Alleviating International Competitiveness Concerns Among Carbon-Intensive Industries: The Role of Sector-Specific Agreements

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Introduction

This paper will present a blueprint for actively engaging three of the most carbon-intensive global industries—aluminium, cement, and steel. Together, these industries account for 37 percent of manufacturing greenhouse gas (GHG) emissions and more than 10 percent of annual global GHG emissions (Bradley et al., 2007). Given the significance of these figures, the benefits of working with these three industries to realize a less energy-intensive path are substantial—these industries account for 24 percent of the global manufacturing industry’s total energy usage (International Energy Agency, 2007). A solid understanding of the opportunities and challenges associated with reducing the energy intensity of production and GHG emissions within these key carbon-intensive industry sectors will not only serve to facilitate more prudent policy choices at the national level, but will also allow nations to engage each other with renewed spirit in the international arena to move beyond the current rhetoric that envelopes climate change discussions.

Sector-specific agreements, that is, bottom-up approaches resulting from public-private partnerships where governments and carbon-intensive industries commit to work together to reduce GHG emissions from a given sector, can serve as a viable way forward in catalyzing effective climate change mitigation. In recent years, developed and developing countries alike, including Australia, Brazil, China, New Zealand, and the United States, to name a few, have considered implementing these approaches in their national economies.

Sector-Specific Agreements: Design of a Flexible Framework

The idea of sector-specific agreements has been around as long as the United Nations Framework Convention on Climate Change (UNFCCC). When the UNFCCC was first envisioning the structure of a legally binding international agreement, sector-specific strategies lost favor to the approach the world now knows as the Kyoto Protocol. With the Kyoto Protocol’s disappointing record in promoting reductions in global GHG emissions by Annex I countries, sector-specific approaches are once again beginning to gain favor in the international community. More recently, the Bali Action Plan envisioned “enhanced national/international action on mitigation of climate change” through “cooperative sectoral approaches and sector-specific actions” as a way to advance the climate change agenda (United Nations, 2007).
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Sector-specific agreements are not intended to replace comprehensive economy-wide emissions reduction targets. Not all sectors of the economy are a good fit for sector-specific agreements. Such agreements should therefore be pursued alongside a Kyoto renewal as these two types of agreements are not mutually exclusive, but complementary. Sector-specific agreements can provide a roadmap for breaking down the comprehensive and seemingly overwhelming targets established through the Kyoto framework by focusing on the industries with the greatest potential for significant GHG emissions reductions. The GHG reductions achieved through sector-specific agreements should contribute to a country's economy-wide emissions reduction target.

Implementation of effective sector-specific agreements does not begin at the international level. In fact, after the international community determines which sectors should be targeted and the list of tools that could be used to define the scope of this type of agreement, most of the prep work must be done at the national level.

Why Are Some Industry Sectors More Suitable for Sector-Specific Agreements?

Aluminium, cement, and steel are identified as the carbon-intensive industries most conducive to a sector-specific approach for four reasons:

1. Relatively uniform product and production processes across the industry make it possible for new methods to achieve economies of scale with relative ease.
2. A significant concentration of major industry players reduces the complexity of the negotiating process.
3. Available national baseline industry data on energy-usage and GHG emissions facilitates the monitoring, reporting, and verification (MRV) process.
4. Exposure to global trade allows for coordination among countries at the international level.

Aluminium, cement, and steel are raw, intermediate goods whose GHG emissions can be fully captured and mitigated upstream during the production process as opposed to other final goods, whose carbon footprint is greatest in operation. This distinction makes these carbon-intensive industry sectors ideal for sector-specific agreements because GHG mitigation is a more transparent and streamlined process. Generally, the greater the ability of a sector to meet the criteria listed above, the more likely the chance that sector-specific agreements at the national and international level will be successfully negotiated. The automotive or aviation industry, for example, could not expect to be able to successfully reduce the carbon footprint associated with the production of vehicles or airplanes without the emissions from the industries that supply the major inputs of production already effectively curtailed.

Who Should Be Party to National Sector-Specific Agreements?

Since the vast majority of goods from the aluminium, cement, and steel industries are produced for domestic consumption, in order to mitigate global GHG emissions from these industries, abatement actions at the national level are required. The creation of public-private partnerships to outline obligations at the national level is the most efficient and effective way to facilitate cooperation, innovation, and prudent regulations while preserving the sector's prospects for future growth. These public-private partnerships should be established between energy, environment, and commerce ministries and the major industry players of a given sector. Ideally, this bottom-up approach should also involve input from research institutions and technical bodies to ensure that the best possible approaches to reducing GHG emissions in the most cost-effective manner are on the negotiating table.

