

Global Sectoral Approaches as Part of a Post-2012 Framework

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**Getting Started Now:  
Capacity Building for the Data Systems Foundations  
of Sectoral Approaches**

*FINAL DRAFT FOR COMMENTS*

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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 – Germany; 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 on 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.

## **DISCLAIMER/LEGAL NOTICE**

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.

Although the study has been carried out with support from the EC, the views expressed do not necessarily represent the opinion of the European Commission.

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# Getting Started Now: Capacity Building for the Data Systems Foundations of Sectoral Approaches

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## Introduction

Although there are numerous different models of sectoral approaches (CCAP et al. 2008b) that are promoted by different stakeholders, be they governments or industries, they all in common depend on a distinct number of key building blocks for implementation. They include notably, i) goal setting based on performance indicators such as benchmarks or other measurable metrics, ii) effective application of monitoring, reporting and verification (MRV) requirements; both of which depend on iii) well developed tools, processes and institutions for data reporting, verification, analysis, security and validation. Goal setting and performance indicators depend on the availability of distinct sets of data such as those on emissions or energy use (both in aggregate and by sector), equipment types and efficiencies, abatement potentials, and abatement cost. To make these data available for use, they need to be comparable either at national, international or industry sector level. Typically, this requires common approaches to how to present and use these data such as those on sector boundaries or baseline definitions. Many of the issues related to data re-appear in the context of monitoring, reporting and verification. Finally, all this calls for a minimum of institutional capacity both to make data available and to subsequently handle it (e.g. developing or developed countries, International Organisations such as the UNFCCC Secretariat or other bodies and of course, industry). These are basic requirements for sectoral approaches to get started and keep running.

On the other hand, each country which decided to adopt sectoral approaches needs to prepare itself. It has to demonstrate not only capacity to introduce the scheme with its own resources based on existing infrastructure such as emissions inventory, but also capacity to attract and absorb external support and carbon finance. This extends to capacity to manage financial flows in a transparent and accountable way. Many international organizations, including the European Union, as well as developed countries have a record of assistance for capacity building, which is provided to entities, usually governments or industries in developing countries. Such assistance intends to develop or upgrade certain skills or competence to perform a given task. The most common instrument is technical assistance or cooperation combined with financial support, which can take different institutional and delivery forms. Technical assistance not only promotes transfer of technique or best-practice but also often facilitates transfer of skills, expertise, know-how or knowledge that is essential in application of the former, for example through training programmes, exchange of personnel or twinning schemes. It may involve bilaterally funded entities and a number of stakeholders such as private sector consulting firms, and non-

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governmental organisations. Especially relevant is the experience of a UNEP and Dutch-supported programme for capacity building in countries hosting CDM projects (e.g. CD4CDM<sup>2</sup>).

This paper will briefly introduce basic requirements for sectoral approaches while drawing lessons from ongoing efforts, discuss major issues related to capacity of a host country, and propose a number of operational steps to accelerate capacity building. The paper will focus on capacity related to data (e.g. availability, accessibility, measurability).

## **1. Sectoral approaches: what are they and what is required?**

Sectoral approaches still mean different things to different people. This project has mainly pursued two major models: i) sectoral bottom-up approaches and ii) sectoral carbon finance approaches.

The first, sectoral bottom-up model, whereby developing countries adopt voluntary commitments possibly on a “no-lose” condition, could take various forms, such as sectoral intensity targets, sectoral technology deployment obligations, and sector-specific capacity commitments (e.g. for a certain level of renewable energy installed capacity). Here, a developing country makes a commitment to undertake specific mitigation activities unilaterally (i.e., without assistance) through policies and measures (PAMs) and then negotiates a more stringent “no-lose” target that is based upon the finance and technology assistance that the international community can provide. Emissions reductions achieved beyond the target can be sold to developed countries in the carbon market. Thus, the “no-lose” targets are incentive-based, but they are not internationally binding (although they would be binding under national laws and policies). Sectoral targets, whether no-lose or binding fall within this category (Ward et al. 2008, Höhne et al. 2008). The second, the sectoral carbon finance model is best understood as an approach to broaden today’s project-by-project Clean Development Mechanism (CDM) to encompass an entire sector (or perhaps a sub-sector) within a country. The target baseline would represent some performance better than BAU. Emission credits are then generated for reductions below the baseline. Credits can be sold into the carbon market such as the ETS, or, potentially, a future US cap-and-trade program. The two models are often jointly categorized as sectoral crediting mechanisms (Baron et al. 2008, European Commission 2009).

