen in the car industry.
Many tax credits and subsidies already exist, which reduces the effectiveness of a carbon tax, for example fossil fuel subsidies. Tax level and perimeter are highly dependent on politics and might change from one government to another.	**Market mechanisms could complement an EPS,** as happens with vehicle emissions in California where a combination of tailpipe emissions standards is applied with cap and trade (AB32) and the Renewable Fuels Standard. **Risk of overlapping policies** if the sector where EPS is applied is also covered by a cap and trade system (for example, the power sector in jurisdictions also covered by the EU ETS).

(Source: Authors)

12. Assumes no transaction costs in the introduction of a carbon tax. The cost of administering a carbon tax can in some cases outweigh its benefits, resulting in negative economic efficiency. One argument is that a carbon tax is relatively inexpensive to implement in well-functioning markets as it can use the existing tax administration. However, it is likely that new human resources and infrastructure investments may be required.
13. See glossary.
14. Australian Government, Australian Taxation Office, "Carbon tax repeal". See **https://www.ato.gov.au/General/New-legislation/In-detail/Indirect-taxes/GST/Carbon-tax-repeal---GST**.
15. See also section 5.

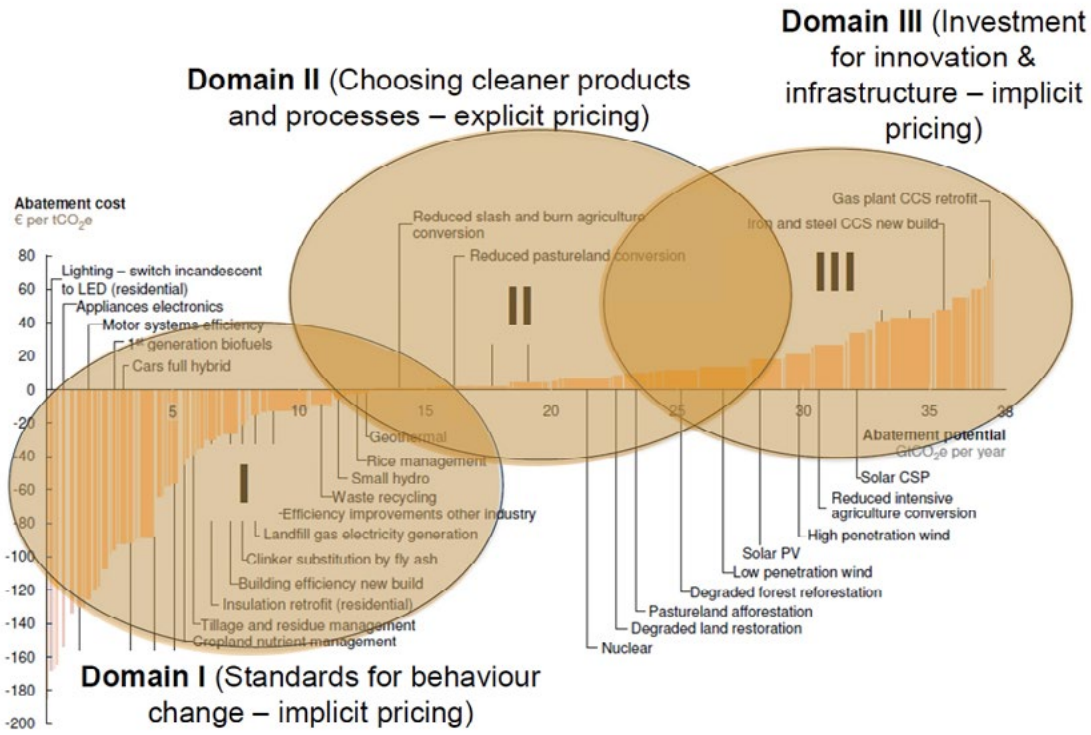
3. Forget about the one size fits all approach

Carbon pricing is only one element in a broader climate change policy framework. Different policy mechanisms can be used to address emissions from different sectors along the whole value chain in a given jurisdiction.

Carbon pricing is only one instrument in a range of approaches that need to be mobilized to mitigate emissions. In addition, energy system policies (related to energy savings and renewable energy, for example) or transportation policies are also developed. They are not directly aimed at GHG emissions reductions but influence the country's or region's overall climate policy. Carbon pricing policies need to be coordinated and to operate in tandem with other regulations to avoid inefficiencies.

As highlighted in figure 2, some key domains require complementary policies.

Figure 2: McKinsey Global GHG Abatement Cost Curve with 3 domains illustration from Michael Grubb's Planetary Economics



Source: World Bank; CDP; We Mean Business

Setting standards for behavior changes (Domain I in figure 2): *Energy efficiency* has many market barriers, such as split incentives between building owners and tenants, high up-front costs, and a lack of information, all of which hamper the achievement of the full range of cost-effective opportunities. Applying a carbon price will strengthen the market signals and provide incentives for such behavior change, but this will not result in the elimination of market barriers. For this reason, many programs that provide incentives for energy efficiency might be needed, even with a carbon pricing system in place. Carbon pricing revenues, however, could provide significant additional funding to help support or expand such programs.[16]

In the *transportation sector*: Efficiency standards are often considered to be the best choice for regulating the transportation sector. The relatively low rate of fleet turnover slows the rate at which new vehicle technology can reduce emissions. Given that vehicle technology, fuel infrastructure and purchasing patterns have few near-term responses to a carbon price, pairing a carbon price with continued strong vehicle and fuel standards is likely to prove a more effective approach.