In many countries, the largest and most influential companies are involved in industry associations. Working together with these associations can streamline the negotiating process for national sectoral agreements, while ensuring that negotiations represent the interests of a significant share of industry sector participants. Once agreement is reached between industry sector representatives and the national government, a Memorandum of Understanding (MOU) can be utilized to explicitly state the scope of the public-private partnership and responsibilities of both the national government and the industry sector. MOUs should be constructed with a degree of flexibility whenever possible by allowing the industry sector to choose from a list of agreed-upon abatement approaches that best meet current industry circumstances. Figure 1 illustrates the main elements of a comprehensive MOU.

Figure 1. Framework for Memorandum of Understanding

<table>
<thead>
<tr>
<th>Memorandum of Understanding</th>
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<tr>
<td><strong>I. Purpose</strong> Summary of the intent of the parties to participate in a public-private partnership to facilitate a national sectoral agreement. Goal is to deepen mutual understanding and promote cooperation on climate change through a range of abatement options.</td>
</tr>
<tr>
<td><strong>II. Legal Intent</strong> Statement of the intent of the parties to establish voluntary or legally binding commitments that are actionable under national or international law.</td>
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<tr>
<td><strong>III. Scope</strong> Illustrates the relationship between the parties to the agreement and their corresponding responsibilities, articulating specific activities to be conducted in collaboration that may include:</td>
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<tr>
<td>(a) Collection of industry energy usage and GHG emissions data</td>
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<td>(b) Identification of strategies for research, development, and deployment</td>
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(c) Advancement of technological capabilities
(d) Investigation of product and process improvements
(e) Evaluation of best practices for energy management
(f) Development of methods to disseminate information
(g) Determination of a range of abatement options and corresponding costs
(h) Negotiation of rigorous commitments that involve industry emissions targets, technological or performance standards, and supporting national policy options

IV. Definitions
Listing of potentially ambiguous terms in the text of the agreement and their intended meanings to avoid unclear language and misunderstandings.

V. Implementation
Specification of who will be responsible for governance, declaration by parties to further the MOU's goals in good faith, and articulation of the dispute resolution process. An oversight committee could be formed to develop an operating structure, deepen membership, make consensus recommendations, and report coordinated efforts.

VI. Funding
Guidelines for coordinating resource decisions and avenues for securing reasonable funding to allow for the successful completion of the activities described in the scope.

VII. Intellectual Property Rights
Rules for accessing, sharing and/or transferring technology that is subject to patents or other intellectual property rights.

VIII. Amendments
Explanation of steps required to alter the initial agreement, including outlining the authority responsible for carrying out necessary duties associated with this process.

Why MOUs?
A Memorandum of Understanding (MOU) is a document that is similar to a contract but is not necessarily a legally enforceable agreement. An MOU is typically used to establish a cooperative relationship between two or more parties, often with the intent of the parties to enter into a more formal arrangement at a future point. Depending on the language used, an MOU can incorporate general guidelines or specific details of expected actions from signatory parties. Although an MOU can have the legally binding effect of a contract, one of the primary benefits of using this type of document to facilitate public-private partnerships on the national level is that they are low-pressure agreements that allow the parties to establish trust and a constructive working relationship without necessarily having legal obligations under contract law. The most attractive element of this type of agreement also serves as the main disadvantage. Since an MOU is intended to be nonbinding, parties are expected to fulfill obligations in good faith without any legal recourse should a party not follow through with outlined responsibilities.

In the international arena, MOUs can be characterized as treaties and can be registered with the United Nations. However, an MOU is not necessarily a binding or nonbinding agreement under international law. The intent of the parties to be bound by the MOU along with the level of authority of the signatory parties determines whether it is voluntary or legally enforceable. Since an MOU does not necessarily have obligations under domestic or international law, MOUs can be affected without majority approval from a legislative branch or parliament, bypassing potential political roadblocks and influence by special interest groups.

How Can MOUs Be Scaled Up to Produce International Sector-Specific Agreements?

One of the most important advantages of utilizing the sector-specific agreement framework is that substantial reductions in GHG emissions can be targeted while involving only a few countries. The countries that should be party to these agreements are transparent and easy to define thanks to emissions data compiled by national and international industry associations. In many of the most carbon-intensive industries, there is a limited number of major industry players, and, as a result, typically less than 10 percent of countries in the global community would need to sign on as parties to a sector-specific agreement to effectively combat the sector’s GHG emissions, significantly reducing the transaction costs associated with the current international negotiating process. Rather than requiring consensus from the global community—the 192 countries recognized by the United Nations—agreement only needs to be reached by countries that are responsible for at least 50 percent of emissions in a particular industry sector.