Although the models tend to converge or at least use design elements from each other, they have different levels of requirements. Both bottom-up and carbon finance models that incorporate crediting emission reductions for sale in the (global) carbon market have far higher data quality requirements<sup>3</sup> notably for baseline setting and MRV as well as transparent and accountable management of financial flows<sup>4</sup> than other models. These other models include transnational or global sectoral approaches launched by sector-specific industry organisations such as the Cement Sustainability Initiative (CSI) with the World Business Council on Sustainable Development (WBCSD), technology cooperation initiatives such as the Asia-Pacific Partnership (APP), and policy based approaches such as Sustainable Development Policies and Measures (SD-PAMs).

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<sup>2</sup> Capacity Development for the Clean Development Mechanism. See, <http://www.cd4cdm.org/>

<sup>3</sup> See also Ward et al. 2008, Baron et al. 2008, Höhne et al. 2008, Bosi and Ellis 2005.

<sup>4</sup> While the latter is important especially for governments not only handling issuance and sale of credits but also receiving external support, this paper will not address it further.

At least the latter two of the above initiatives and approaches generally have lower requirements both regarding MRV and data collection and use (Höhne et al. 2008).

Precondition for participation in the carbon market is to ensure integrity of the credit, i.e. assurance that a “tonne is a tonne”. The establishment of sector baselines requires a lot of data, a question which chapter 2 will address. It is still premature to accurately describe how much detail is required for data for each stage. Nevertheless, countries participating in a sectoral approach should provide donors of technology and finance as well as buyers of credits with sufficient information and data, and convince them that a strategy is credible, notably monitorable, reportable and ultimately verifiable.

All of the above would suggest that at a minimum, however, the implementation of these two major models of sectoral approaches will require the following:

- To assess technical opportunities and to negotiate baselines (or some other performance goals);
- To monitor, report and verify sectoral performance to the extent that benefits from such performance can be quantified and credited in accordance with the pre-determined baselines/goals; and
- To collect and compile data of adequate quality to support the previous two points;

In addition, to meet these requirements, a country should be able to adapt existing measurement protocols and data collection systems to its own industry structure and boundary conditions, in a manner which is acceptable to other Parties.

We start in the following two chapters with briefly outlining the general capacity needs related to data collection under the two major implementation requirements. In chapter 3 we explore in more detail the problems with current capacity level for providing data.

## **2. Setting baselines and targets**

Both sectoral crediting models we have identified involve setting a certain performance level for the sector in a country as a baseline or target beyond which carbon market credits are generated. Such baselines could be expressed in absolute, e.g. GHG emission levels, or relative terms (usually per unit of industrial output), e.g. emissions intensity (CCAP et al. 2008a, Höhne et al. 2008). It is doubtful whether a technology deployment target or other commitments can be translated into a “creditable” form.

A developing country hosting the sectoral approach, usually represented by its government, constructs a baseline and makes the case for it before all actors involved in respective international negotiations. In establishing and documenting the baseline, host governments should be able to quantify the costs and potential emission reductions resulting from certain policy interventions and their combination (Ward et al. 2008). The information and data should be of quality acceptable in negotiations by the international partners, e.g. industry and countries, and in approval by the bodies governing international negotiations, e.g. the UNFCCC Secretariat or the CDM executive board (Ward et al. 2008, Bosi and Ellis 2005). The domestic expertise and skills needed to administer the whole process may be substantial and far greater than for the current CDM.

This is especially important for the sectoral bottom-up model, where the baseline or target is usually constructed by taking into account the combined mitigation effects of multiple existing and planned PAMs (Bosi and Ellis 2005). The institutional and technical capacity needed to develop, implement and evaluate PAMs is however not the focus of this paper.

Baselines and targets are usually based on benchmarks, such as performance indicators of energy intensity (energy use per unit of output) or GHG intensity. Performance indicators or benchmarks enable industry or governments to compare the sector's (or plant's) performance levels with some reference performance levels or standards (CCAP et al. 2008a). They are used as tools to evaluate margins of improvement for existing plants based on international or regional comparison. Governments and industry need to obtain and process significant data for benchmarking<sup>5</sup>. This is quite time-consuming.

As a side effect, benchmarking can help identify costs of abatement for industrial sectors. This however can require extra data and expertise.

Regardless of the extent and detail to which benchmarking is employed, analysis of sectoral targets requires at least some reliable data of various types, e.g. on plant-level performance, technical and cost details as well as aggregate sector efficiency, output etc. (see also chapter 4). Reliable GHG emissions inventory (i.e. records of the total emissions originating from all sources within a certain geographical area and time span) is usually mentioned as one of these (Bosi and Ellis, 2005; Höhne et al. 2008) as well as energy use. These are usually associated with collecting data from individual installations in a sector.

