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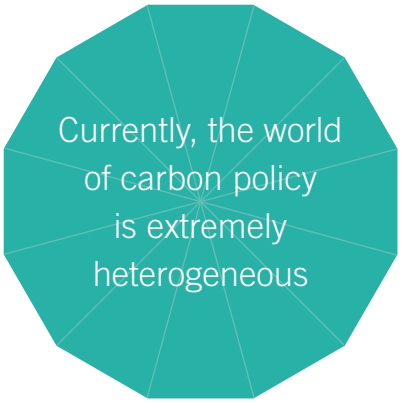
THE COST OF CARBON PRICING: COMPETITIVENESS IMPLICATIONS FOR THE MINING AND METALS INDUSTRY

In May, 2011 the International Council on Mining and Metals (ICMM) established a climate change program with the goal of ensuring the continued competitiveness of the industry in a low carbon future. While the strong preference of the industry is an eventual global regime with a common carbon price, ICMM's members are open to operating in national regulatory environments that are fair and transparent. To that end, ICMM commissioned a report with the International Institute for Sustainable Development (IISD) that begins to assess how best to develop carbon pricing policies that achieve a transition to a low carbon economy without compromising the ability of national industries to compete internationally. This article represents a summary of that report.[1]



The geographic regions analyzed include the European Union (EU), South Africa, and Australia, as well as sub-national jurisdictions within the US and Canada, namely California, Quebec, and British Columbia. These are regions where ICMM member companies have a significant production presence, and where there are climate policies currently in place or under development.

Four commodities are included in the analysis: iron ore, copper, aluminium and coal. These commodities encompass a range of widely produced and used outputs and a variety of extraction and production techniques in a number of locations globally. The analysis on iron ore and coal focuses on upstream; the analysis of aluminium focuses on the smelting process; and the analysis of copper covers both mining and refining processes to show the impact of carbon pricing on financial metrics for both upstream and downstream processes. Many of the lessons drawn from the analysis are applicable to the mining and metals industry as a whole.

Recent years have seen an increase in the number of proposed or implemented carbon pricing systems. Currently, the world of carbon policy and pricing is extremely heterogeneous with different rules for coverage and pricing in each scheme. To try and address that reality, governments typically introduce measures for energy intensive trade exposed (EITE) industries to try and offset those higher costs. The most frequently adopted approach seen in the systems under review is free allocation of allowances to industries that are most vulnerable. Other potential approaches include border adjustments (which have not been implemented to date), tax rebates, and direct financial aid to industries. While these measures provide some compensation, they may not be adequate to overcome the competitive impact of pricing in certain sectors. Furthermore, the level and scope of compensation provided for the four commodities is highly variable. The challenge is to identify a price signal that sufficiently protects industry while also serving as an incentive to reduce emissions in their operations. Indeed, in some cases there may be no room for a price signal due to other particular domestic circumstances, such as electricity costs, or acute international competitiveness pressures.

In our analysis, we focused on evaluating the impact of carbon pricing policies on key financial metrics for the mining and metals industry:

- Sales
- Capital spent (a measure of profit whereby earnings before interest, taxes,
- depreciation and amortization (EBITDA) are used)
- Cash costs (defined as a company's sales (revenue)) minus EBITDA.

Only publicly available information has been used and inferences are only made when directly supported by the evidence.[2]

Illustrative results for each of the four commodities considered are shown in

Figure 1: **Carbon cost impacts on aluminium production**

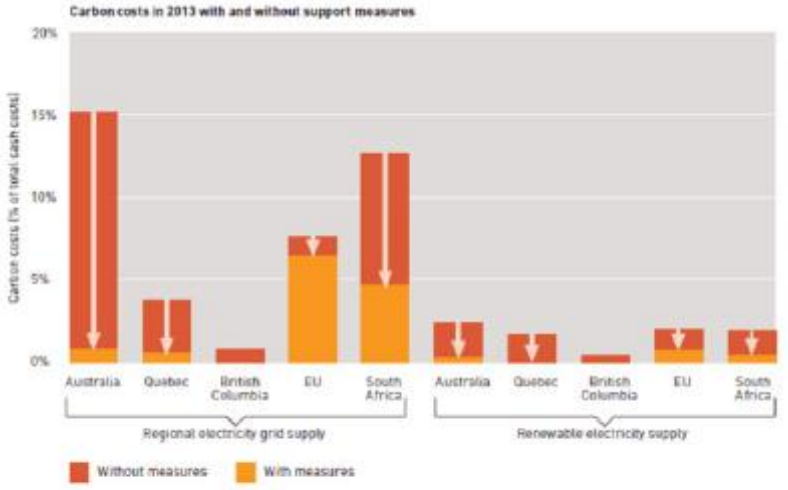
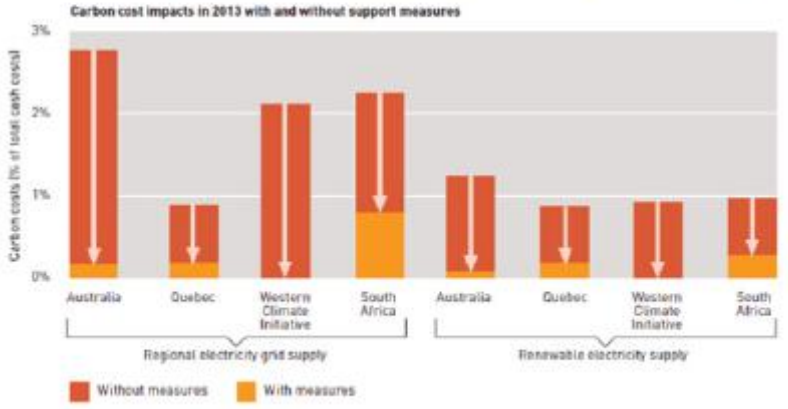