Choosing cleaner products and processes (Domain II in figure 2): additional GHG emission savings can be achieved by improving existing processes and materials used for production. This can be applied through cleaner electricity production (for instance by switching from coal to gas, increasing the share of renewables in the grid) or by improving agriculture techniques. These switches require relatively limited investments but provide a clear incentive through an explicit carbon price.

Investment for innovation and infrastructure (Domain III in figure 2): Many emissions reduction opportunities depend on other technologies that are not likely to be incentivized by only a price on carbon. For example, technical upgrades to the national grid would enable an increased contribution of power from distributed electricity generating sources, including renewables. A carbon price by itself is unlikely to provide sufficient incentive for investment in the grid, because any benefit from increased distributed power generation does not tend to accrue to parties investing in the grid. Research and development in breakthrough technologies also require additional incentives to complement a carbon price.

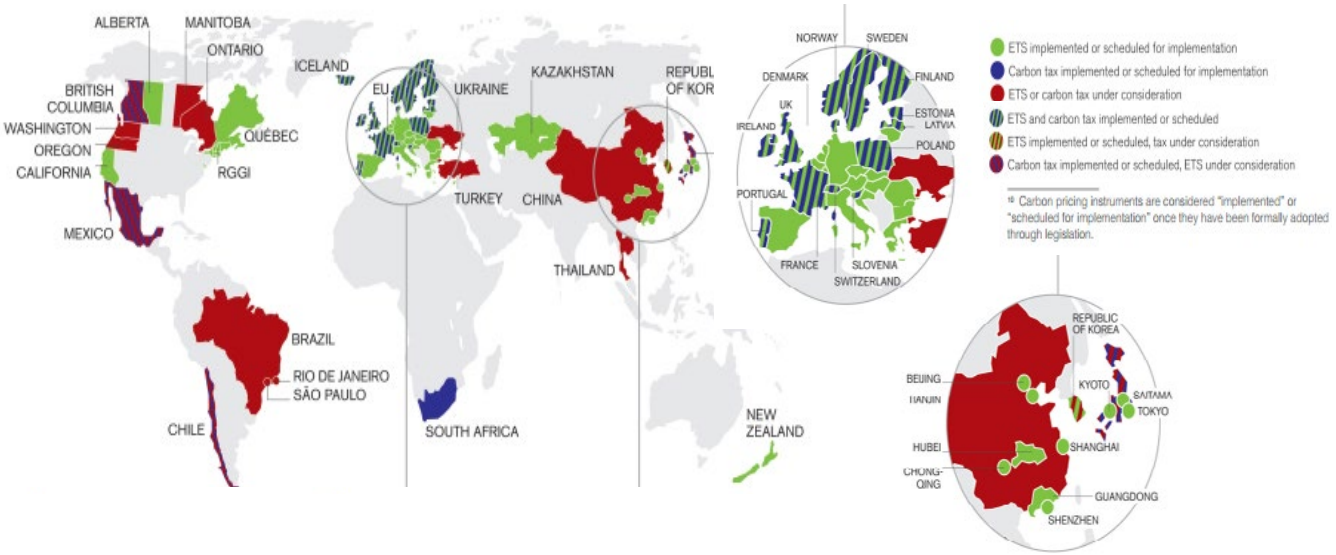
To conclude, it is important to note that figure 2 depicts the current situation. We know the world is not static and the domains in the figure will evolve based upon the emergence of new technologies and the changes in the national and regional policy context.

16. World Resources Institute, 2015.

4. Get inspired by the current momentum on carbon pricing

Companies are generally in favor of establishing a global carbon price to ensure a level playing field—preferably through a market-based mechanism—and this support tends to increase depending on the company's emissions level.

Figure 3: Map of existing, emerging and potential regional, national and sub-national carbon pricing instruments (ETS and tax)



