

# Submission of the United Nations Environment Programme (UNEP) Sustainable Building Initiative (SBCI) to the Ad-Hoc Working Group on Further Commitments for Annex I Countries under the Kyoto Protocol (AWG-KP)

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## Background

This submission is compiled in response to the invitation of the Chair of AWG-KP in its sixth session for further input on possible improvements to emissions trading and the project based mechanisms, as contained in annexes I and II to document FCCC/KP/AWG/2008/5 and Annexes I and II to document FCCC/KP/AWG/2008/INF.3. The input is submitted by the Sustainable Building and Construction Initiative (SBCI), a UNEP led partnership between the UN and public and private stakeholders in the building and construction sector which promotes sustainable building practices globally. This submission expresses views of UNEP-SBCI on improvements to emission trading and project based mechanisms to better support energy efficient building (EEB) projects, particularly in regard to improvement of project based mechanisms.

One of the UNEP-SBCI's key objectives is to ensure that Parties to the Kyoto Protocol have the information needed to promote energy efficiency improvements in buildings. To further this objective, SBCI conducted research and investigated the current CDM project development environment in the building sector<sup>1</sup>. The results of this research were published as a UNEP report in December 2008<sup>2</sup> (hereby referred to as UNEP-SBCI CDM report). The main findings and recommendations of the report are further summarized for this submission<sup>3</sup>. UNEP-SBCI is well placed to facilitate and support the implementation of a number of these recommendations.

## Introduction and context

**The building sector is responsible for more than one third of total energy use and, in most countries, is the largest greenhouse gas emissions source.** Energy is mainly consumed during the use stage of buildings, for heating, cooling, ventilation, lighting, appliances, etc. A smaller percentage, normally 10-20%, of the energy consumed is for materials manufacturing, construction and demolition. According to the fourth assessment report of the Intergovernmental Panel on Climate Change (IPCC)<sup>4</sup>, building-related GHG emissions was estimated at 8.6 billion metric tons in 2004, and could almost double by 2030 to reach 15.6 billion metric tons under the high-growth scenario.

IPCC's fourth assessment report further concluded that **the building sector not only has the largest potential for significantly reducing greenhouse gas emissions, but also that this potential is relatively independent of the cost per ton of CO<sub>2</sub> eqv. achieved. With proven and commercially available technologies, the energy consumption in both new and old buildings can be cut by an estimated 30-50 percent without significantly increasing investment costs.** Energy savings can be achieved through a range of measures including smart design, improved insulation, low-energy appliances, high efficiency ventilation and heating/cooling systems, and conservation behaviors of building users.

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<sup>1</sup> Although the study focused on CDM, the same factors limiting the effectiveness of CDM in the buildings sector most likely also apply to the Protocol's Joint Implementation projects.

<sup>2</sup> Cheng, C., Pouffary, S., Svenningsen, N., Callaway, M., The Kyoto Protocol, The Clean Development Mechanism and the Building and Construction Sector – A Report for the UNEP Sustainable Buildings and Construction Initiative, United Nations Environment Programme, Paris, France, 2008.

<sup>3</sup> Although the findings and recommendations were focused on building sector, many of these recommendations are relevant to other sectors that have common characteristics and subject to similar barriers and market inefficiencies of the building sector, such as end-use energy efficiency in SMEs in industrial and services sectors, and rural energy service provision/improvement projects. These are mostly Small Scale CDM (SSC) project activities.

<sup>4</sup> Barker, T., Bashmakov, I., Alharthi, A., Amann, M., Cifuentes, L., Drexhage, J., Duan, M., Edenhofer, O., Flannery, B., Grubb, M., Hoogwijk, M., Ibitoye, F.I., Jepma, C.J., Pizer, W.A., Yamaji, K., Mitigation from a cross-sectoral perspective. In Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. [Metz, B., Davidson, O.R., Bosch, P.R., Dave, R., Meyer, L.A., (eds.)], Cambridge, U.K. and New York, NY, U.S.A., Cambridge University Press, 2007.

However, this potential has not been captured in the CDM. **As of December 2008, only ten of the more than 4,000 projects in the CDM pipeline are related to energy efficiency in buildings.** In addition, within the ten projects, only one is currently generating Certified Emission Reduction credits (CERs). Thus CDM is apparently not having any impact on this sector, despite the obvious need and opportunities to reduce GHG emissions in buildings.

