

**Global Sectoral Approaches as Part of a post-2012 Framework  
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## **The Role of Industry in Sectoral Approaches**

**Noriko Fujiwara  
and  
Christian Egenhofer**

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## **ABOUT THE STUDY**

### **Global Sectoral Approaches as Part of the Post - 2012 Framework**

The European Commission has awarded this grant to an international consortium led by the Center for Clean Air Policy (CCAP) – Europe, together with its partners the Centre for European Policy Studies (CEPS), Brussels; the Institut du développement durable et des relations internationales (IDDRI), Paris; the Zentrum für Europäische Wirtschaftsforschung (ZEW), Mannheim; and Climate Change Capital (CCC), London.

Study Goals and Objectives:

- Explore the proof-of-concept and gain experience in formulating and applying industry-based sectoral approaches for climate mitigation;
- Identify financial incentives that would encourage developing countries to take additional sectoral actions;
- Understand the implications of sectoral approach for international market competition; and
- Provide recommendations for the most feasible approaches including sectoral strategies in UNFCCC post-2012 framework.

This work consists of both a country specific dimension with studies and workshops being carried out in China, India, Brazil and Mexico with a focus on the electric power, aluminium, cement, and iron and steel sectors. It contains a transnational dimension looking at industry sectors in global context. Other industries and/ or projects are encouraged to make contact and collaborate with the study team.

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This discussion paper is the result of the activities carried out under a grant agreement of the Enterprise and Industry Directorate-General of the European Commission. The work has been conducted by staff from CCAP-Europe, CCC, CEPS, IDDRI and ZEW together with sector and country experts.

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**Noriko Fujiwara  
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Christian Egenhofer\***

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**D**espite their informal but frequent contacts with governments and negotiators, there is little formal role foreseen for business and industry in sectoral approaches to address climate change beyond a limited involvement in advisory bodies at the multilateral, national or local level. At UN negotiations, business and industry have an observer status, which limits their ability to participate in discussions directly influencing their investment decisions. A relative lack of industry's visibility at UN negotiations contrasts dramatically with their active engagement in sector-specific initiatives. Does this reflect ineffective presentation of industry's interests or, more importantly, the absence of strategic architects?

This paper explores ways to integrate industry in the process of designing and operationalising sectoral approaches according to a guideline that could be agreed in Copenhagen or later. One possible effective form of industry's contribution could be industry's participation in a consultative body based on a public-private partnership and tasked to steer this process.

## **1 Business and industry's participation in climate policy**

Business has an observer status accredited by the UNFCCC secretariat in the form of BINGOs (Business and Industry Non-Governmental Organisations) and has organised a business day since COP13 in Bali. More recently in the run-up to Copenhagen, a number of voluntary initiatives have focused on the role of business. Many but not all have dealt with sectoral approaches.

Sector-based approaches are particularly promising in industry sectors with high emissions where a large portion of world production is heavily concentrated. A coordinated approach by a few major players could achieve quick and substantial emissions reductions.

- An important initiative launched in 2000 has been the Cement Sustainability Initiative (CSI) by the WBCSD (World Business Council for Sustainable Development) to promote sustainable practices in the cement sector (WBCSD, 2009a). CSI now has 18 major international companies as members, manufacturing cement in more than 100 countries. CSI companies represent 30% of the world's cement production. Over the last five years, CSI companies have made major efforts to identify and reduce

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\* Noriko Fujiwara, Research Fellow and Head of Climate Change at CEPS, is the corresponding author ([noriko.fujiwara@ceps.eu](mailto:noriko.fujiwara@ceps.eu); tel. +32 2 229 3911). Christian Egenhofer is Senior Research Fellow, CEPS. This paper is prepared for the study on global sectoral approaches financed by the European Commission (DG Enterprise). For the interim report of the consortium undertaking this study, see CCAP et al. (2008).

CO<sub>2</sub> emissions within their sector, via a series of initiatives culminating in the development of a global database of CO<sub>2</sub> emissions from cement plants as a function of fuel, location, technology and other critical parameters. Called 'Getting the Numbers Right' (GNR), this effort is based on a substantial protocol for monitoring, reporting and verifying CO<sub>2</sub> emissions, which can now form the sound numerical basis for the CSI sectoral approach initiative. The latest modelling exercise using the data has been recently published analysing the impact of carbon policies on the sector (WBCSD, 2009b). The CSI sectoral approach aims at addressing the corporate sector's concerns and potential to introduce emissions reduction technologies in the UNFCCC, G8+5 and APP (Asia Pacific Partnership on Clean Development and Climate) processes. With a coordinated approach and solid information databases, it allows industries to present an informed, coordinated and practical approach to reductions in the sectors at global level.

