Realizing the sector’s potential for contributing to sustainable development

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Summary
To support cooperation in the sustainable building and construction sector, consensus-based definitions are needed with regard to what this sector consists of, who the principal stakeholders are and the main issues that need to be addressed. Defining terms helps identify the range of measures that could be adopted, with the overall aim of achieving sustainable development. If the various actors are to take actions that entail non-traditional forms of cooperation, they need to acknowledge that they are part of the same stakeholder community and belong to the same sector, however this sector may be defined. The publications Agenda 21 on Sustainable Construction and Agenda 21 on Sustainable Construction in Developing Countries, together with the EU CRISP project, can function as cornerstones of a conceptual framework and terminology covering every aspect of SBC.

Résumé
Pour soutenir la coopération en matière de développement durable de l’industrie de la construction, il faut définir de façon consensuelle la composition de cette industrie, quels sont les principaux acteurs et les problèmes à aborder. Le fait de définir les termes aide à déterminer les diverses mesures qui pourraient être adoptées dans le but général de parvenir au développement durable. Si les divers acteurs doivent prendre des mesures qui supposent des formes de coopération non traditionnelles, ils doivent reconnaître qu’ils appartiennent à la même communauté et au même secteur, quelle que soit la façon dont il est défini. Des publications comme Agenda 21 sur la construction durable et Agenda 21 sur la construction durable dans les pays en développement, ainsi que le projet CRISP de l’UE, pourraient servir de fondement à un cadre conceptuel et à une terminologie couvrant tous les aspects du développement durable de l’industrie de la construction.

Resumen
Para apoyar la cooperación en el sector de las edificaciones y la construcción sostenibles es necesario definir de manera consensual en qué consiste el sector, quiénes son los principales interesados directos y qué son las cuestiones fundamentales que hay que abordar. Definir los términos ayuda a identificar las distintas medidas que deben adoptarse con miras al objetivo general de lograr un desarrollo sostenible. Si los distintos actores van a tomar acciones que conlleven formas no tradicionales de cooperación, tienen que aceptar que son parte de una misma comunidad de interesados directos y que pertenecen a un mismo sector, como quiera que se defina este sector. Las publicaciones Programa 21 para la Construcción Sostenible y Programa 21 para la Construcción Sostenible en Países en Desarrollo junto con el proyecto CRISP de la Unión Europea pueden hacer las veces de piedra angular de un marco conceptual y de terminología que cubra todos los aspectos del sector de la construcción sostenible.

Probably no sector has more potential to contribute to the achievement of sustainable development than building and construction. But this sector is very broad and its organization is fragmented. The aplication of measures directed towards achieving sustainable building and construction (SBC) requires close cooperation among various professionals, decision makers and other stakeholders.

The many international organizations in the sector have important roles to play in accomplishing such non-traditional cooperation, in communicating how potentially important the sector is to sustainable development, and in attracting the kind of resources that thus far have more often been made available to politically more “sexy” sectors.

In support of this sector-wide cooperation, consensus-based definitions are needed regarding what the building and construction sector comprises, who the stakeholders are, and the main issues involved.

Sectoral contributions to sustainable development
It is important to first define the sector’s possible contributions to progress in sustainable development. They can be broken down into various types of measures, each involving different types of organizations and different stakeholders.

For instance, in the area of sustainable construction per se - that is, the sustainable production, maintenance and demolition of buildings and of infrastructure such as roads - related measures might include the use of:

- local materials that do not require long-distance, energy-consuming transport;
- technologies that generate less construction waste and require less energy;
- methods of demolition (or preferably deconstruction) that result in more reuse of materials.

Regarding sustainable buildings and built environment (buildings and infrastructure that help achieve, or are components of, sustainable development), examples of relevant measures are the design of healthful, less energy-consuming buildings and urban planning that discourages the use of private motorized transport.

In addition, as in any sector, the use of local rather than imported contractors contributes to local and national socio-economic development, and responsible behaviour by employers improves social sustainability. However, this article will focus on measures specific to the buildings and construction field.

Definitions
Research and technology development (RTD) programmes related to sustainable building and construction, especially in developed countries, tend to emphasize the areas of:

- energy, with RTD aiming to reduce energy consumption and promote use of renewable energy sources, such as wind and solar energy;
- waste, including waste prevention through design for reuse as well as recycling of construction materials and waste management;
- measurement and prevention of the negative environmental impacts of construction.

These are indeed important, but SBC can potentially mean much more. Proper definition of terms will help describe the full scope of potential measures geared towards achieving sustainable development.

To many people, the building and construction sector or industry - there is not even a single term acknowledged worldwide - essentially means construction firms, general contractors, and perhaps specialized subcontractors. A broader definition, as implicitly used by some, includes manufacturers of construction materials, components and equipment, and perhaps engineering and design firms.
But to be able to identify a maximum of potential measures to achieve SBC, along with the relevant international organizations and other stakeholders to be incorporated into the debate, it would be best to have a clear understanding of what we are talking about.

Thus, for the purposes of this article, the building and construction sector is defined as all the professionals, firms and organizations (and their representative associations) contributing to the development, maintenance, management and demolition/deconstruction of buildings and other construction making up the built environment.