Source: World Bank, 2015

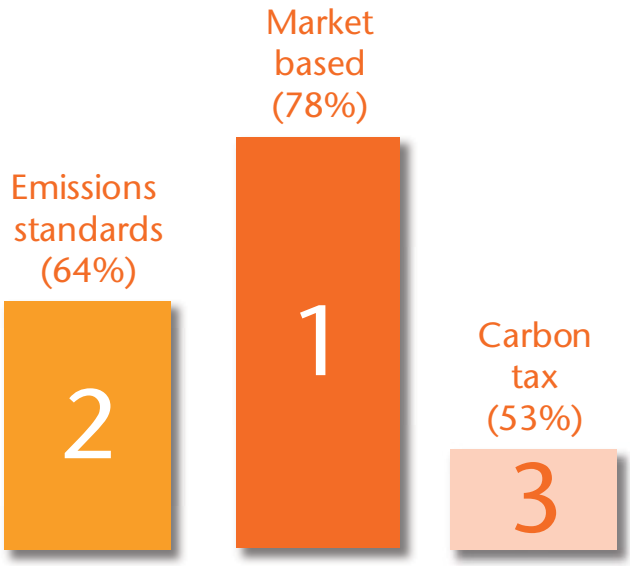
The carbon pricing map (figure 3) shows strong disparities across the world in terms of carbon pricing mechanisms. In addition to some of the negative signals, such as the repeal of the Australian carbon tax, the ongoing negotiations under the UN Framework Convention on Climate Change (UNFCCC) bring numerous national plans to the table that could lead to the birth of additional local carbon pricing mechanisms. According to the World Resources Institute (WRI), there are currently 804 laws worldwide aiming at limiting emissions; and this number is increasing every year. In 2015, about 40 national and more than 20 sub-national jurisdictions, representing almost a quarter of global GHG emissions, have aprice on carbon; and together the carbon pricing instruments in these jurisdictions cover about half of their emissions, which translates into approximately 7 $GtCO_2e$, or about 12% of annual global GHG emissions. In 2015, the combined global value of the carbon pricing mechanisms estimated by the World Bank is just under US$ 50 billion.

In countries where carbon pricing mechanisms have been set, the coverage (industries and/or consumers) and the mechanism design differ. This leads to a wide range of carbon prices—from a few dollars to more than a hundred dollars.

Beyond countries implementing carbon pricing, more and more businesses see carbon pricing as the most efficient and cost-effective way to reduce GHG emissions effectively and believe that clear and long-term regulation will lead to business opportunities. An online survey[17] was undertaken in June 2015 to collect the position of WBCSD member companies with respect to carbon pricing strategy and policy. The key results are highlighted below:

According to our survey (42 respondents) there seems to be a preference for market-based mechanisms and the support rate increases as the respondent's direct emissions increase. A carbon tax, on the other hand, sees mixed results but has the highest support with the largest emitters. Finally the support for emissions standards seems to be less impacted by company size.

Figure 4: Private sector preferred mechanism



57% Publicly support a carbon pricing mechanism and prefer a mechanism resulting in a global carbon price rather than regional actions on carbon.

89% Support the linking of carbon prices between the regional markets

Source: WBCSD FLP Online survey

17. The survey represents a sample of 46 companies that operate on a global scale across various sectors, including materials, energy, industries, utilities, consumer goods and finance, and covering a large range of GHG emissions, from few thousand tonnes of CO_2 equivalent to more than 50 million tonnes per year.

5. Learn from past experiences to reduce business risks

A pricing mechanism designed without sufficient rigor represents important risks for business (i.e. carbon leakage) and can even lead to a negative global environmental outcome.

Since the implementation of carbon pricing mechanisms is relatively new, it is important for both policymakers and businesses to understand what has gone well in existing schemes that can be replicated elsewhere while making improvements based on mistakes in the past.

Carbon leakage

When introducing carbon pricing mechanisms, one of the key business concerns is how to maintain the industry's competitiveness. Since carbon pricing is being introduced piecemeal throughout the world, some manufacturers incur the cost of action while others do not, although they may be competing in the same market. This is called carbon leakage.[18]

Carbon leakage can both undermine environmental integrity and introduce economic distortions. The environmental impacts are the result of emissions migrating from a jurisdiction with carbon constraints and pricing to one either without mechanisms in place or a jurisdiction with a lower carbon price. The potential social impact of carbon leakage, such as potential job losses or a weakened economy, also needs to be considered.

One of the key learnings from the European ETS is that the different sectors participating in the scheme are impacted differently depending on their exposure to international competition and indirect costs. A 2015 report on the "10 years of the EU ETS"[19] underlines that energy-intensive industries—those most concerned about the impact of the introduction of the EU ETS—have nevertheless derived some benefits from it, such as the ability to better manage their emissions. Today more and more companies recognize that there are some real benefits to the EU ETS while acknowledging the need for continued support—such as the allocation of free allowances—for the manufacturing industries.

It is essential that free allowances be used to protect the companies' competitiveness and that the opportunity cost of the freely obtained allowance not be passed through to the customers. Otherwise, the only effect of free allocation is that companies gain windfall profits through the ETS and income from citizens is transferred to business.

Focusing only on direct emissions can give customers the wrong price signal

Although economic theory acknowledges that a carbon price should be defined as a function of a carbon footprint, existing carbon pricing schemes generally only rely on direct emissions. In the case of materials, direct emissions from their production fail to reflect the potential environmental benefits during the whole life time of the materials.

For example, the steel industry is looking for a methodology that could be implemented in existing or emerging market mechanisms that recognizes the lower lifetime emissions of steel products that can be recycled infinitely. Table 2 shows examples of the effects on carbon intensity when accounting for recyclability. In the case of steel, the life cycle CO_2 is nearly three times less than that of primary CO_2 when accounting for the material's recyclability.