- The International Aluminium Institute (IAI), a global initiative composed of 27 major aluminium-producing companies, works on a similar emissions reduction initiative. Amongst the many areas of activities, the IAI agreed on climate change objectives as part of the Aluminium for Future Generations Initiative (IAI, 2008), a list of targets to increase the environmental sustainability of aluminium production. The IAI represents 80% of world aluminium production and runs a large database on the industry. The main objective on emissions is the elimination of perfluorocarbons (PFC). Between 1990 and 2006, the industry has managed to reduce the emissions by 86% compared to 1990 and aims at further reductions to 93% of the 1990 figure in 2020 (IAI, 2007). The IAI aims at reducing CO<sub>2</sub> emissions in production and in transport, but no specific objectives are fixed. It also aims at a 10% reduction in average smelting energy usage by IAI member companies per tonne of aluminium produced by 2010 compared to 1990. Also here a central pillar of the approach is the database and analysis. Data cover 80% of world production and are currently being expanded. The IAI has developed a mass flow model to identify future recycling flows and estimate future greenhouse gas emissions (USEPA and IAI, 2008). The industry will report regularly on its global recycling performance.
- Another sectoral initiative has been launched by worldsteel, an association comprising 180 steel-producing companies (including 19 of the 20 largest producers) in 66 countries and covering 85% of world production with the particularity of including producers in the BRIC (Brazil, Russia, India and China).<sup>1</sup> The association has headquarters in Brussels and Beijing reflecting this global coverage. In 2008, worldsteel set up a CO<sub>2</sub> data collection programme that enables every steel-producing company to submit its CO<sub>2</sub> emissions according to a standardised methodology. In the same year more than 180 steel-producing sites contributed to this exercise. This measurement framework covers key factors influencing CO<sub>2</sub> emissions and energy use. The database now holds CO<sub>2</sub> and energy-intensity data for nearly 40% of global steel production capacity (worldsteel, 2009). Moreover, the association launched the worldsteel Climate Action recognition programme

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<sup>1</sup> Source: [www.worldsteel.org](http://www.worldsteel.org)

in 2009. This programme recognises steel producers that have met their commitment to participating in the worldsteel CO<sub>2</sub> emissions data collection programme. Two-thirds of the association's membership participated in the first round of data collection before early 2009 (worldsteel, 2009).

- A more coordinated sectoral approach covering different business sectors can be found in the Asia Pacific Partnership (APP), which was launched in 2005. There are now seven partner countries: Australia, Canada, China, India, Japan, Korea and the United States. Together, they account for more than one-half of the world's economy and energy use and 54% of the world's CO<sub>2</sub> emissions in 2005.<sup>2</sup> They produce about 65% of the world's coal, 62% of the world's cement, 52% of the world's aluminium and more than 60% of the world's steel.<sup>3</sup> This partnership aims to promote practical technology cooperation for GHG emissions reduction through the sharing of effective technologies and practice for reduction, and analysis of reduction potentials. It is built upon private-public partnership and comprises eight sector-specific Task Forces: Aluminium, [Buildings and Appliances](#), [Cement](#), [Cleaner Fossil Energy](#), [Coal Mining](#), [Power Generation and Transmission](#), [Renewable Energy and Distributed Generation](#) and [Steel](#) (APP, 2006). In the APP's decentralised framework, the form of representation in membership or that of participation may vary from one to another Task Force. To date, the partnership endorsed 175 collaborative projects including 22 flagship projects across the seven partner countries and the eight sectors.<sup>4</sup>

In addition, a group of government officials have been also actively engaged in developing models of sectoral approaches (e.g. Annex I Expert Group supported by the OECD and IEA Secretariats, Baron & Ellis (2006) and Baron et al. (2007)).

## **2 Categorisation of sectoral approaches**

There is no single definition of sectoral approaches to address climate change. IEA (Baron et al., 2007) has attempted to identify four different models and to categorise them based on country and industry focuses.