In the global aluminium industry, the list of the top 10 producing countries has remained largely unchanged in recent years, as has these countries' share of global production. In 2009, 10 countries represented 83 percent of global production, and six of these 10 countries are characterized as Annex I countries under the UNFCCC.1 The cement and steel industries have a similar concentration of key actors. Five countries have consistently accounted for 70 percent of global cement production, three of which are designated as Annex I countries. Ten countries are associated with 89 percent of global steel production; five of them are Annex I countries. (See appendix for complete list of production totals by country for each of these industries.)

1 According to the UNFCCC, Annex I parties include the industrialized countries that were members of the OECD (Organization for Economic Cooperation and Development) in 1992, plus countries with economies in transition (the EIT Parties), including the Russian Federation, the Baltic States, and several Central and Eastern European states.
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As can be seen, only a limited number of MOUs negotiated nationally will have to be coordinated and harmonized at the international level to form the guidelines and responsibilities of the major GHG-emitting countries of the aluminium, cement, and steel industry sectors. National sectoral action plans are not likely to be comparable at first, however, and it is possible that the activities defined in the scope of MOUs will vary considerably by country based on what each public-private partnership believes is capable of accomplishing in terms of emissions reductions. For this reason, it is critical that designated representatives from global industry associations be available throughout the international negotiating process. The International Aluminium Institute, the Cement Sustainability Initiative coordinated through the World Business Council for Sustainable Development, and the World Steel Association are the recommended associations to give input into the scope of international sector-specific agreements governing aluminium, cement, and steel, respectively. All three of these industry associations represent the majority share of global producers and each of these associations has publicly declared support for the application of sector-specific approaches to their industries in recent years.1

These global industry associations can facilitate constructive dialogue and offer a prudent way forward if countries come to the table with divergent action plans that are unable to be effectively consolidated during initial negotiations. These industry associations agree that global industry information (including country-level aluminium, cement, and steel emissions and GHG emissions) as one of their main functions and would therefore be in a position to recommend synergies that may not be apparent to political negotiators. To be clear, the obligations of the major emitting countries under an international sector-specific agreement will be based on each of the participant’s circumstances and respective capacities and thus will be consistent with the spirit of international common but differentiated responsibilities that characterize international common but differentiated responsibilities that characterize international

Since the majority of GHG emissions from carbon-intensive industries are concentrated within few countries, largely the countries that will be party to a sector-specific agreement, leakage, the relocation of GHG emissions to an area that is not regulated by a stringent climate change policy, will be naturally contained. With the majority of the world’s largest producing companies in each of these industries represented by the global industry associations that have already endorsed these agreements, these companies will not be apt to move operations to a nonparty country, especially considering that the largest producing companies will all be governed by the same sector-specific stipulations. Nonetheless, sector-specific agreements should include trade guidelines that provide incentives for other countries to join the sector-specific agreement because that will further reduce the likelihood that leakage will occur. Another promising way to prevent leakage to countries not party to a sector-specific agreement is through no-lose targets, which can incentivize countries that are not major sectoral emitters—typically developing countries—to adopt the international sector-specific agreement without concern for being penalized if they are unable to achieve the desired outcome.

Determining governance is of critical importance given the nature of sector-specific agreements. Since industry-level best practices will continue to evolve, it is important that agreements be designed to be flexible enough to incorporate changes without the amendment process being too drawn out or cumbersome. Parties to a

1 Though the International Aluminium Institute, 25 companies representing more than 80 percent of global aluminium production voluntarily take part in the Aluminium for Future Generations Initiative. Compliance with this initiative involves the adoption of 14 voluntary objectives that aim to promote environmental sustainability in the aluminium industry (IAI, 2009). The Cement Sustainability Initiative has publicly declared that they consider an acceptable sectoral approach to involve "organizing action by key product producers in a specific product sector" (World Business Council for Sustainable Development [WBCSD], 2009a). The World Steel Association has publicly declared that its members are "committed to the reduction of carbon emissions" (World Steel Association, 2010b). As an indicator of this association’s commitment to reducing energy intensity and corresponding GHG emissions, the association has already established voluntary intensity reduction targets among its membership.
sector-specific agreement may decide to hold consultation meetings at regular intervals to discuss recent technological advancements and other applicable developments that affect the realization of the terms of the agreement. Task forces among signatory parties may also be utilized to separate countries into smaller working groups to tackle certain elements of the scope of the agreement efficiently.