Figure 2: **Carbon cost impacts on copper production**
Note that at present, copper smelting is not undertaken in British Columbia; the results shown are therefore illustrative only



Figures 1–4, which compare carbon costs – based on levels set out in legislation or recent carbon market analyses – to the selected financial indicators. General inferences from the quantitative analysis are:

- As prices or tax levels increase, the scale of potential impact increases and the impacts become increasingly divergent between regions, largely due to differences in the electricity-generating mix.
- The inclusion or exclusion of a sector from compensation measures will strongly influence the cost impact of pricing on the bottom line.
- There is the potential for large variations on the impact of financial metrics from year to year, particularly for globally traded commodities.

Aluminium and copper production (see Figures 1 and 2) are both electricity-intensive industries. The impact of emissions reductions policies is likely to be acute if power generation is included and/or the electricity generation type emits high levels of greenhouse gases (GHGs). Analysis suggests if all costs are passed through to aluminium producers, carbon costs can be as high as 70 per cent of EBITDA. For aluminium, potential impacts are considerably lower if renewable electricity is purchased rather than electricity with a grid-based average carbon intensity. Compensation measures significantly reduce costs, except in British Columbia and in the EU, when grid-based electricity is consumed. A similar pattern of results is seen for copper, except that the difference in potential impacts between grid electricity and renewables is much less pronounced.

The impact of emissions reductions policies on iron ore mining is likely to be lower due to its relatively low emissions intensity. Figure 3 shows that the potential impact of carbon costs, without any compensation, is less than 1 per cent for all jurisdictions and all financial indicators. However, emissions intensity can vary across production sites and the policy impact can differ accordingly. The ranges on Figure 3 illustrate the variation that ICMM member companies have around these averages.

Figure 4 shows that the potential carbon costs for coal production are similar on average for the four jurisdictions where ICMM member companies have a significant share of production. However, coal production has a highly variable emissions intensity by mine, which depends on the product mined (metallurgical or thermal coal) and the type of mine (gassy or non-gassy mine).

Specific concerns for the mining and metals industry

PRICE

An indication of the percentage increase in costs of a carbon policy enables the easy identification of the most vulnerable commodities. The increase will be relatively low if the commodity's energy intensity of production is low, and if other costs, for example labour or capital, are high.

TRADE EXPOSURE AND EMISSIONS INTENSITY

Trade exposure should be considered at the installation level, keeping in mind

Figure 3: **Carbon cost impacts on iron ore production**
Emissions intensity data (indicated by vertical bars) submitted by ICMM member companies under the Carbon Disclosure Project

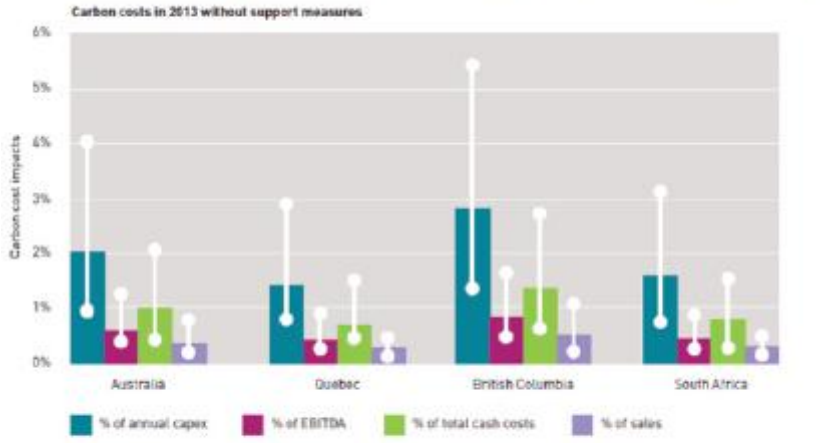
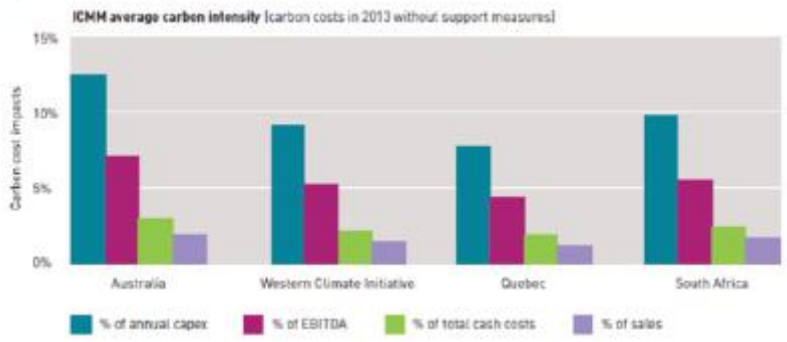