Measurement protocols are a summary term for systematic means and techniques to collect data. They constitute tools, processes and institutions for data reporting, verification, analysis, security and validation. Protocols usually focus on how and what to measure in order to assess plant-level GHG emissions and energy use (Newman, forthcoming). They also encompass data collection systems and methodologies for relevant data for determining the respective performance indicators. Among these are frameworks for accounting GHG emissions, i.e. recording, summarizing and reporting the quantity of emissions by sources.

Since the essential capacity needs in host countries for baselines and targets relate to providing reliable data, such needs logically extend to putting measurement protocols in place and the ability to operate them. Thus the techniques and methodologies are naturally complemented by know-how and expertise on the ground. A crucial aspect is organizing the processes and institutional set-up to make sure data is available and accessible.

In the case of a sectoral carbon finance model where individual installations receive carbon market credits directly, the capacity requirements for measurements combined with international negotiation and approval may fall more on the private sector (Höhne et al. 2008, Ward et al 2008). Institutional barriers for data availability and access may, however, still depend on the government.

It is important to note that it is not yet clear how much accuracy and detail of data is required for the initial stage of negotiating targets. Benchmarking is usually very data-intensive but it might also be possible to arbitrarily set targeted performance levels prior to the implementation of

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<sup>5</sup> CSI project on “Getting the numbers right”; Baron et al. (2007), and Bradley et al. (2007); Egenhofer and Fujiwara (2008).

sectoral programmes. It has been suggested to possibly base these “yardsticks” on very rough estimates, aggregated sector-level data (as opposed to plant-by-plant), or simplified indices<sup>6</sup>. GHG inventories may therefore not be necessary for negotiating these. The option to recalculate baselines as soon as better data is available could also be left open. If ex-ante compromises have been made prior to implementation, the baseline will need to be recalculated based on ex-post parameters, which however will need to be agreed upon ex-ante.

Nevertheless, it is usually expected to demonstrate at negotiations that it will be possible to track progress, i.e. that performance will be monitorable, reportable and verifiable. Thus it may be sufficient at this stage to start the process of putting in place internationally accepted measurement protocols and data collection systems or indicate the ability to do so with reasonable capacity building efforts. The following chapter elaborates on this further.

### **3. Monitoring, reporting and verification**

After a sectoral approach is implemented comes the stage of assessing progress towards the targets or goals, e.g. against baselines or associated costs. Each country should be able to monitor, report and verify emissions, and track the levels of emissions or other variables (e.g. energy use) for individual facilities and their aggregate within a sector (CCAP et al. 2008a). Reliable and accurate data is absolutely essential, e.g. GHG inventories, and so is access to it by international supervisory authorities. A respective high degree of robustness for achieved emissions reductions, i.e. low error margin, is needed to ensure a “tonne is a tonne” for credits sold on the international carbon market.

It is important to note that the requirements for cost data are lower at the MRV stage. Such data is necessary mostly in the baseline-setting stages of the sectoral approach. Later, in the ongoing operation and monitoring of sectoral approaches, it is less critical (CCAP et al. 2008a). Consequently, participating countries should initially concentrate respective capacity-building efforts on the baseline-setting stage.

It is critical to strengthen the host country’s capability to operate the respective measurement protocols and data collection systems amongst all domestic capacities. Protocols also need to be put them in place in time and accepted by international partners. Voluntary GHG emissions reporting programmes already exist not only as part of global (e.g. CSI) or regional (e.g. APP) initiatives, but also as national programmes in some developing countries such as the ‘Program GHG Mexico’<sup>7</sup>. In these cases, one aim for capacity building must be to make these programmes more rigorous, comprehensive, mandatory and perhaps comparable with those of other countries.

A country where some data collection systems are already in place may be considered advanced enough to aim for models of sectoral approaches involving carbon market credits. The gap between its capacity and requirements for such models would be thus lower. A case study from South Africa reveals an institutional set up of a SD-PAM for energy efficiency (Ward et al. 2008). Several organisations are involved and teams for on-site measurement and verification have been created. The same set-up may be possible for MRV and measurement protocols under

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<sup>6</sup> ‘Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting and verification issues’, Brussels, 17-18 September 2008

<sup>7</sup> See e.g. <http://www.geimexico.org/>

models with sectoral crediting. It appears that the experience accumulated from less demanding sectoral approaches and initiatives can contribute to a higher existing capacity for MRV.