18. Seeglossary.
19. University of Cambridge Institute for Sustainability Leadership (CISL), 2015.

Table 2: CO_2 intensity of materials

Material	Primary CO_2(t CO_2/t)	Life cycle CO_2(t CO_2/t)
Natural stone	0.2	0.2
Pine	0.45	0.45
Steel	2.5	0.86
Clinker	0.9	0.9
Carbon fiber	17	20
Titanium	40	17

In practice, life cycle analysis[20] could be used to increase consumer awareness about the actual impact of specific products and services. This could lead to some additional business opportunities for some sectors, such as the chemical industry which could offer solutions to lower the carbon footprint of basic services or applications: light-weight materials, new batteries and rolling resistance in transportation, or actions on energy efficiency and thermal insulation, such as triple-glazed windows for buildings.

Overlapping policies can lead to market volatility

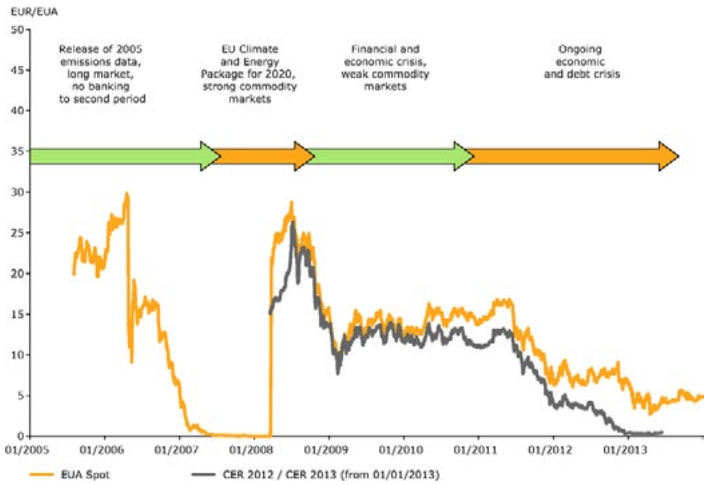
The unexpected decrease of the carbon price in the EU ETS has created uncertainty for companies with planned investments in low-carbon technologies, as shown in figure 5.

The decrease in carbon price has mainly been related to the overestimation of future greenhouse gas emissions reinforced by the financial crisis.

The overlap with other low-carbon policies has also distorted the price signal. Individual European Member States have added policies, usually with more specific objectives than just CO_2 reductions, that have overlaid the EU ETS without being accounted for in the EU ETS cap setting process. Added to the impact of the recession and the effectiveness of companies in reducing their emissions, a huge surplus of allowances has built up in the system, suppressing the price.

To address the market volatility concern, several of the latest carbon pricing mechanisms include some stabilization measures, such as a price floor and soft ceiling price in the California Cap and Trade Program and the reserve of allowances in the EU-ETS (the same mechanism is also being developed in the Republic of Korea's ETS).

Figure 5: Carbon Price under the EU ETS - Price trends for European Union allowances (EUAs) and certified emission reductions (CERs)



Source: European Environmental Agency

20. See glossary.

6. Look for pragmatic solutions

Several policy tools are available to overcome carbon leakage challenges and progressively build a global carbon pricing infrastructure. To adapt, business needs a steady and predictable trajectory for carbon prices.

It is clear that regional carbon pricing mechanisms will emerge first, well before a global carbon price. The design and pricing model of these regional mechanisms will depend on the objectives set. The key question therefore is how can regional carbon pricing mechanisms be designed to serve the global objective of carbon reduction?

How to deal with carbon leakage risks?

There are some well-known solutions to cope with the fundamental issue of carbon leakage:

- **Give free allocations to sectors exposed to international competition.** This has been done in the EU ETS and will be replicated by the Republic of Korea's ETS in its first phase and in China's national ETS. The main challenge is that free allowances may not incentivize the companies to make the reduction efforts early enough and at a sufficient scale except if they are given on the basis of strict benchmarks.

- **Introduce a CO_2 tax at the border.** This option could be legally challenging due to international treaties (World Trade Organization rules). It is also very difficult to assess the CO_2 content of each imported product.

- **Use redistribution policies:**

  — Revenues generated by putting a price on carbon could be used by governments in an efficient way either to promote new carbon reduction innovation projects and technologies or to attract efficient manufacturing companies and create new jobs.

  — Revenue could be used as a redistribution tool, like Switzerland's carbon tax, which is returned to citizens through lower health insurance and to business via social security contributions (Switzerland redistributes about two-thirds of its annual carbon tax revenue—US$831 million—to business and the public).

  — Another example of tax incentives to support sectors at risk of carbon leakage is the possibility for European Member States under EU ETS Phase III to compensate firms for indirect emissions costs using state aid schemes. Both the EU and New Zealand also provide research and development funding to affected sectors.

Beyond the above mentioned options, the ultimate solution to carbon leakage is international cooperation, which would harmonize carbon price signals across all jurisdictions. A first important step in this direction would be to link the different existing carbon pricing mechanisms, even if the regulatory challenges for implementing such a solution should not be underestimated.