The primary goal of international sector-specific agreements is to harmonize national policies at the international level as this is the only way competitive concerns among countries and within carbon-intensive industries can be adequately addressed. While striving to meet the terms outlined in the sector-specific agreement, the national policies of major trading partners will naturally trend toward convergence, and the additional costs levied on the most carbon-intensive industries will eventually become comparable across countries. In order for national policy actions to harmonize in a relatively short period of time, robust commitments should be included in the scope of the agreement.

**Sector-Specific Agreements: Establishment of Robust Scope**

Substantial commitments under sectoral agreements primarily take three forms: emissions targets, sector standards, and supporting national policies. Although all three approaches can be used to address carbon-intensive industry competitiveness concerns, the most effective sector-specific agreements will be those that utilize a combination of these three mechanisms to achieve emissions reductions that are tailored to the particular needs of an industry sector. Responsibilities under sector-specific agreements should be balanced between public and private entities to ensure the viability of the public-private partnership. A successful sectoral agreement will include specific national government actions that will complement industry abatement efforts and provide assurance that an industry sector will continue to receive government support during transition to a less carbon-intensive path.

**Emissions Targets**

Emissions targets set a limit on the amount of emissions that can be generated from a sector. Typically, emissions targets can take the form of an absolute target, an intensity target, or a production target. Of these three options, a production target would be the most viable option to negotiate in the near-term with the carbon-intensive industries—aluminium, cement, and steel—discussed in this paper. Since a production target tracks emissions by weight, changes to the energy intensity of production would be captured and encouraged as a way to meet this target. These targets are therefore the ideal main tool for public-private partnerships to utilize to reduce emissions from a given sector.

A production target may not be the most effective solution for limiting G3G emissions if production increases at a greater rate than the energy-intensity of production is reduced. However, the target does not inhibit economic growth and should be acceptable from a political standpoint. Since a production target necessitates that improvements be made to the energy intensity of production, it is the only emissions target that would require parties to consider the mitigation of both direct and indirect emissions at the outset of the sector-specific agreement, a key advantage as indirect emissions account for the majority of total emissions from some of the most carbon-intensive industries, particularly aluminium.

**Sector Standards**

Sector standards are designed to establish best practices in an industry sector and do not necessarily aim to achieve a specific emissions reduction outcome. Instead, the primary objective is to encourage the adoption of more efficient technologies and less energy-intensive production processes that can eventually lead to a substantial reduction in sectoral emissions. Sector standards are primarily either technology-based or performance-based. Since the aluminium, cement, and steel industries have conducted several detailed studies to date on how to transition to a less

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4 An absolute target would serve to impose a direct quantity control by capping emissions from a given sector. Considering this option in the initial negotiating stages of a sector-specific agreement is understandable because it could alienate industry representatives. Without supporting measures, an emissions cap would serve to shrink output and employment without constructively addressing the carbon-intensity of production, compromising the sector’s ability to invest in a more energy-efficient capital stock or to develop new production processes. An intensity target limits the emissions per unit of business activity or economic output. As such, this tool is not as burdensome for a sector to adopt as an absolute target. While these targets do not limit economic growth potential and are thus politically viable, the downside is that this option cannot ensure an environmental outcome since emissions from a sector are not capped, just the emissions per unit of output. Therefore, a country that is developing rapidly and experiencing strong economic growth could improve emissions intensity while increasing overall emissions from a given sector. In addition, using an economic value can make the achievement of intensity targets difficult to assess in areas where fundamental macroeconomic indicators are