## 4. The data conundrum

The case we have made is that sectoral approaches require accurate emissions inventories, or databases with data on the levels of other variables such as energy use and estimates of the likely impacts of sectoral programmes. Data likely to be required for sectoral approaches include plant-specific data covering technical aspects (e.g. location, age and capacity of the plant, technologies and processes that are used, fuel sources etc.), performance (output, fuel consumption, GHG emissions etc.) and ideally cost details. Also needed are aggregated sector data which covers total production, structure and overall efficiency (e.g. energy or emission intensities per product or sector-wide).

There are a number of general data challenges associated with the two models of sectoral approaches.

- Data required for goal setting or definition of performance indicators in some instances is confidential, for example, if companies judge that data is proprietary or of strategic importance.
- Even where data may not be considered confidential, the organized reporting and collecting of certain information may run afoul of antitrust and competitiveness concerns. Industry-led efforts to collect data are typically limited to non-cost data, and safeguards are usually put into place to limit access to individual company or plant data.
- Benchmarks are snapshots of actual technologies but fail to provide guidance on what future level of mitigation can be achieved. However, taking new technologies or technological progress into account, requires new and more data collection.

In many countries data is not available or accessible (due to confidentiality or the existing laws, or failure to use the required format). At the same time data collection is time-consuming and to set up the right format will take years to develop, even in the case that political will exists. Data collection can also be costly. Furthermore, there is no uniform definition of what constitutes a sector, especially its boundaries. If sector boundaries are not clear, installations may self-define how to report emissions from those parts that might or might not be within the boundaries. Comparison is not possible without agreed definitions of sector boundaries.

This paper will not pursue the limits of the general data challenges further but concentrate on required capacity. The above problems with lack of capacity for data collection are related to each other, and examined together with a focus on some specific areas:

### *Lack of practice or experience:*

In some cases or countries there is still no practice to track key technical or performance variables which are necessary for establishing and monitoring performance levels such as GHG emission levels, GHG intensity, energy use and energy intensity (see also sector characterization below). For example, there is lack of reliable plant-level emissions data in China, as accurate sector-wide methodologies or protocols for this have yet to be implemented. In contrast to emission data, energy consumption data is reliable as the statistical bureau checks the data from

the bottom up at several levels and provides it to the government.<sup>8</sup> China's experience for this has been built in tracking the progress on its target to reduce by 20% energy consumption per unit of GDP by 2010. The lack of reliable emissions data in particular is one of the reasons for China to prefer not using carbon intensity as a performance indicator. Additional effort to remedy this reliability problem could significantly improve the accurate measurement of mitigation benefits on the one hand but significantly increase the administrative costs of setting up sectoral programs on the other.

In some countries and sectors the necessary data is not yet available in one single source. In China, for example, the plant-level data on various aspects is not being compiled by a single authority or organization. Separate organizations and government institutions keep track of different aspects, depending on the purpose they collect it for. Also, each of them does not cover all industrial plants in a sector or the whole economy. For example the environment ministry compiles data on certain pollutants from a number of plants, while the statistical bureau and domestic industry associations track other variables, not necessarily from the same plants. Regional authorities may not communicate data from local plants among themselves and to the central government.<sup>9</sup>

There is often a significant gap in data availability between modern or large-scale plants and small-to-medium-size or obsolete plants in the key sectors of major developing countries.<sup>10</sup> Often, the largest and newest facilities are built and operated by large multinational companies who are more accustomed to such data reporting. The smaller companies, often local, may be less experienced in such efforts.

Existing data, even with high aggregation, is sometimes not publicly accessible. The Chinese central government, for example, has the legal ownership of the data reported to it from the above-mentioned organizations and authorities. Putting that data together might allow for estimating the overall emissions of a sector. The government, however, publishes very limited quantity of highly aggregated emission data in the statistical yearbook – the only source that is open and accessible to the public. There have been some indications of a traditional practice of limiting general public access to pollution and emission information, which leads to lack of full transparency in the process. In contrast, aggregated data of other types from various sectors is statistically open to the public, e.g. energy consumption per sector<sup>11</sup>.

It may appear that energy data is more readily available than emissions data both on plant level and on aggregate sector level, based on the China example. This is however due to the unique

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<sup>8</sup> S. Zhang, presentation (oral and slides) at the 'Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting and verification issues', Brussels, 17-18 September 2008.

<sup>9</sup> C. Wang, 'Overview of data available in China', presentation (oral and slides) at the 'Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting and verification issues', Brussels, 17-18 September 2008.