Linking carbon pricing mechanisms

Instead of pushing for border carbon adjustments to try to "level the playing field" between countries with differing climate ambitions, partners can coordinate the introduction of carbon prices at roughly comparable levels to overcome concerns over competitiveness. By working together, countries can also benefit from sharing best practices, greater transparency, and the opportunity to link carbon pricing schemes where appropriate. This is already happening across Europe and increasingly in North America where California and Quebec have recently linked their cap and trade programs.

Linking jurisdictions means enabling a participant in one system to use a compliance instrument (allowance or credit) issued by the administrator of either system for compliance. According to the World Bank's Partnership for Market Readiness (PMR) Secretariat[21], a decision to link requires *"compatibility and consistency of the design features of the ETS to protect the environmental integrity of the linked systems and manage impacts on the distribution of costs within each system."*

There are two links that could be effective in progressively building up a global architecture for carbon pricing:

- A link between two different jurisdictions with similar objectives in carbon reduction;
- A link between a jurisdiction where carbon pricing is in place and a jurisdiction without carbon pricing mechanisms through the use of offset mechanisms.

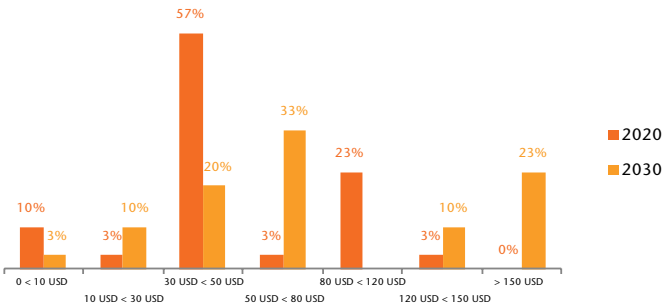
Such links enable, for example, participants from developed countries to launch GHG emissions reduction projects in developing countries to meet their own domestic emissions reduction compliance requirements (e.g. a certain amount of certified emission reduction units (CERs) generated through the Clean Development Mechanism by carrying out emissions reduction projects in developing countries can be used to comply under the EU ETS).

A steady and predictable regulatory framework trajectory is a requirement for business to adapt

Although damage assessments are highly contentious, according to the World Bank, estimates of future climate change damage suggest CO_2 should be priced at around US$ 35 per tonne. Alternatively, a study by Yale University[22] indicates that a global carbon price starting at about US$30 per tonne (in current US$) in 2020 and rising at around 5% a year could be roughly in line with ultimately containing projected warming to 2.5°C with the least cost.

In addition, companies expect a progressive carbon price that creates the appropriate economic signal, as shown in the results of the online survey.

Figure 6: "Necessary future carbon price level to induce new low-carbon investments in your sector."



Source: WBCSD FLP Online survey

21. Partnership for Market Readiness, 2014.
22. Nordhaus, W.D., 2013.

Based on our survey (30 respondents), 57% of the companies anticipate the need for a price between US$30 to US$50 by 2020 to induce new low-carbon investments, while 33% see the need for a price between US$50 and US$80 by 2030. Fewer companies, 23% anticipate the need for a price between US$80 and US$120 by 2020 and above US$150 by 2030.

The expected carbon price depends on the level of carbon emissions (see table 2 below): the highest carbon prices are preferred by the relatively small emitters, while larger emitters prefer a lower price. By 2030 the dispersion of carbon prices is greater, although a constant increase in carbon price is recognized.

Climate regulatory frameworks and associated carbon pricing trajectories need to be steady and predicable, allowing businesses to adapt their operations and future investments accordingly.

Table 2: Expected carbon price as related to the level of carbon emissions

Company level of direct CO_2 emissions	What do you believe would be the necessary carbon price level by **2020** to induce new low-carbon investments in your sector?						
	0 < 10 US$	10 < 30 US$	30 < 50 US$	50 < 80 US$	80 < 120 US$	120 < 150 US$	> 150 US$
<500 Kt	0%	0%	42%	0%	17%	0%	0%
500 Kt to 10 Mt	8%	0%	38%	0%	38%	0%	0%
10 Mt to 50 Mt	11%	0%	44%	11%	0%	0%	0%
>50 Mt	13%	13%	38%	0%	0%	13%	0%

Company level of direct CO_2 emissions	What do you believe would be the necessary carbon price level by **2030** to induce new low-carbon investments in your sector?						
	0 < 10 US$	10 < 30 US$	30 < 50 US$	50 < 80 US$	80 < 120 US$	120 < 150 US$	> 150 US$
<500 Kt	0%	0%	17%	17%	0%	0%	25%
500 Kt to 10 Mt	8%	0%	23%	15%	0%	23%	15%
10 Mt to 50 Mt	0%	11%	0%	44%	0%	0%	11%
>50 Mt	0%	25%	13%	25%	0%	0%	13%

WBCSD FLP Online survey

7. Define your company's carbon pricing advocacy position

To participate in shaping future legislative frameworks on carbon pricing, your company first needs to define its advocacy position based on a risk assessment, business priorities and the strategic vision of the energy transition pathway.