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5 Technology standards require a specific technology or production process be adopted by an industry sector, but in early stages of forming a sector-specific agreement, it may not always be apparent which technologies or production processes are best from an economic or environmental standpoint. Depending on the level of uncertainty that exists, including a technology standard in a sector-specific agreement may not be practical if significant research and development is still needed to determine the most technologically efficient options, especially considering the dismal track record of efforts to pick winners and losers prematurely. However, a technology standard would likely be easy to coordinate and garner support for on the international level since compliance tracking will be a relatively straightforward and transparent process. Performance standards can be implemented to improve plant-level operations across an industry or be applied to any portion of the production process. As such, this type of standard can be as comprehensive or narrow in focus as deemed appropriate for industry sector circumstances and could even potentially catalyse the employment of new technologies. A primary advantage of utilizing a performance standard is that it offers an industry sector a degree of flexibility as opposed to a technology standard that is stringent in mandating a particular technology or production process be adopted. A potential disadvantage of performance standards is that comparable industry actions can be difficult to ascertain among countries whose industries are employing a variety of methods to achieve a stated performance goal in an internationally negotiated sectoral agreement.
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carbon-intensive path in the most cost-effective manner, either of these standards could potentially be employed in a sector-specific agreement at present. An advantage of setting one of these standards across an industry sector is that the policy will tend to inspire major trading partners to follow suit in order to maintain global competitiveness as these standards will allow adopting plants to achieve greater production efficiencies and long-term reduced operating costs. Moreover, depending on the nature of the standard, international conformance may be necessary so as not to disrupt the trade flows of complementary goods and services. Standards are also relatively easy to implement across countries where production processes are homogeneous, as is the case in all three of the industries discussed in this paper. Therefore, standards offer an avenue for harmonizing national policies and responding to the competitive concerns of these carbon-intensive industries in a fairly short period of time.

Supporting National Policies

Of the more substantial commitments discussed thus far, the primary burden of implementation falls on industry sectors. Even if an MOU is designed to take advantage of the lowest-cost abatement efforts available, an industry sector will likely face increased costs of production in the first years of a national sectoral action plan as plants shift to new technologies and processes to realize less energy-intensive and more environmentally friendly operating methods. To alleviate concerns that a national industry is locking itself into commitments that may not be matched by their counterparts in other major emitting countries, supporting national policies should be designed to complement the agreed-upon industry actions in MOUs. Supporting national policies, which can primarily take the form of non-carbon-related tax burden alleviation, subsidies, and mandates, serve to realize an effective public-private partnership. Ideally, supporting national policies should be implemented once a sector-specific agreement is drafted to ensure that robust industry targets are set during the commitment period.

Relief from increased compliance costs with a climate change policy through a reduction in other costs industrial plants face would facilitate the negotiation of more rigorous commitments from an industry sector. Abatement costs could be offset through a more favorable corporate tax structure that reduces the costs associated with employment, particular health care or payroll costs, which are typically the most burdensome for a company. Another option would be to provide a generous tax credit or tax deduction that rewards a plant for employing new technologies or processes. Avenues that reduce corporate tax liabilities could provide enough of an incentive to catalyze substantial commitments from the most carbon-intensive industry sectors, while also reducing leakage risks.2

Since comprehensive changes to national energy subsidies are not likely feasible in the near term, MOUs should endeavor to incorporate targeted subsidies that directly respond to a sector’s specific abatement costs. To this end, subsidies could focus on reducing procurement costs of new technologies and/or production processes, reducing a sector’s electricity costs, or supporting industry research, development, and deployment efforts. As with taxation schemes, coordinating subsidy policies on the international level through sector-specific agreements can be instrumental in harmonizing national policies to alleviate carbon-intensive industry competitiveness concerns. Major emitting countries can also bypass a potential violation of the Uruguay Round’s Subsidies and Countervailing Measures (SCM) Agreement if they acknowledge the implicit fossil fuel subsidies that exist without the internalization of the negative externalities associated with fossil fuel reliance and agree to implement sectoral subsidies in a collaborative manner. Further, the coordinated effort to phase in similar subsidies across major emitting national sectors could eventually accelerate the coordinated removal of perverse fossil fuel subsidies among signatories.

Of the three supporting national policy options, mandates will have the fewest barriers to implementation and, as a result, could inspire the greatest climate impact in the near term. A national mandate might mobilize low-cost financial resources for industry energy-efficiency improvements, earmark national funds for research, development, and deployment, institute performance standards for products that use carbon-intensive materials as inputs of production, or impose government agency purchase requirements on final goods that contain aluminum, cement, and steel. A critical element of an industry sector’s ability to employ less-carbon-intensive operations in a timely manner is to make borrowing options as attractive and transparent as possible. Incentivizing financial institutions to provide low-cost loans with maturity schedules that coincide with an industry sector’s investment cycle is essential to realizing the scope of national and international level sector-specific agreements.3

Agreement on a uniform sectoral carbon tax would serve to further harmonize national climate policies, effectively address national competitiveness concerns, and be a building block to an international carbon market. The possibility of negotiating sectoral carbon taxes may not be as far-fetched as many would believe as some major emitting countries, not the least of which is China, have already effected national policies that effectively tax GIG emissions from certain carbon-intensive manufacturing sectors in an effort to improve air quality and promote the services sector of the economy.