### *Country focus*

1. Country-specific quantitative approach: a country's initiative limited to a sector and recognised by the international community (e.g. UNFCCC) such as the 'no-lose' target approach.
2. Sustainable development policies and measures: a country would pledge a policy that delivers both sustainable development objectives and lower greenhouse gas emissions.

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<sup>2</sup> Okamoto (2009).

<sup>3</sup> Source: <http://www.asiapacificpartnership.org>

<sup>4</sup> "Shanghai communiqué", the 3<sup>rd</sup> ministerial meeting, Shanghai, China, 27 October 2009.

### *Industry focus*

3. Transnational quantitative sectoral approaches, where companies or associations within a single sector agree, across countries, to achieve a reduction goal.
4. Technology-oriented approaches ranging from pooled or coordinated R&D to diffusion of low-carbon technologies and best practices.

The CEPS Task Force on sectoral approaches (Egenhofer & Fujiwara, 2008) has proposed three models of sectoral approaches:

- *Sector-wide transnational* approaches, e.g. transnational industry-led approaches that aim to engage a sector on a broad international basis or global sectoral industry approach;
- *Bottom-up country commitments*, possibly combined with no-lose targets; and
- *Top-down sectoral crediting* as an incentive mechanism, e.g. a sectoral Clean Development Mechanism (CDM).

Lastly, the consortium of research institutes led by CCAP, which works on Global Sectoral Approaches<sup>5</sup> (CCAP et al., 2008), has concluded that among the three sectoral models, internationally, the transnational approach has far less support than the other two, i.e. the bottom-up and the top-down sectoral crediting approach.

At UN negotiations, two types of sectoral mechanisms – sectoral crediting and sectoral trading – have been discussed under the Bali Action Plan 1 (b) (v), “various approaches, including opportunities for using markets, to enhance the cost-effectiveness of, and to promote, mitigation actions”. These two mechanisms currently discussed at negotiations reflect the bottom-up and crediting approaches that the consortium has proposed. The transnational approach has been initially addressed in the context of the Bali Action Plan 1(b) (iv), “cooperative sectoral approaches and sector-specific actions”. However, it has been proposed that cooperative sectoral approaches should be associated with nationally appropriate mitigation actions (NAMAs) by developing countries, and that global sectoral approaches should address emissions that cannot be attributed to any particular economy (e.g. international aviation and maritime transport).<sup>6</sup>

### **3 The role of business and industry in sectoral approaches**

It is private investment and technology that will ultimately solve the climate change problem. The main areas of business and industry involvement are:

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<sup>5</sup> ENT/CIP/08/C/N02S00/1 Global sectoral approaches: sectoral approaches as part of post-2012 framework, OJC 29/11 of 1 February 2008.

<sup>6</sup> Non-paper, No. 49, Contact group on enhanced action on mitigation and its associated means of implementation, subgroup on paragraph 1(b)(iv) of the Bali Action Plan (Cooperative sectoral approaches and sector-specific actions), 6 November 2009.

- R&D – the private sector accounting for the largest part of R&D (e.g. Uppenberg, 2009);
- deployment of existing technologies on a large scale;
- carbon markets built upon the CDM and JI and potentially expanding into new flexible mechanisms such as NAMAs crediting, sectoral crediting, sectoral trading, and REDD crediting;
- provision of data for target-setting and progress tracking to governments; and
- capacity-building in developing countries for data collection and exchange or spread of best practices.

Most of these areas call for more active engagement of business and industry in international climate change negotiations.

In sectoral approaches, across the different models, industry plays a number of important roles. For example, the following three features are common to all the three sectoral models (transnational, bottom-up and crediting):

- collecting information and data about the status of a sector, e.g. benchmarking in different forms such as i) setting the sector boundaries, ii) documenting current industry performance on agreed metrics or key performance indicators and iii) identifying best practices, i.e. comparing performance of equipment, plants or countries to the best practice, which in the longer-term could help identify common medium-term goals;
- sharing and diffusing best practices within companies to increase operational efficiency, including diffusion of technology within the sector, typically to improve the performance of the least efficient installations; and
- engaging governments and large installations of major industry sectors in emerging economies where the highest emissions growth has been observed and the largest potential for emission reductions lie.

In addition there are other roles of business and industry that do not apply to all models.