Many companies have already designed their position on carbon pricing while others are considering doing it. The process for defining a corporate position will be specific to each company but a simple four-step process is suggested below.

It is recommended to start with a detailed **risk assessment.** The analysis could include a review of:

- **The level of company's exposure to increasing climate regulations:** Companies should review the impact of existing and planned carbon pricing policies, not only in the jurisdictions where they operate but also outside to see if and how their competitor's products and services are being impacted.This assessment needs to include a forecast of the likely costs per product and service in each jurisdiction where carbon pricing is likely to be introduced.
- **The business opportunities associated with the introduction of new carbon pricing legislation (or a change in regulations where carbon pricing policies are already in place)**: For some activities such as those in the renewable energy sector, the introduction of carbon pricing policies could strengthen the business case for new investments. A way to assess opportunities associated with the introduction of carbon pricing policies is for a company to review the potential CO_2 reduction projects and develop a cost curve to assess the marginal abatement costs, the amount of investments associated with each project,and their associated life time.

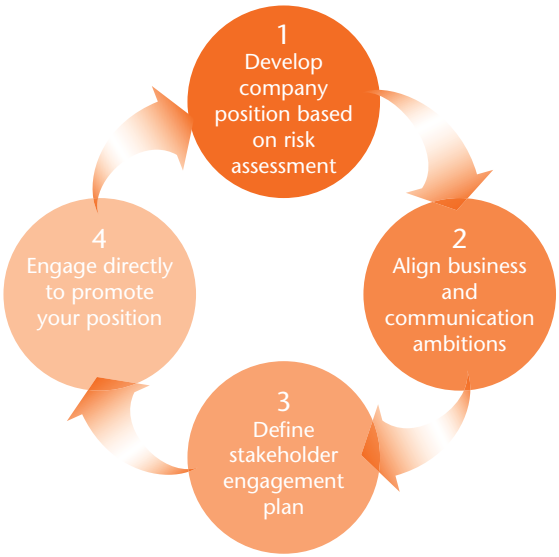
In some cases, this internal risk assessment can be supported by setting an internal value for GHG emissions—often called a "shadow price" **(see the WBCSD Internal carbon pricing report)[23].**

"Statoil has for some years called for a price on carbon because we know that carbon pricing actually works. If more governments put a price on carbon, other businesses will follow suit and quickly. We believe putting a price on emissions is indeed the most efficient policy measure to trigger innovation and secure a level playing field between technologies and geographies."

Eldar Sætre, President and CEO of Statoil ASA

23. In a report published in September 2015, the Carbon Disclosure project describes a tripling over last year in the number of companies reporting that they priced their greenhouse gas (GHG) emissions (437 in 2015, up from 150 in 2014). An additional 583 companies state they plan to use an internal carbon price within the next two years.

Figure 7: A proposed process to define your company's position



This risk assessment should allow companies to have a clear idea of the type of carbon pricing mechanisms and the ambition level the company would like to see being implemented in relevant jurisdictions.

The second important step is to ensure **internal alignment** within the company and develop some external messages that fit the company's communication strategy but remain fully aligned with the business risks and opportunities identified in the first step. This alignment could be established either by using a top-down approach (the corporate center sets and distributes advocacy messages related to carbon pricing based on the group strategy) or on a bottom-up approach (each branch and site brings its suggested position to influence the corporate position).

For companies with a wide range of activities that might be affected differently by the introduction of carbon pricing policies in various jurisdictions, the corporate center can propose a set of overall principles. These principles will guide the local divisions in setting their own advocacy position while remaining consistent with the rest of the organization.

The third step is to develop a **stakeholder plan** examining how best to engage with a broad range of stakeholders (peers, industry associations, policymakers, non-governmental organizations,academia, etc.) in order to contribute constructively to the debate and influence upcoming carbon pricing legislation.

The fourth step, the **engagement phase** involves both bilateral advocacy activities and engagement through industry organizations, bringing your company's voice to the discussion (see section 8 below). Over time, this engagement step will most likely require you to adjust your advocacy position as the regulatory context evolves.

8. Raise your voice! Engage with policymakers in shaping carbon pricing policies

The current transition to a low-carbon economy offers opportunities for business to show leadership and build its competitive position. Being seen as a proactive and constructive partner in shaping carbon policies will not only strengthen the company's reputation but can also influence the shaping of future regulatory frameworks.

Engage at regional and national policy levels

What matters the most for business is the jurisdiction covering its current operations. Business is often invited to participate in a detailed carbon pricing dialogue at the national or regional level. For example, there are ongoing legislative processes on the next phase of the European ETS set towards 2030; the shaping of China's regional and federal emissions trading systems; the establishment of the Republic of Korea's emissions trading scheme; and a potential US carbon tax. Business can engage in these dialogues either through bilateral meetings or through industry organizations.