6 The Uruguay Round’s SCM Agreement outlines rules that apply to subsidies established for an enterprise, industry, or group and places subsidies into three categories: prohibited, actionable, and non-actionable. Generally, a subsidy that is applied to a specific entity can be considered favorable and prejudicial, whereas if a subsidy is widely available, a resource allocation distortion is presumed not to exist. Applicable to subsidies that could be included in sector-specific agreements, most national government financial contributions that affect production can fall into the actionable category if they: (i) cause harm to a member’s domestic industry; or (ii) impair or nullify the core GATT principles. These two criteria are not easy to prove and the WTO dispute resolution process has not set consistent precedents to date. However, assistance with industry research efforts and with compliance costs associated with upgrading existing facilities are categorized as non-actionable. The category of non-actionable subsidies is currently expired. Its provisional application was a five-year period that ended in December 1999. According to Article 31 in the SCM Agreement, the category of non-actionable subsidies could be extended but the required consensus has not been reached.

5 Regulations that standardize waste management and recycled content requirements can also fall under this category and can serve to streamline industry production processes, promoting homogeneity across an industry
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A caveat to executing national policies with the objective of supporting the abatement efforts of domestic industry sectors is that they could be determined as protectionist, which would place a country in violation of its World Trade Organization (WTO) obligations. The international community is only beginning to define what policy choices constitute a violation of WTO principles, so it may be prudent to discuss the types of supporting national policies that will be acceptable with the countries that will be involved in the negotiations of a particular sector-specific agreement prior to forming MOUs that establish national sectoral action plans. However, even if consensus is reached between the top emitting countries, countries that are not party to the sector-specific agreement could register a dispute with the WTO. To date, there are no disputes on record by countries objecting that the trade measures in other international environmental treaties violate their WTO rights, but confidence on this matter will only be achieved once the WTO establishes how it will promote clean development in the 21st century, which the Doha Round is any indication, is unfortunately not likely in the near future. Nonetheless, this uncertainty should not stop the international community’s adoption of sector-specific agreements, as the potential exists that the construction and eventual prevalence of these agreements will aid in formulating synergies between international environmental and trade regimes.

Sector-Specific Agreements: Determination of Legal Enforceability

As acknowledged previously, sector-specific agreements can be either binding or non-binding. Binding measures are preferable and will be able to allay the competitiveness concerns across carbon-intensive industries more readily, but they may be difficult to negotiate on both the national and international level. To enable fruitful negotiations while alleviating industry competitiveness concerns during the bargaining process at the national level, MOUs should not be structured to be binding initially. Rather, they should be designed with a clause that states the conditions under which it would be the intent of the parties to be legally bound by the document. The decision by the public-private partnership to be legally bound or not at the national level should not be finalized until the international sector-specific agreement has been realized.

Once an international sector-specific agreement has synthesized the national commitments of the largest emitting countries, the signatories to the agreement will decide whether to bind themselves to voluntary or legally enforceable commitments depending on the level of harmonization that has been achieved. Should an international sector-specific agreement be determined as voluntary, national commitments captured in MOUs will likely remain non-binding. On the other hand, if

...and increasingly the likelihood that an industry sector will be amenable this type of agreement. On the international level, the coordination of national mandates will be able to respond further to industry competitiveness concerns by increasing the availability of financing options beyond national borders. International collaboration through sector-specific agreements will also promote joint research, development, and deployment efforts between signatory parties, which will reduce the fiscal burden of any one national government while accounting for inefficiencies that can occur with overlapping research fields.

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it is decided that an international sector-specific agreement will be binding. MOUs should also become legally enforceable instruments to ensure that national industry sector actions allow for the realization of international commitments.

What Does the Track Record for Voluntary Agreements Look Like?

Given recent trends in international environmental negotiations and the establishment of regional partnerships to promote clean development and climate change mitigation, politically binding, voluntary measures have the potential to be just as effective as legally binding agreements, with the added benefit of being able to be negotiated more expeditiously. Voluntary nonbinding measures are being considered and executed with increased frequency in the international community to facilitate positive climate actions among industry sectors. Significant energy efficiency improvements by industrial sectors throughout the world have already been realized through voluntary agreements (Price et al., 2000). In the framework of several hundred voluntary initiatives around the world, the International Energy Agency (IEA) concluded that "past and present experiences with voluntary actions show that, properly designed and implemented, they can achieve stated objectives, sometimes even exceeding those minimum regulatory standards, and help integrate economic and environmental goals" (IEA, 1997). Below is a snapshot of noteworthy voluntary measures and their accomplishments to date.