- Joint learning between governments and business and industry to better understand each other and jointly solve problems with GHG emissions. This is a feature of the Asia Pacific Partnership.
- Cooperation driven by industry in the development of new breakthrough technology, e.g. in the CO<sub>2</sub> Breakthrough Programme on which the steel industry through worldsteel has agreed. Development of breakthrough technology is limited to industry that uses proprietary technology, which is typically the case for aluminium or chemicals.
- Assistance in (decentralised) management of financial support and credits from emissions reduction generated by new flexible mechanisms (e.g. sectoral crediting mechanism (SCM)), sectoral approaches and NAMAs.

The current legal framework built upon the UNFCCC does not assume that emissions reduction obligations are delegated directly to private entities.

Equally, and specific to the transnational model, international law has no clear precedents for regulating specific sectors on a global scale. If an international treaty applies to a specific sector, e.g. aviation or maritime transport, an international organisation, e.g. the ICAO (International Civil Aviation Organisation) or the IMO (International Maritime Organisation), develops standards but relies on individual countries for their adoption and enforcement (Schmidt & Helme, 2005 cited in Baron & Ellis, 2006).

#### **4 International industry organisations**

Moreover, the status of industry organisations does not normally allow them to legally bind their members for consequences of their performance (Baron et al. 2007). International industry organisations will be unlikely to reach enforceable agreements for several reasons including their lack of legal personality.

On the other hand, most of the roles of industry organisations in sector-based climate policy would be substantially similar to roles they already started playing in traditional activities in the context of transnational approaches, i.e. data collection, assistance in R&D pooling arrangements, cooperation with governments in setting requirements, procedures, or guidelines for data collection measures, benchmarking, or measuring, reporting and verification (MRV).

To date industry organisations have largely concentrated their efforts on data definition and collection for benchmarking. Benchmarks are tools to evaluate margins of improvement for existing plants based on international or regional comparison. They can also identify the current best level of performance that can theoretically be achieved. The WBCSD-CSI, IAI, and worldsteel all have been central in organising activities to collect data from member companies in their respective sectors. In that role, they help governments obtain a better overview of margins for improvements in sectors and of abatement potentials and associated costs for industry sectors with current technology. In this way governments and international industry organisations can compare data from two sources: data collected from sectors through transnational approaches; and data collected and provided by governments, for example, based on IPCC guidelines. Another example for the latter would be the international standard ISO 14064 for GHG emissions inventories.

Theoretically, the role of international industry organisations could consist of the following (Baron & Ellis, 2006):

- To provide a forum to identify appropriate best-available technologies among its members, and negotiate on behalf of the industry as a whole mainly at national or possibly regional level;
- To monitor and report on members' achievements with support from certified auditors and expert reviews mandated by the COP or another international authority. This could be an option for countries lacking environmental reporting and reviewing capacity;
- To take the baseline agreed between Parties and translate it into disaggregate objectives, down to the company level in non-Annex I

countries. This presumes that governments would agree to let an international industry organisation set GHG rules for installations on their territories and jurisdictions;

- To receive GHG credits for its non-Annex I members' overall performance against the baseline on their behalf, and apportion them among participants under the 'jurisdiction' of the organisation. In practice these organisations have not played such an executive role in the past. Moreover, governments' role would be then limited to observers in a crediting process despite the consequence of such act on their GHG balance.

Baron & Ellis (2006) conclude that industry organisations could aim at reaching an agreement on the former two points, running a negotiation forum as well as monitoring and reporting GHG emissions reductions, but are unlikely to be able to do so on the latter two – baseline-setting and issuance of credits. Taking the second point further, an international industry organisation could also contribute to capacity-building through the spread of best practices and know-how or the exchange of experts.

## **5 Examples of industry's potential engagement**

The above observation of industry's role in sectoral approaches can now be put into a more specific context. There are two interesting examples: one is the Montreal Protocol, which mainly focuses on air conditioning, the refrigeration sector and foam industries; another is the APP, introduced earlier, which currently runs eight sectoral Task Forces. The latter has become the basis of a proposal for a new Advisory Group on Sectoral Technology Cooperation (AGSTC), discussed below.