Bring concrete solutions to the table: sector-based agreements

A possible business-driven solution to overcome or mitigate some competitiveness concerns is to establish sector-based agreements for mitigation actions, such as emissions caps and intensity targets applied to an entire sector and value chain. As an example, the WBCSD's Cement Sustainability Initiative (CSI) has been exploring and advocating for sector-based market mechanisms.[24]

Support carbon pricing as part of the Paris Agreement

The Paris Climate Agreement will likely be a compact, foundational document, similar in length and scope to the UNFCCC or the Kyoto Protocol. As stated by IETA CEO and President Dirk Forrister, it is important that the Paris agreement discuss the importance of carbon pricing, especially carbon markets: *"The Paris agreement should establish a solid foundation for the markets of the future, ensuring their integrity and effectiveness. If policymakers are serious about getting business engaged in actions on a large scale, they must ensure that carbon market mechanisms grow strong under the future framework."* If reaching a global carbon price requires linking different national or regional mechanisms, it is important that a unified international transfer system is created, including standardized accounting and reporting provisions to safeguard against double counting.

Show leadership

Only few WBCSD companies signed the Carbon Price Communiqué released in 2012, the World Bank Carbon Pricing Statement or the UN Global Compact Carbon Pricing Principles released in 2014. As the momentum for carbon pricing builds up, the opportunities for WBCSD members to engage are plenty.

One of the forefronts where business can engage is the World Bank Carbon Pricing

24. WBCSD Cement Sustainability Initiative, 2012.

Leadership Coalition.[25] The Coalition brings together leaders from across government, the private sector and civil society and is built on lessons learned through the Partnership for Market Readiness[26] and experiences in different jurisdictions around the world. It has been formed from a groundswell of support for carbon pricing at the 2014 United Nations Climate Summit, where 74 countries and more than 1,000 companies backed carbon pricing. Its goal is to expand the use of effective carbon pricing policies that can maintain competitiveness, create jobs, encourage innovation, and deliver meaningful emissions reductions. Part of its task is to develop pathways that will illustrate plausible outlooks under a variety of carbon pricing policies and timelines.

The UN Global Compact has also established a group of Carbon Pricing Champions[27] who have taken the following three commitments: (i) set an internal carbon price high enough to materially affect investment decisions to drive down GHG emissions; (ii) publicly advocate the importance of carbon pricing through policy mechanisms that take into account country-specific economies and policy contexts; (iii) communicate on progress over time on the two previous criteria via public corporate reporting.

Finally, the International Emissions Trading Association (IETA) is also bringing the voice of business through, for example, the Business Partnership for Market Readiness (B-PMR).[28] One of the main objectives is to exchange best practices between businesses that already have operations covered by a pricing mechanism and businesses in countries currently discussing the implementation of carbon pricing mechanisms.

"Carbon pricing is one of the most powerful mechanisms we can put in place to reduce emissions and speed the transition to a low-carbon economy. Many companies are already using internal carbon prices, and the external call for a formal carbon price has grown stronger across the world during 2015. This is a united call for action from the business community as we head towards the historic climate negotiations in Paris this December."

Peter Bakker, President and CEO of WBCSD

Source: International Emissions Trading Association (IETA) press release "20 business groups call on governments to include markets in the 2015 Climate Agreement", 20 October 2015

25. See **http://www.carbonpricingleadership.org/.**
26. The World Bank Partnership for Market Readiness was established in 2011 to help countries address the technical capacity gaps in designing, and adopting innovative and cost-effective approaches to (GHG) mitigation. A particular focus is on mitigation approaches that lead to a price on carbon—such as domestic ETS and carbon taxes. It brings together 30 countries and has to date allocated US$ 53 million to governments. See **https://www.thepmr.org.**
27. See **http://caringforclimate.org/workstreams/carbon-pricing.**
28. See **http://www.ieta.org/index.php?option=com_content&view=article&id=626:ieta-launches-the-business-partnership-for-market-readiness-b-pmr&catid=20:press-releases&Itemid=88**

Conclusion

As carbon pricing legislation emerges around the world, the debate needs to shift from "*Can we get a global price on carbon?"* to *"How can we get it quickly and simply?".* Business has a key role to play in this conversation, not only by providing facts and evidence about what works and what does not based on past experiences but also by proposing cost-efficient and pragmatic solutions. International companies with operations and markets in different parts of the world also have a key responsibility in pushing for harmonization, consistency and future linkages of the different carbon pricing instruments and regulatory measures emerging in the various jurisdictions.

As a result, business will strengthen its short-term license to operate as it is increasingly perceived as a constructive and solution-oriented partner in climate change mitigation discussions. Over the long term, being an active shaper of future climate and carbon pricing policies will help business better anticipate future compliance needs and identify future business opportunities ahead of the competitors.

As clearly indicated in the 2015 report on the EU ETS,[29] companies that already show leadership on climate are moving away from a compliance approach to carbon pricing to deeper engagement and more innovative means of reducing emissions.They are being rewarded by a creative flair that is uncovering new ways of doing things that improve efficiency and reduce carbon liability.There is much to learn from the adoption of carbon pricing, including how it can guide creative leaders in transforming their companies into creative powerhouses that reduce carbon emissions at the same time as they boost profitability.