Figure 4: **Carbon cost impacts on coal production**



The Fuel mix of a grid is largely out of industry's control

that emissions intensity, while important, is not the only relevant consideration. Other considerations should include the scope of emissions coverage (direct and/or indirect), the sources of emissions (combustion, process, fugitive) and the types of gases that are captured by the system.

VOLATILITY OVER THE ECONOMIC CYCLE

The financial performance of commodity industries is highly variable and carbon costs become more or less affordable according to industry and market trends. Carbon systems need to be responsive to market turbulence.

EMISSIONS REDUCTIONS TECHNOLOGIES

The impact of carbon pricing can be more easily mitigated if there are low carbon technologies still to be implemented. Unfortunately, this is not often the case for energy-intensive industries: as energy is a major part of their production costs, its use has been largely optimised over a long period.

Recommendations

Based on the analysis undertaken, the following recommendations have been drawn:

1. ELECTRICITY, ELECTRICITY, ELECTRICITY! CAREFULLY CONSIDER THE TREATMENT OF THE ELECTRICITY SECTOR AND HOW THIS WILL AFFECT ALL INDUSTRIAL USERS.

Inclusion of the electricity sector within a system may result in carbon costs being passed through to users through their electricity bills. The potential impact is greater for those industries such as metal smelting that are electricity intensive and in cases where the electricity grid is fossil fuel dominated. The fuel mix of a grid is largely out of industry's control. To mitigate the impact, carbon pricing systems need to consider how best to treat the electricity sector and how to account for and mitigate any related increases in user costs.

2. LINK LONG-TERM EMISSIONS REDUCTIONS TARGETS INTO POLICY MEASURES

Significant reductions in GHG emissions from the mature processes used in the majority of mining and metals activities will tend to require significant investment in research, development, dissemination and deployment. Where carbon pricing policy is implemented, the objective of compensation measures should be to give support to industries in making the transition to a low emissions economy and to act against the disadvantages that are created by unequal carbon costs.

3. MAKE POLICIES SPECIFIC TO REGIONAL CONTEXT AND PRIORITIES

The introduction of climate change policy has to take into account the context in which it is being developed and implemented. Domestically, the level of economic and social development, the political and industrial support for the

policy as well as government priorities will help to determine the feasibility and likely impacts of policy. External factors, such as trade links and related policies in other jurisdictions, are also important.

4. PROVIDE CLEAR AND CONSISTENT INCENTIVES

The mining and metals industries have extremely long investment cycles with investments that may be developed and implemented over periods in excess of 50 years. As a result, policy certainty and stability is essential. However, establishing long-term targets for emissions reductions and long-term objectives for policies can bring some certainty to participants. More importantly, building a political and social consensus around the need for emissions reductions policies will increase the likelihood that such policies will continue to exist in the future.

5. REFLECT INDUSTRY AND FACILITY HETEROGENEITY IN POLICY DESIGN

Coverage of a carbon pricing policy should be broad enough to ensure that the cost of emissions reductions is shared across the economy and narrow enough to guarantee that the system is workable. The criteria for receiving support needs to be clearly defined and assessed on an industry-by-industry basis, with the understanding that they are one in a range of factors that affect the competitiveness of an industry.

6. ADOPT A COLLABORATIVE APPROACH AND AIM FOR A GLOBAL EMISSIONS SYSTEM

Policymakers should strive to build a political and social consensus on climate change policy. All industries that are likely to be affected by the introduction of policies should be consulted. Policymakers should also look to industry and government experience internationally to help design an effective carbon system. This could also facilitate the harmonization of various elements of policies such as reporting requirements and the use of offsets, reducing costs and competitiveness implications to participants. Such harmonization would also support a global emissions system in the long run.

(Endnotes)

[1] Authors and contributors to this document include Peter Wooders, Lucy Kitson, Greg Cook, Simone Cooper and John Drexhage. / [2] A full description of the inputs and assumptions to the quantitative analysis can be found in the full report.

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John Drexhage most recently worked for ICMM where he worked as Director of Climate Change and Energy Management. Prior to that he was Director of Climate Change for the International Institute for Sustainable Development and Associate Director with the Government of Canada where he co-ordinated the government's international negotiations. His specific areas of expertise include the Kyoto based market mechanisms, development of national policies and competitiveness. is former Director, Environment and Climate Change at ICMM.