<sup>10</sup> J. Arima, 'Sectoral Approaches: Applications and Challenges'. presentation (oral and slides) at the 'Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting and verification issues', Brussels, 17-18 September 2008.

<sup>11</sup> C. Wang, 'Overview of data available in China', presentation (oral and slides) at the 'Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting and verification issues', Brussels, 17-18 September 2008; S. Zhang, presentation (oral and slides) at the 'Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting and verification issues', Brussels, 17-18 September 2008.

combination of circumstances related to the above-mentioned practices in that country constraining availability and accessibility, and these vary among countries or even sectors. Global data collection efforts under industry association initiatives such as under the CSI or the World Steel Association (WSA<sup>12</sup>) have shown that aggregated sector data of both types is usually more readily available and accessible than detailed plant data<sup>13</sup>.

Cost data is the most difficult to obtain. It is unavailable not only from the cement sectors in Brazil, Mexico and China but also from many plants in the EU or developed countries. Confidentiality and competitiveness concerns further complicate collection of cost data. This makes it difficult to estimate costs especially on a plant basis, which may become the basis for identifying the exact scale of support needed.

Thus in spite of country-specific variations, the most common problems world-wide remain those associated with detailed plant-level data, especially cost-related, as opposed to aggregate sector data. Taking into account these constraints, there have been attempts to evaluate mitigation options, potentials, or opportunities in a whole sector (with a corresponding lack of precision), relying to a lesser extent on cost data from individual plants.

*Lack of coordination:*

In some countries data is collected by individual plants or companies but not in a coordinated manner within the sector. Moreover, data is not necessarily comparable across countries or across institutions. The APP, IEA, or industry-led approaches have originally used different data formats. Gradually, formats are being made compatible. For international comparison, data formats need to be more harmonised, recognizing that international differences in industry structure can limit the extent of harmonization. This has been one of the lessons emerged from experience of APP sectoral task forces.

*Lack of coordination in sector boundary and characterisation:*

The cement sector has been most advanced in compiling an international database, referred to Getting the Numbers Right (GNR). However, the coverage is not complete. For example Chinese plants are not fully covered for several reasons including regional unevenness. Another limitation of that database is differences between countries or regions in setting the sector boundaries, which is part of sector characterisation.

Among others sectoral characterisation needs to describe following aspects:

- Whether and how far to go *upstream and downstream* in the product life cycle and the industry value chain, or whether to use process-based rather than product-based method for determining the boundary.
- How to deal with *indirect emissions*, primarily those from electricity consumption. This aspect has connotation for choosing energy use rather than GHG emissions as a performance indicator for certain sectoral benchmarks. The WSA (former IISI) approach to benchmarking includes indirect emissions to compare actual impacts, while the European Confederation of Iron and Steel Industries (EUROFER) approach focuses on direct

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<sup>12</sup> Formerly the International Iron and Steel Institute (IISI).

<sup>13</sup> 'Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting and verification issues', Brussels

emissions as it needs to work with the EU-ETS.<sup>14</sup> One of the key issues is the electricity used instead of combusting fuel in certain sectors (e.g. aluminium) and in certain processes (e.g. in the iron & steel sector). Using indirect emissions also has implication for differentiated incentives and possible economic-environmental tradeoffs. Reducing energy intensity is economically efficient, but there is a technological limit beyond which further emissions reduction is only possible with increased energy input, as in carbon sequestration. In addition, it is necessary to decide how to reward on-site electricity co-generation, such as combined heat and power (CHP) or even renewable sources.<sup>15</sup>

- What criteria can be used to assess compatibility with certain regulatory and market instruments, including the future inclusion of a sector in a cap-and-trade system. One possible criterion is to avoid double counting, such as overlap with sectors covered by different policy instruments. Clear sector boundaries are also essential for facilitating unambiguous regulation and monetization of emissions reductions.

These aspects are largely influenced by industry structure of a country, which often differs from country to country. The variance across countries in industry structure would hinder joint data collection efforts. These differences in industry structures combined with the regional and national differences in the way sector boundaries are being set for current regulatory or other purposes (e.g. EU Emissions Trading Scheme, industry-led initiatives like CSI, APP) make international comparisons more difficult. This in return encourages a country to adapt the coordinated or agreed boundary conditions to national industry structure but keep these boundaries comparable.