### **Underlying causes for low project uptake from the building sector**

The building and construction sector is subject to a number of generic barriers and market inefficiencies. As a result, the building sector is lacking response to the incentives provided by the CDM and caused the low uptake of EEB projects in this sector.

- Dispersed end-use and numerous but individually small mitigation opportunities: The large mitigation potential spreads over millions of individual buildings, each one presenting multiple and very diverse types of interventions. This property is also referred as a long-tail characteristic by some CDM scholars<sup>5</sup>. The opportunity is difficult to capture as a group since ownership, design, location etc. are dispersed.
- Fragmentation of the sector and split incentives among stakeholders: Different aspects of the buildings, such as architecture, engineering, building management, building function, occupant profiles etc. are often poorly coordinated. There is no natural incentive for, or convergence of interest in, managing energy use in buildings.
- Lack of information and awareness of impact of EEB among professionals, investors and end-users.
- Poor energy management skills and supporting tools, such as EE standards for EE buildings, in particular in developing countries.
- Emission reduction in buildings can often be achieved through a combination of technological modifications of the building and changed user behaviour, which is often difficult to capture as CDM eligible activity.
- A large share of new construction in developing countries seeks to provide adequate housing to disadvantaged groups. These groups often suffer energy poverty, which makes it difficult for such housing projects to both meet the needs of the users and the emission reduction criteria of CDM.
- Lack of financial tools and risk strategies for EE investments and high transaction costs for individual EEB projects.

### **Principles to improve project based mechanisms for EEB projects**

Project based mechanisms, including programmatic approach (PoA), and its positive project support features, such as transparency of project documents, quality assurance system, as well as its recognized green identity, has a strong potential to support and finance mitigation activities/projects with dispersed end-use nature. The building and construction sector does not respond well to economic/voluntary incentives alone. **Without policy intervention to mobilize the building professionals and stakeholders to adopt EEB, the building sector will not respond to the project based mechanisms effectively.** UNEP-SBCI therefore propose an improved project based mechanisms to support government policy measures.

Six principles are identified in the UNEP-SBCI CDM report to further improve project based mechanisms to attract EEB projects.

1. **Use performance based methodologies and baselines**, in buildings, Kwh/m<sup>2</sup> is a commonly used performance indicator<sup>6</sup>.

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<sup>5</sup> Some end-use efficiency CDM experts refer to projects with a large number of mitigation opportunities, small improvement in each project activity, dispersed ownership, widespread locations and diverse end-use patterns as “long tail” projects (Hinojosa, et al. , 2007, Figueres and Philips, 2007). In aggregate, the long-tail events tend to comprise the majority of events and can, through the aggregation of small savings, yield the majority of energy savings from the energy end-use sectors.

<sup>6</sup> In other dispersed end-use sectors, Kwh/output, Kwh/service or Kwh/unit of use may be appropriate performance indicators.

2. **Use sampling, statistical tools and other methodologies** to reduce costs and burdens for monitoring and evaluation of a large amount of small project activities.
3. **Develop common baselines** for different types of buildings to allow large volume duplication of EEB projects.
4. **Recognize the concept of avoided emissions** to support disadvantaged groups to meet energy needs.
5. Allow CDM crediting mechanism to **support implementation of national EEB standards** and allow CDM to partially finance policy projects.
6. **Build capacity in Designated National Authorities** to lead development crediting criteria and baselines.

### Specific inputs to Annex I of FCCC/KP/AWG/2008/5 and Annex I of FCCC/KP/AWG/2008/INF.3

Specific inputs of UNEP-SBCI to improve project based mechanism for EEB projects, based on the results and recommendations of the UNEP-SBCI CDM report, are summarized below. The inputs are described in relation to, and/or in addition to, the categorized specific views and elaboration by the Chair in Annex I to document FCCC/KP/AWG/2008/5 and Annex I to document FCCC/KP/AWG/2008/INF.3.

Related concepts in this input for baselines, crediting baselines (crediting targets), and national standards and their relations are illustrated in the Figure 1 below.