### **An experience in the Montreal Protocol**

One can find in the literature comparisons of international ozone and climate regimes, i.e. the Montreal Protocol and the UNFCCC and Kyoto Protocol. Here the comparison is limited to industry's contribution to negotiations, compliance and enforcement (e.g. UNIDO, 2009). The Montreal Protocol targets control over several groups of ozone-depleting substances – nearly 100 chemicals – that are identified, classified and listed in annexes to the Protocol text. In domestic appliances the main consumers of these substances are refrigerators, freezers and air conditioners. Their experience in the Montreal Protocol could be regarded as sector-specific approaches.

For each group or annex of chemicals, the Protocol sets out a timetable for phasing out the production and consumption of those substances with a view to eventually eliminate them. The timetable applies to consumption of ozone-depleting substances. All phase-out schedules were adhered to in most cases, some even ahead of schedule. Among a number of factors which are considered to lead the Protocol to a great success, one refers to the assurance given to the industry that a reasonable timeframe for effecting transition would be granted. On the other hand, important lessons included an underestimation of the necessary reductions and the ability of industry to adapt to change and convert

to non-ozone depleting substances. In the case of halons, and ozone-depleting compound used as fire-extinguishing agents, industry stepped up efforts to meet the phase-out challenges, which led Parties to agree to phase them out completely in developed countries by 1994.<sup>7</sup>

UNIDO (2009), a UN agency to implement the Montreal Protocol, identifies four types of interventions for greening industry: institutional strengthening, awareness increase, eco-labelling and energy classification and investment and technology transfer. For the purpose of this paper, investment and technology transfer to implement the Protocol is particularly interesting. The largest portion of the Multilateral Funds, which the Protocol sets up to help developing countries meet their obligations, was allocated to enterprise-level interventions. Existing production facilities, technologies and products that are related to ozone-depleting substances are required to be converted to those reducing ozone depletion drastically and, if possible, to zero. The technology transfer was both successful and remarkably fast with some cases, such as the refrigeration industry, in which enterprises in developing countries went even further than their counterparts in technically advanced developed countries in adaptation of the most advanced technologies (UNIDO, 2009).

### **A new advisory group with lessons from the Asia-Pacific Partnership (APP)**

The Japanese government has put forward a technology-focused proposal based on lessons learnt from experience in the APP.<sup>8</sup> It calls for an Advisory Group on Sectoral Technology Cooperation (AGSTC) with a view to filling the gap between the need for clean technologies in developing countries and financial and organisational capacity in place within and beyond the UNFCCC framework. The proposal foresees a lean secretariat integrated in the existing structures of the UNFCCC. AGSTCs are allocated regionally (i.e. Africa and Middle East, Asia Pacific and South America).

The AGSTC is meant to remain flexible in membership and composed of two different groups, one supporting national action plans by developing countries and another consisting of sectoral groups with public and private experts from key sectors such as iron and steel, cement, aluminium, power, road transport and forestry.

The AGSTC is meant to act as an interface linking national action plans of developing countries with donor developed countries. The national action plans present the needs for clean technologies in key sectors to regional cooperation bodies. In response to the national action plans, specialised groups will be endowed with the necessary expertise and financial capacity for carrying out specific tasks such as data collection, performance diagnosis and the analysis of the introduction rate of technologies. The secretariat would then call upon a specialised database of technology owners, potential technology recipients,

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<sup>7</sup> Source: 'vital ozone graphics' (<http://www.grida.no>).

<sup>8</sup> Okamoto (2009).

donors/investors and governments on a sector basis in order to create appropriate expert groups. Major activities include the following:

- To identify effective technologies, analyse appropriate ways for promoting technologies, estimating emissions reduction potentials and costs and developing lists of know-how and technologies.
- To make recommendations to donors and investors (e.g. UNFCCC, Global Environment Facility, World Bank, ODA and the private sector).
- To support developing countries to make voluntary national action plans.
- To regularly report its activities to the COP (Conference of Parties).

The AGSTC model is strongly influenced by the experiences of the APP, which has benefited from participation of industry experts in sectoral Task Forces.

## **6 The objectives and roles of a consultative body**

This paper suggests that one possible effective form of industry's contribution would be participation in a consultative body based on a public-private partnership and tasked notably to steer the process of designing and operationalising sectoral approaches. The consultative body would most likely need to fulfil one or several of the following long-, mid-, and short-term objectives:

- The ultimate objective is to operationalise implementation of sectoral approaches, proposing effective tools and systems to deliver the agreed goals.
- Technical priority is given to identifying the sectors to which sectoral approaches apply, agree on the definition of a sector and sub-sectors as well as performance indicators, and operationalise data collection and MRV systems.
- The initial task is to facilitate communication and consultation among stakeholders and international coordination between Parties to the UNFCCC.