Sector characterisation including boundaries also needs to be set in a manner that promotes coordination, avoids double counting, and reflects real world plant conditions. On occasions European Commission has emphasised in this respect its preference for not including indirect and off-site emissions, in line with the EUROFER approach that focuses on direct emissions under the specifications of the EU ETS<sup>16</sup>. The manner of sector characterisation should i) be consistent with measurement protocols and data collection systems; ii) be reproducible and acceptable by all parties<sup>17</sup>; and iii) not be too costly<sup>18</sup>.

Sector characterisation needs to be compatible with the selected performance indicators such as those based on energy use and technology penetration. Different performance indicators may be used for different countries as a basis for measurable commitment, e.g. performance on technology or in China and performance on carbon intensity, taking into account cogeneration,

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<sup>14</sup> Hans-Jörn Weddige, Presentation (oral and slides) at the ‘Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting & verification issues’, 17 and 18 September 2008, Brussels

<sup>15</sup> Ned Helme, Chairman summary comments of the 1<sup>st</sup> day (oral) at the ‘Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting & verification issues’, 17 and 18 September 2008, Brussels

<sup>16</sup> ‘Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting and verification issues’, Brussels

<sup>17</sup> J. Newman, ‘Benchmarking for Global Sectoral Approaches’, presentation (oral and slides) at the ‘Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting and verification issues’, Brussels, 17-18 September 2008.

<sup>18</sup> This point is not pursued further.

for Mexico. In Mexico's cement sector, for example, the relatively high efficiency of the country's cement kilns offered little opportunity for GHG reductions, while increasing cement blending and constructing renewable power sources presented more substantial opportunities. In contrast, China's cement industry and planning processes seem quite well-suited for a technology-based approach that sets goals for replacement of old inefficient capacity, waste heat recovery at newer facilities, and increased cement blending using by-products from coal consumption and steel production.

At least measurement protocols and data collection systems under each separate sectoral programme need to be consistent with the sectoral characterisation including sector boundaries, and with the chosen performance standards calculation methods that are incorporated in the programme design (Newman, forthcoming).

There are internationally recognized methodologies and protocols, such as those developed under global voluntary initiatives in the aluminium, iron & steel and cement sectors (e.g. the CO<sub>2</sub> Accounting and Reporting Standard for the Cement Industry, developed by the CSI<sup>19</sup>). While such protocols hold important lessons and may form the basis for national and global efforts on measurability, it is important that developing countries maintain 'ownership' when implementing the existing protocols in respective sectors and plants. That is to say host country actors are likely to fully support only those protocols that they believe match their circumstances, as in the selected sectoral approach design features. Hence, there will be always an element of adaptation to national industry structure or sector boundary conditions. The key question will be how much adaptation is acceptable by Parties to achieve international comparison of sectoral performances.

## 5. Ways forward for capacity building

There will be more than one form of support for capacity building needed to implement sectoral approaches, involving a range of activities, from developing data reporting instructions to training local staff in industries in developing countries, as well as the development and implementation of procedures for data collection and monitoring, reporting and verification (MRV). Therefore, this report has identified six steps for supportive actions.

### Step 1: capacity assessment for data collection

The series of actions would start with *assessing the current level of capacity for data collection and needs for capacity building targeted at improvements in reliability and availability of data at technical and institutional levels*. One of the reasons for distinguishing data collection and bringing it to the fore are the systemic barriers that are different in each country that impede not only data collection itself, but also the rest of the capacity-building process. They would have to be addressed at an early stage. For example it is essential to encourage the host country's government to support and take part in the capacity assessment research as well as in the subsequent improvement in data collection practices and measurement protocols. Cooperation and trust among all stakeholders from the public and private sector, by engaging as many as possible at this stage, would also facilitate data collection systems and institutions. Domestic and international industrial associations can be important actors with regard to access to certain types

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<sup>19</sup> World Business Council for Sustainable Development, CO<sub>2</sub> Accounting and Reporting Standard for the Cement Industry, [http://www.wbcscement.org/index.php?option=com\\_content&task=view&id=53&Itemid=114](http://www.wbcscement.org/index.php?option=com_content&task=view&id=53&Itemid=114).

of data. To reconcile confidentiality concerns with transparency concerns by the international community, especially those related to legal practices, closer collaboration and compromises between the authorities and international associations may help.