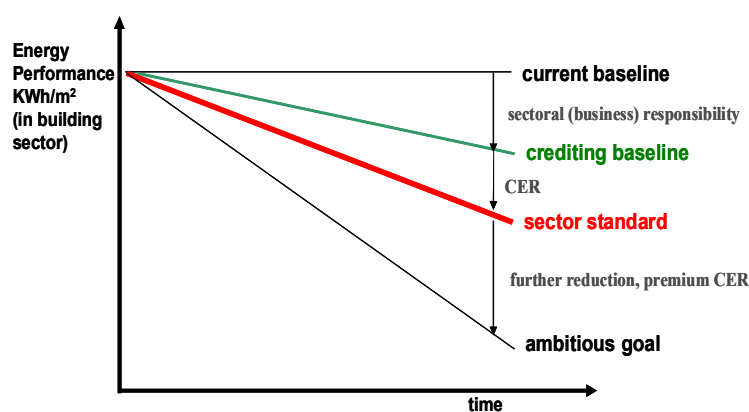


Figure 1. Sectoral crediting mechanism for buildings illustrating relations of common baselines, crediting baselines, and sectoral standards

### **I.E. Introduce sectoral clean development mechanism for emission reduction below a baseline defined at a sectoral level**

1. It is beneficial for the building sector to adopt a sectoral approach to facilitate emission reduction below a baseline defined at a sectoral level. However, it is UNEP-SBCI's view that a sectoral approach for CDM do not necessarily need to introduce a sectoral CDM that covers all emission sources within the defined sector, as long as activities in the defined sector could use pre-defined common sectoral baselines and crediting mechanisms and registered under the CDM. Emission reduction activities in the specified sector could be registered under the CDM either as a project or a PoA. Nevertheless, the inclusion of all emission sources in the sector could be achieved through imposing sectoral-wide mandatory energy efficiency standards and encourage regulated entities to register under the CDM. The flexibility of participating in the sectoral mechanism allows the CDM to maintain its voluntary participation modality. At the same time, CDM's support of government standards could help a wider and deeper adoption of EEB practices and partially support regulated entities to obtain funding for their emission reduction projects.

2. Common baselines for sectoral CDM approach in buildings would be very helpful for project developers and could catalyze a significant increase in the number of EEB projects and PoAs. The baselines could be established at the country, regional and provincial levels based on building types, primary energy used and climate zones. These common baselines could be established by authorized institutions, which are overseen by countries' DNA and supported by UNEP-SBCI.
3. Baselines shall be energy performance based for EEB projects (Kwh/m<sup>2</sup>). Performance-based baselines are more practical, less complicated to establish and more readily adopted by building and construction sector stakeholders.
4. Establishing baselines for low-income housing has important implications for sustainable development in poor communities. A commonly accepted consumption baseline(s) could be chosen for the low-income housing sector. The baselines shall recognize the concept of avoided emissions (or suppressed demand) and establish a hypothetical consumption level to support a "normal" life style as a reference point. This approach could avail additional financial support from CDM and meet the energy needs of the disadvantaged groups.

**I.F. Introduce sectoral crediting of emission reductions below a previously established no-lose target**

5. UNEP-SBCI supports the introduction of sectoral crediting emission reduction below previously established non-binding, no-lose targets (crediting baselines).
6. To facilitate implementation of sectoral standards, the sectoral standards are set below the non-binding, no-lose crediting targets (crediting baselines) at a specified sector (see Figure 1). This crediting mechanism allows emission reduction from standard-compliance projects get partially credited under the CDM.
7. The non-binding, no-lose targets (crediting baselines) are performance based, and established on the basis of nationally acceptable levels taking into account host countries' and businesses' responsibility for emission reduction. The criteria of determining the crediting baselines could be established by CMP.
8. The EEB standards are performance based and established on the basis of nationally and locally achievable levels taking into account technological and socio-economic reality of the non-Annex I Countries. The proposed sectoral crediting scheme would reach its optimal emission reduction results if the host countries were to implement mandatory energy efficiency standards and regulations.
9. The common baselines, crediting baselines and sectoral standards could be re-determined over time based on a country's economic and technical capacity, as well as changes in commitment levels.

**I.H. Ensure environmental integrity and assess additionality through the development of standardized, multi-project baselines**

10. UNEP-SBCI supports assessment of additionality through the development of standardized multi-project baselines. The crediting baselines described above could automatically become a clear and measurable baseline against which a project's additionality could be determined.

**I.M. Introduce multiplication factors to increase or decrease the certified emission reductions issued for specific project activity type**

11. Should regulated entities choose to go beyond standard compliance and meet a more ambitious goal, premium credits (potentially resulting in more value) could be issued. Premium credits could be awarded a higher value since they in most cases would require extra investments.