Asia Pacific Partnership on Clean Development and Climate. The Asia Pacific Partnership (APP) on Clean Development and Climate was established between Australia, Canada, China, India, Japan, Korea, and the United States in 2005 to promote the development and deployment of clean technologies in ways that respond to both developmental and environmental imperatives. Similar to the recommended scope of sector-specific agreements, the focus of APP is to foster research, development, and deployment methods that facilitate harmonized and coordinated national climate action plans as well as engage the private sector to promote the dissemination of best practices across carbon-intensive sectors of the global economy.

Perhaps the most encouraging aspect of APP is that the governing agreement is legally nonbinding and yet members continue to collaborate effectively, sharing knowledge and resources. More than any other voluntary collaboration that currently exists on a global level, the efforts of the APP have laid the foundation for establishing sector-specific agreements as a viable avenue for mitigating GHG emissions under the UNFCCC. The efforts of the APP are congruent with the objective of alleviating competitive concerns among carbon-intensive industries, as a substantial amount of APP's current efforts are focused on moving the aluminum, cement, and steel industries onto a less carbon-intensive energy path.

Equator Principles. The Equator Principles (EPs) are a voluntary set of standards for mitigating social and environmental risk in project financing. Since their establishment in 2003, the EPs have come to be regarded as the "gold standard" for
conducting project finance in a sustainable manner. Although adoption of the EPs by financial institutions is voluntary, once a financial institution makes a commitment to incorporate the EPs into financing decisions, the institution must agree to put in place internal policies and processes that will support the implementation of the EPs as well as consent to publicly report its progress with compliance.

Despite initial deficiencies in governance and transparency that have now been corrected, the EPs are credited with harmonizing environmental and social standards within the finance industry as evidenced by several multilateral development banks, including the European Bank for Reconstruction and Development, along with export credit agencies, adopting principles similar to the EPs. This evidence is encouraging and illustrates that voluntary standards can catalyze industry best practices, even without a transparency mechanism or governance structure in place.

**Shandong Province Enterprise Energy Efficiency Voluntary Agreement.** With cooperation from China's State Economic and Trade Commission, the China Sustainable Energy Program and the China Energy Conservation Association, a voluntary agreement with two iron and steel companies in the Shandong Province was formed through the negotiation of energy efficiency targets and the enactment of supporting national policies. The overarching aim of this voluntary agreement was to protect the industry's global competitiveness while ensuring a positive environmental outcome and safeguarding employment.

Despite initial setbacks, voluntary agreements in China are expanding in scope to incorporate the regulation of environmental pollutants in addition to targeting energy-efficiency improvements. After a decade of experience with voluntary industry involvement, this expanded scope indicates the acceptance of these agreements by both industry and government as a viable way of facilitating coordinated action. The Shandong Province Enterprise Energy Efficiency Voluntary Agreement is a positive indicator that China will be amenable to incorporating sector-specific agreements for the most carbon-intensive global industries under the UNFCCC. Although it is not clear whether binding sector-specific agreements will be acceptable to China, the voluntary agreements with major industrial sectors that have been established thus far indicate that voluntary measures would engender similar authority and be treated with the same importance as legally enforceable commitments.

18 While the voluntary agreement between the provincial Chinese government and the two iron and steel companies was meant to encourage long-term planning, some of the supporting policies were not implemented in a timely fashion, leading to uncertainty at the industry level. As a result, the two companies set less ambitious targets. Another problem arose as a result of the extensive monitoring, evaluation, and reporting procedures, which made it difficult for the two Chinese iron and steel companies to collect annual energy efficiency data as the cumbersome process stretched the limits of their administrative capacities.

**Conclusion**

Sector-specific agreements should be viewed as a tool to reinvigorate international environmental negotiations, reestablish trust among negotiating parties, coordinate meaningful climate actions among top emitters, and target emissions that can offer the greatest positive climate change impact in a relatively short time period. As such, sector-specific agreements have a far greater benefit than simply fostering meaningful GHG emission reductions or alleviating competitive concerns among the most carbon-intensive global industries. These agreements have the potential to change the tone of international climate change negotiations, breaking the first impasse discussed in the opening of this paper. The political deadlock that currently exists due to disagreement over which countries should take the lead on climate change mitigation can be dissolved and these sectoral agreements can be a vehicle for international political leaders to re-learn how to create value in the negotiating space.