Moreover, the consultative body could take up advisory roles. The new body could also provide strategic advice to the COP on technology and finance issues:

- R&D, deployment and dissemination of technology, drawing on technology needs identified in national low-carbon development strategies and industry-led sectoral approaches, built and expanded upon existing activities of the private sectors and the expertise of international organisations (e.g. Expert Group on Technology Transfer, 2009).
- The course of action to address actual barriers to technology diffusion. This also relates to a bottleneck in the diffusion process.
- Allocation of public finance and ways to mobilise private finance.

While industry sectors have made progress in their respective initiatives, their efforts have so far concentrated on data collection and MRV. APP sectoral task forces consisting of both governments and industry have put an emphasis on

not only these aspects but also technological cooperation and the identification of barriers to technology diffusion with project-based funding.

## 7 Possible models of a consultative body

With the foregoing discussion as a starting point, one can identify three conceptual models of a consultative body:

- *Informal advisory body* for on-going consultation and coordination between governments and industry sectors. This process would remain *informal* yet structured and strategically-targeted. The medium for this consultation process could be international industry organisations which are either i) international sector-specific (e.g. WBCSD-CSI, IAI or worldsteel) or ii) inter-sectoral types (e.g. WBCSD or ad hoc task forces). It is important to explore how existing consultation processes could be adapted and improved. Without prejudice to the outcome, one could think that such groups could support formal negotiation processes for setting goals, agreeing on baselines and discussing ways to track progress towards the goals from the baselines. Such a group would suit the initial phase for brainstorming (e.g. *de facto* process before reaching an agreed outcome in Copenhagen or later).
- *An independent organisation* financed partly from governments and partly from industry sectors. Such a body should be composed on balance by government officials and representatives of international industry organisations. The consultation process could initially remain *semi-formal* with an interim body being initially granted a limited mandate until a final mandate is set up. For example, in Copenhagen Parties could look into the feasibility and desirability of creating the independent body with a limited mandate and time-frame to be agreed later (e.g. two years after the initial agreement). The initial mandate would be to identify the sectors to which sectoral approaches apply (e.g. cement, aluminium, iron and steel), agree on the definition of a sector and sub-sectors as well as performance indicators, and operationalise data collection and MRV systems.
- *UN body*. Establishment of a body under the COP with a similar status to the CDM Executive Board or the JI Supervisory Committee. An interesting example of another international convention would be the Montreal Protocol (e.g. the Technology and Economic Assessment Panel (TEAP)).<sup>9</sup> Placing the new body under the COP would mean, however, balancing of representation among parties and across world regions. This naturally risks politicisation of consultation at the expense of practicality, applicability and feasibility. For the latter, it is essential to draw sufficient expertise from government officials and industry representatives irrespective of their countries of origin. The consultation process would be institutionalised in a semi-permanent body by a full mandate. Transition to such a body could be envisaged after

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<sup>9</sup> The panel provides, at the request of Parties, technical information related to the alternative technologies that have been investigated and employed to make it possible to virtually eliminate use of ozone depleting substances (CFCs, halons, etc.) (see <http://ozone.unep.org/teap/index.shtml>).

the first review of a guideline or some form of agreed outcome in Copenhagen and based upon the outcome of the consultation process led by the interim body. This mandate would be to take up full responsibility for implementing and operating sectoral approaches while proposing effective tools and systems to deliver the agreed goals. For the latter, the body may appoint a panel of experts for an independent review in order to report to the COP after consultation with stakeholders.

These models could exist side by side and complement each other. Nevertheless, one could envisage evolution of the new body: starting from an informal body designed to steer and frame the discussions, evolving into an interim body with a limited mandate, for example, for two years after an initial guideline, and finally establishing a semi-permanent body with a full mandate. Once the semi-permanent body would be created, the interim body would complete its limited mandate and could disappear or act as an advisory body.