### **Step 2: testing measurement protocols and capacity analysis**

The second step is to *test measurement protocols as well as analyse and assess the current level of capacity* for their successful operation. Examples include dissemination of the sector proposal templates<sup>20</sup> and diffusion and testing of protocols. However, ‘one size fits all’ is not the case. As each country’s situation has its own unique characteristics, a pragmatic approach may be needed. An example of a pragmatic approach is the extensive use of various tools such as templates and handbooks. For example, the fourth step suggests modifying the template according to the targeted opportunities. In some situations a template may be sufficient for data collection and analysis, while in others it may only serve as a starting point. The key capacity-building characteristics of the templates also include exploring data issues, learning about institutional needs, as well as testing the feasibility of metrics which continues at the third step.

There are examples of the essential role existing initiatives could play as learning-by-doing capacity-building instruments in the second and fifth step. These are the APP-type technology cooperation and the industry-led voluntary global sectoral approaches, both including a number of specific tools. The APP peer review method, especially if adjusted to capacity-building objectives, is one of them. Others are the compilation of handbooks and templates, including toolkits and guiding documents or spreadsheets, as well as training programmes and workshops.

### **Step 3: analysis and assessment of applicability of sectoral approaches**

The third step is to *analyse and assess the applicability of certain types of sectoral approaches that would suit certain country-based and sectoral circumstances including its capacity*. It builds on the assessment in the first and second steps, as well as on considering the opportunities in step 4. This should clarify the extent to which countries and sectors are capable of implementing the various design elements of different sectoral approach models, given a reasonable timeframe to make up for some capacity deficiencies.

Specific models and elements are likely to be suitable for specific countries and sectors while others may not be. The choice depends on the ability to deal with the data availability, to implement certain measurement protocols (with their implicit sector boundaries) and to achieve international coordination or acceptance by the negotiating parties (as in Step 5). This step also involves especially increasing attention to what the suitable performance metrics would be, considering the current level of capacity and future potential as well as other circumstances. Examples mentioned in the previous chapter include the differences between China and Mexico, as well as the tradition and accuracy for constructing energy use indicators in China.

### **Step 4: assurance for data collection**

The fourth step is to *ensure collection of reliable data*. This could be realised through, for example, completing the diffusion of existing protocols for measurement and reporting, and

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<sup>20</sup> M. Jung et al., ‘Sector proposal templates: Overview and lessons learnt’, presentation at the ‘Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting and verification issues’, Brussels, 17 September 2008.

development of a separate set of internationally agreed but relatively rigorous cost standards. It is crucial here to share the understanding about the limitation on collecting all the precise data with complete plant-level coverage and in a consistent boundary. Basing sector baselines or targets on benchmarks in accurate engineering terms may not be feasible or even achievable in a reasonable timeframe. The way forward therefore could be to start identifying where mitigation opportunities are and focus on those. In certain countries and sectors and for some types of sectoral approaches it may be sufficient to collect data about how much and how far abatement actions can be taken. Thus ‘near-perfect’ data levels and estimates may be possible and may still allow operationalizing sectoral approaches. A focus on *opportunities* instead of detailed *data* would allow us to look at the industry’s performance as a whole, especially where aggregate data is already available. The focus on opportunities would inform to some extent the choice of sectoral approach design according to circumstances and therefore is also important for the third step above.

### **Step 5: international acceptance of data collection systems and measurement protocols**

The fifth step is to *gain international acceptance of data collection systems and measurement protocols*. This could be advanced through, for example, the UNFCCC process and the International Organization for Standardization/ International Electrotechnical Commission (ISO/IEC) process aimed at standardisation of measurement and reporting protocols, simultaneously in collaboration with international organisations such as the IEA which has already developed energy efficiency indicators.<sup>21</sup> It is important to involve stakeholders and experts from the public and private sectors of both developing and developed countries. In fact the fourth and fifth step could occur simultaneously.

### **Step 6: further improvement of technical and institutional capacity for MRV**

The sixth’s step is to *further improve the technical and institutional capacity for MRV, depending on the agreed protocols, metrics, benchmarking methodologies etc.* The step starts before the sectoral approach commences operation. It aims at providing the capacity for recalculation of the baselines that have been set ex-ante and essentially an internationally accepted MRV level, thus ensuring verifiable subsequent issuance of credits. This is informed by the analysis and assessment of capacity-building needs in the previous steps and naturally depends on having agreed on the most suitable and realistically achievable sectoral approach design features as identified in the third step. Thus the remaining specific improvements would be made to bring the targeted technical and institutional environment up to standard to enable the tracking of progress and constant improvement after the agreed sectoral approach has started operating.