Utilizing sector-specific agreements to inject life back into international attempts to mitigate climate change does not require abandoning the Kyoto renewal track. Many countries, particularly those in the European Union, have already invested significant time and resources into meeting their Kyoto commitments, and abandoning this format would be counterproductive. Mechanisms imbedded into the Kyoto Protocol also more readily protect the most vulnerable and poorest nation states from the harmful effects of climate change. But, since the format of the Kyoto Protocol does not appeal to the largest emitters of greenhouse gases, another path must be envisioned and adopted. That's where sectoral agreements come into play. Creating individual agreements to govern the most carbon-intensive sectors of the world economy provides a viable way to address mutual competitiveness concerns between the largest GHG-emitting economies, particularly China and the United States.

Atmospheric concentrations of GHG emissions will not likely be reduced below the necessary threshold to stop the Earth's surface temperature from increasing beyond 2 degrees Celsius without cooperation from China and the United States. Therefore, a politically binding, voluntary process that brings the major emitting countries to the negotiating table is more valuable that a legally binding process that alienates them. Although legally binding agreements inspire greater confidence that commitments to reduce GHG emissions in a given sector will be honored, there is strong evidence that voluntary measures have the potential to be just as successful as legally binding agreements. Therefore, breaking the Kyoto Protocol's comprehensive economy-wide targets down into manageable and targeted actions via sector-specific agreements is a viable way to move beyond the lingering North-South impasse.

Sector-specific agreements offer a framework for governments to engage their most carbon-intensive industries to promote meaningful actions on the mitigation front. This renewed collaboration will further serve to enrich international negotiations.
Alleviating International Competiveness Concerns

Global industry associations for aluminium, cement, and steel have made concerted efforts to garner industry support for climate-friendly product and process improvements as well as to mobilise industry cooperation for research, development, and deployment of technological improvements that can improve the energy efficiency of the predominant industrial capital stock. As a result, there is increased likelihood that public-private partnerships could be readily formed in a cooperative spirit as the three carbon-intensive industries discussed in this paper are already amenable to utilizing sector-specific agreements to mitigate GHG emissions.

From an economic efficiency perspective, mitigating the emissions of the most carbon-intensive industries is not an avenue that readily ensures the lowest cost mitigation options in an economy will be found and encouraged. However, national market-based regulatory systems (neither mind a globally traded carbon credits scheme) do not appear to be viable possibilities in the near term, and scientific evidence indicates that action is required today to halt significant and irreversible damage to the natural environment. Therefore, even though sector-specific agreements may not be the most economically efficient choice, they are a viable option to move beyond political deadlock. Moreover, it can be expected that the national policies of the countries involved in sectoral agreements will become increasingly comparable as best practices for reducing sector-specific emissions are established and shared. This harmonization will create a level of efficiency across national industries, facilitating greater environmental protection while alleviating competitive concerns among major GHG emitting countries.

COP15 saw the BASIC countries—China, India, Brazil, and South Africa—along with the United States primarily draft and acquiesce to the politically binding Copenhagen Accord. Although no action was required from this accord, the outlook for politically binding documents with more teeth to them, namely actionable commitments, appears to be positive. The key is to build on the momentum generated by these heads of state constructively negotiating with each other in the international arena for the first time. Sectoral agreements have the ability to harness this momentum. Perhaps through these agreements, international leaders will be convinced of the benefits that stand to be gained from mutual cooperation and adequate preparation leading up to future Conferences of the Parties.

### Appendix

#### Major Aluminum Producing Countries

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* Annex I Parties to the UNFCCC
** 27 Members of the European Union
TMT defined as thousand metric tons
Note: In 2008, Germany ranked 14th (605.9 TMT) and Spain ranked 16th (405.8 TMT).
Source: British Geological Survey, UNFCCC

#### Major Cement Producing Countries

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Alleviating International Competitiveness Concerns

* 27 Member States  
** Annex I Parties to UNFCCC  
TMT defined as thousand metric tons  
Note: An exact production figure for the EU beyond the estimated 250,000 TMT cannot be determined at this time due to the fact that several EU countries have not officially reported their production totals. In 2008, Mexico ranked 9th (47,609 TMT), Pakistan 14th (39,000 TMT), Germany 17th (33,581), and Thailand 18th (35,600 TMT). In 2009, Mexico ranked 11th (40,670 TMT), Thailand 16th (35,668 TMT), and Germany 17th (33,382 TMT).  

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* Annex I Parties to the UNFCCC  
** 22 Members of European Union  
MMT defined as million metric tons crude steel production  
Sources: World Steel Association, UNFCCC

References


Zeoli


Alleviating International Competitiveness Concerns