29. University of Cambridge Institute for Sustainability Leadership (CISL), 2015.

Glossary

Carbon pricing: only two words, but many concepts

Carbon pricing: The goal of a carbon price is to create a change in the economy such that the market begins to differentiate between goods and services on the basis of their carbon footprint. The carbon price, initially experienced by the emitter or fuel provider, is passed through to the consumers of the product. The result is a change in the relative cost of most goods and services based on their carbon footprint. This will influence the purchasing decisions of consumers and products with a high carbon footprint will be less competitive. [30]

Emission trading systems (ETS): In an ETS the market establishes the price for carbon. The scheme creates an incentive to implement the most cost-effective emission reduction option.The most common approaches to emissions trading are:

Cap and trade, which is based on setting an upper limit or cap on the total level of emissions from the sectors covered by the scheme. The cap is chosen in order to achieve a desired environmental effect and the cap diminishes progressively over time. Permits or allowances are distributed or auctioned among participants and can be traded as needed. If a company reduces its emissions, it can keep the spare allowances to cover its future needs or sell them to another company that is short of allowances. This way a market price for carbon is established.The scheme creates an incentive to implement the most cost-effective emissions reduction option.

Baseline and credit, in which emission intensity levels are set for emitting activities, while a baseline is established against which emission performance can be measured. If actual emissions are below the baseline set, companies are eligible for credits that can be traded, so actually the difference between the two represents emissions reductions.

Sector-based market mechanisms, through which emissions reduction goals are jointly set by governments and companies for industry sectors. The market mechanisms can be applied at the regional or national level and include sector-based emissions reduction targets that are rewarded by tradable credits provided that emissions are reduced below agreed benchmarks.

Project mechanism, which relies on comparing the emissions of a project with a baseline, usually defined on the basis of the best available technology or practice for a particular country. If project emissions are lower than the baseline, tradable credits are issued.

Carbon tax: In essence, a carbon tax is a fee assessed on the carbon content of the fuel or product and the tax rate determines the carbon price. In practice, the government imposes a fixed tax on CO2 emissions at some point in the economy. This may be (i) downstream directly on the end-users of products, (ii) at the source of the emissions, or (iii) upstream of the actual emissions (e.g. at the point of sale from a coal mine). To send the most efficient price signal, the carbon tax should ideally be on the product's end-users and their use but it remains challengingto assess theiroverall carbon footprint.

Emissions performance standard: An emission performance standard defines an acceptable emission level per unit of output, for example grams of CO2 per KWh of electricity produced.The approach provides an implied carbon cost, which can be calculated from the standard itself, in combination with a market energy price. Where sector-specific standards are used, emission limits are set at intensity levels based on the technology available at an acceptable cost in a particular industry.

Pass-through: Carbon pricing may apply to primary energies. These costs, as all other marginal costs, are passed all along the value chain until the end consumers who ultimately drive the emissions trend.

Carbon leakage: A carbon price is normally passed through the supply chain, where it impacts the cost of goods and services provided to the consumer. But if the market price for those goods and services is being set by a competitor outside the cap-and-trade system, then pass-through is not possible. The supplier inside the cap-and-trade system becomes competitively disadvantaged and the supplier outside the system gains market share and may therefore see a rise in emissions from its manufacturing facilities. This is known as carbon leakage and is managed by distributing some or all of the allowances within the system for free. Even then, an emitter within the system may have an allocation shortfall and have to bear the cost of buying additional allowances in the market. In cases where pass-through of the carbon cost is possible, carbon leakage is still a factor to consider. External suppliers into the same market now see higher prices, which may lead to increased profits, again leading to a competitiveness concern (source: Hone, D., 2015).

Market Stability Reserve (MSR): An MSR is a mechanism designed by the European Commission to adjust the supply of allowances to be auctioned and thereby improve the resilience of the EU ETS to major supply-demand shocks. The MSR is expected to be operational from January 2019.

Life cycle analysis: Life cycle analysisis a technique to assess the environmental impacts associated with the different stages of a product's life, from cradle to grave (i.e. from raw material extraction through processing, manufacturing, distribution, use, repair and maintenance, and disposal or recycling).

30. WBCSD, 2011.

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The World Business Council for Sustainable Development (WBCSD), a CEO-led organization of some 200 forward-thinking global companies, is committed to galvanizing the global business community to create a sustainable future for business, society and the environment. Together with its members, the council applies its respected thought leadership and effective advocacy to generate constructive solutions and take shared action. Leveraging its strong relationships with stakeholders as the leading advocate for business, the council helps drive debate and policy change in favor of sustainable development solutions.

The WBCSD provides a forum for its member companies - who represent all business sectors, all continents and a combined revenue of more than $8.5 trillion, 19 million employees - to share best practices on sustainable development issues and to develop innovative tools that change the status quo. The council also benefits from a network of 70 national and regional business councils and partner organizations, a majority of which are based in developing countries.

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