Importantly, less demanding sectoral approach models will possibly have been decided on, if the capacity and circumstances of certain host countries and sectors are still too far from the required level. Every initiative or approach set in place contributes to institutional and technical capacity development as the basis for expansion of future actions and mechanisms, as in the South Africa

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<sup>21</sup> J. Arima, ‘Sectoral Approaches: Applications and Challenges’, presentation at the ‘Technical workshop on sectoral approaches: Benchmarking, sector boundary and monitoring, reporting and verification issues’, Brussels, 17 September 2008.

example. For example, existing industry-led initiatives could be extended to further regions, countries or plants not participating before.

In principle it is in the interest of the host country to cooperate with international experts and involve its own ones to ensure fair identification of their conditions and circumstances.

Moreover, the above-mentioned supportive actions for capacity building would incur substantially lower costs than those for technology R&D. For further cost-savings initial assessment and testing would identify the areas where less effort, resources and spending are required. Adjusting the type of sectoral approaches and performance metrics for baselines or benchmarks to country-based or sectoral circumstances is a way to avoid prohibitive costs and time-frames for capacity building. Initially reforming some of the existing institutions to facilitate the analysis, assessment and testing processes may save some costs. A body may be also established to coordinate the current data collection and measurement practices of the existing institutions, and improve them. These moves could reduce the projected amount of external support in guidance, expertise, know-how plus observation for implementing the new protocols.

## **6. Concluding remarks**

There has been significant progress made in data collection and MRV efforts led by industry and some developing countries such as Mexico and China. In the course of this process some outstanding problems or difficulties have been crystallised:

- (lack of) availability and accessibility of data, especially of plant-specific data and above all cost data;
- lack of consistency in current circumstances and data collection capabilities among countries and sectors, especially related to the sector characterization under measurement protocols

These will require urgent attention. This may be a technical issue (e.g. lack of initial technical and administrative capacity to implement existing measurement protocols and methodologies or adapt them to sectoral characterisation or boundary conditions in developing countries). Capacity building can address this issue. It is clear that capacity building cannot directly address other general data challenges, such as competitiveness and confidentiality.

The use of protocols and methodologies for measurement of indicators as well as calculation and reporting of emissions are important in providing the basis of sectoral targets and baselines and essential in assessing progress against those targets or objectives. Capacity-building efforts will have to be centred around ensuring the successful operation of protocols on the ground. It is important to adapt protocols to national sector characterisation or boundary conditions while ensuring they are accepted by the participants in sectoral approaches.

There appear to be differences in the requirements for accuracy and detail for data between the setting of goals while planning and designing sectoral programmes on the one hand and the tracking of progress subsequent to their implementation, on the other. These requirements are generally higher for the latter, with the exception of cost data. Therefore, the capacity building process has to start immediately but does not have to be complete prior to implementation.

This paper has identified a need for five immediate supportive actions and a sixth one to build on those:

- capacity assessment for data collection;
- testing measurement protocols and capacity analysis;
- analysis and assessment of applicability of sectoral approaches;
- assurance for data collection;
- international acceptance of data collection systems and measurement protocols; and
- further improvement of technical and institutional capacity for MRV.

The message of these steps is to avoid focusing on some ideal situation and trying to bring host country capacity up to standard. Rather, current capacity levels and circumstances, which are likely to vary among countries and sectors, need to be considered in designing sectoral approaches. It may be wise to select sectoral approach design features, e.g. the types of metrics, or less demanding models initially and to improve capacity through learning by doing. This may be a good way to ensure timely implementation and lower cost for capacity-building efforts.

One of the conclusions would be to initially target mitigation opportunities based on sector data rather than plant-specific data. Especially cost data in general is neither available nor accessible, and to identify potentials for further cost-savings that a hosting country's government could largely achieve on its own. However, this might impede participation of developing countries in the global carbon market as MRV in such cases is most likely not robust enough. No-lose crediting could still be granted depending on the outcome of negotiations, while its final level possibly subjected to review and update as soon as the accurate data is available for both baseline adjustment and robust MRV. This would allow additional learning-by-doing and could even constitute an additional incentive to improve capacity to a level where full participation in the carbon market becomes possible, i.e. when there is certainty that a tonne is a tonne.

Capacity building on its own will unlikely require scaling up finance for developing countries. The more appropriate question would be how to spend available resources in a smart way. One clue would be to prioritise supportive actions and activities according to a time-frame aligned with sectoral approach implementation phases. Another would be to direct the resources towards the targeted opportunities in specific sectors while mainstreaming the existing institutions of a hosting country. As there is sufficient space for a hosting country to develop their own initiatives with their own resources, capacity building could lead to a growing confidence in a hosting country's government and an increasing trust in its institutions. Such a development would encourage donor countries to provide further assistance where necessary.

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