We conclude that introducing the second model for a limited period of time, say two years, would be the most timely and policy-relevant approach. However, there is the possibility that stakeholders might find it too ambitious or too modest. This is exactly why it is essential to develop a recommendation for models of a consultative body based on empirical study, test it with stakeholders, and feed in their reaction to elaboration of the models.

## **8 Summary and concluding remarks**

Based on the preliminary investigation presented in this paper, we have identified several key elements to consider in the possible formation of a consultative body, as follows.

- A number of ongoing efforts to put into practice sectoral approaches offer lessons for the possible role of a consultative body/process that would make use of business expertise to operationalise the delivery of sectoral approaches. Some are voluntary initiatives of industry sectors (e.g. WBCSD-CSI, IAI, worldsteel). Others are public-private partnerships known in the example of APP sectoral task forces. It will be crucial to understand their objectives, functioning and their possible limitations if ideas and proposals emerging from these initiatives are to become a reality.
- It would be important to understand the achievements and challenges of existing bodies which have been set up under the UNFCCC and other international conventions such as the Montreal Protocol. There are lessons to be learnt from the experience of bodies in charge of existing flexible mechanisms, namely the CDM Executive Board and the JI Supervisory Committee (e.g. governance issues concerning the CDM Executive Board, see Fujiwara (2009)).
- A third area concerns resources and capacity development. The key questions are how different sectoral approach models can improve capacity and ensure access to resources and how a Consultative Body could address these questions.

- There could be at least three conceptual models of a consultative body: an informal advisory body, an independent organisation financed by participants and a body under the COP. These models could exist side by side and complement each other. Nevertheless, one could already envisage the evolution of the new body: starting from an informal body designed to steer and frame the discussions; through transition to an interim body with a limited mandate, for example, for two years after an initial guideline; and eventually establishing a semi-permanent body with a full mandate to implement and operate sectoral approaches and other flexible mechanisms. When the semi-permanent body is created, the interim body could either disappear or act as an advisory body.
- Long-, mid- and short-term objectives can be respectively identified. The ultimate objective is to implement and operate sectoral approaches and other stakeholders' initiatives while proposing effective tools and systems to deliver the agreed goals. The mid-term objective is to tackle technical issues: to identify the sectors to which sectoral approaches apply, agree on the definition of a sector and sub-sectors as well as performance indicators, and operationalise data collection and MRV systems. The initial task is to facilitate communication and consultation among stakeholders and international coordination between Parties.
- In addition the consultative body could provide strategic advice to the COP on technology and financial issues. If industry-led approaches are considered to be the basis for a future sectoral approach, an emerging consultative body would be initially stronger with expertise on technology rather than on finance, but would complement the latter over time. If a future sectoral approach is to be built upon bottom-up country commitments or crediting models, a consultative body will likely start with experts on finance and then gradually move into technology. This paper has not covered the importance of financial expertise but would leave it as an important area for future research.

There remain several research questions to explore:

- It is important to examine industry's experiences in the Montreal Protocol and the process that enables their active participation while recognising the difference in scope between the two sets of international treaties and the consequent limitation of one's relevance for the other. One would ask about the extent to which lessons from the Montreal Protocol can be relevant to the current discussion on the UNFCCC and the Kyoto Protocol, given, for example, the availability of an alternative product for ozone-depleting substances, and the size of industry to be covered by regulations. Similarly, the ways through which industry engaged themselves in implementation of the Montreal Protocol might not be applicable to that of the UNFCCC and the Kyoto Protocol.
- The proposed consultative body could also give scientific advice, like the IPCC Working Group. It is important to keep in mind that the fourth assessment of the IPCC Working Group III (mitigation) addressed the estimation of mitigation potentials on a sectoral basis, and that there should not be duplication in work as a result of the new consultative body.

- The scope of the proposed consultative body may not be limited to implementation and operation of sectoral approaches. Such a body or process could also make useful contributions in other related fields, making proposals on how to help other flexible mechanisms, technology deployment, finance and capacity-building in the international climate change architecture.

Future research built on the preliminary information and analysis in this paper will help to further consider design elements of a consultative body. More specifically, a first step can be taken with an empirical study on the institutional arrangement for the Montreal Protocol, and the roles of the CDM Executive Board, the JI supervisory committee and the IPCC Working Group. Based on the empirical study, conceptual models introduced in this paper can be further elaborated with inputs from experts involved in the above examples and put to test with a broader group of stakeholders.

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