Figure 1 shows the various components of this broad definition in the form of a matrix. It is composed of three levels of buildings/construction and five phases in the buildings/construction process, as traditionally organized. In each cell of this matrix different professionals are at work, different stakeholders are involved, and different decision-making processes are crucial. The matrix illustrates both the complexity and the wide scope of the building and construction sector, which must be addressed when defining the stakeholders and potential measures to achieve SBC.

Why is it important to have such a wide-ranging and complex definition, one that in fact differs from other authoritative definitions, e.g. those given in the ISO, CEN (the European Committee for Standardization) and ASTM international technical standards?

Many of the known, potentially important measures, if they are to be successfully applied, require cooperation by professionals, stakeholders and decision makers who are traditionally operating in different cells of the matrix and often do not feel that they are part of the same sector or industry. For example:

- An architect – an actor in the cell “Design and engineering” x “(Whole) buildings and the immediate built environment” – designs a housing project with a specific kind of north-facing facade, for reasons related to a desire to reduce energy use. But the city plans, drawn up by an urban planner – an actor in the cell “Programming and planning” x “(The wider) built environment” – does not allow for this. It will take close cooperation between these two professionals and the related decision makers, who work for agencies traditionally unrelated to the sector, to successfully address this dilemma.

- A facility manager – an actor in the cell “Maintenance and management” x “(Whole) buildings and the immediate built environment” – wants to introduce a method to control heating per room in a building, but construction of the building does not allow for this because of the technology chosen by the contractor – an actor in the cell “Construction” x “(Whole) buildings and the immediate built environment”.

- A building owner – an actor in the cell “Maintenance and management” x “(Whole) buildings and the immediate built environment” – wants to encourage those who work in the building to commute by public transport, but the responsible city planner – an actor in the cell “Programming and planning” x “(The wider) built environment” – turns down a request to adjust the zoning regulations to allow for a bus stop near the building.

Each of these everyday examples contains a measure that could help make building and construction more sustainable. This underlines the need for different actors to cooperate.

For the various actors to be successful in taking measures that may require non-traditional cooperation, they must realize that they are part of the same stakeholder community and that they all belong to the same sector, however wide-ranging and complex its definition.

This is not to say that programmes involving only a single cell in the matrix are in vain. They may motivate or enable people to apply simple measures (and there are many of those) that do not require non-traditional cooperation. Yet all the known “big” measures, from which substantial breakthrough may be expected, do require such cooperation. Thus “the sector” must really act like one, with sector-wide cooperation.

Stakeholders

The next step is to determine which of the many stakeholders have decisive roles in applying more complex and far-reaching measures to building and construction, and who should be primarily targeted by awareness-raising and capacity-building campaigns.

To make it somewhat easier to answer this question, let’s assume that properly motivated, educated and facilitated professionals are available in all situations to carry out proper planning, design, construction, management/maintenance and deconstruction. This is oversimplifying things; in many countries, especially developing ones, such professionals may not be available. The assumption also ignores the fact that there is often no consensus-based professional opinion on how appropriate certain tools and technologies are for sustainable building and construction: examples are the various methods of assessing the environmental impacts of buildings, and methods of defining and measuring sustainability performance indicators.

If we nevertheless assume that the required knowledge, tools and technologies are available, as are the professionals to apply them, which key decision makers will ensure that these professionals do a proper job? Who is actually in the driver’s seat?

The answer will vary according to market segment and country. The key decision makers on, say, subsidized housing in the Netherlands will differ from those dealing with commercial buildings in Japan or infrastructure projects in Chile. Generically speaking, however, the decisive decision makers when it comes to incorporating sustainability measures in building and construction projects are often:

- Local governments, including local politicians and agencies;
- Project developers, the individuals or firms that commission buildings and other projects on a commercial basis to be sold or handed over to owners (note, though, that in many countries, especially developing ones, commercial developers do not exist – at least not yet);
- Owners of buildings and other construction works in countries where the building and construction market allows them to influence major planning and design decisions, directly or indirectly. Examples are housing cooperatives, government building agencies (which in some countries are expected to set an example) and firms, which sometimes own a very large number of buildings;
- National and local regulatory agencies, given that the above decision makers usually have to work within the framework of national (and often also local) regulatory systems, including codes and
standards for building and construction, and perhaps even including references to energy performance ratings, environmental impact assessments and other rating and labeling systems.

Unfortunately, these four often decisive actors are usually poorly represented in international debates on sustainable building and construction, while most of the various sector professionals – urban planners, architects, engineers, contractors, suppliers, manufacturers – are generally represented by well organized international associations that do take active roles in such debates. Yet the latter often complain that their members are ready and able to contribute to sustainability in the sector, but are seldom asked to or allowed to by the decision makers. Meanwhile the RTD community keeps developing concepts, methods and tools and analyzing why they do not have the envisioned impact.

With some exceptions, these three groups (actual decision makers, building and construction professionals, and researchers) seldom show much willingness to cooperate towards a common goal of making building and construction sustainable. Their strategic agendas are not often aligned, and their international organizations are not equally represented in international debates. In fact, many of the international debates on sustainable building and construction, while aiming for international strategic or action-oriented agendas, often involve only research topics or, at best, just a few types of professionals.

Joint framework and terminology

On the few occasions when representatives of decision makers, professionals and researchers do have joint debates on SBC, they often seem to be speaking different languages, based upon differing understandings of what SBC entails, differing cultural and educational backgrounds, and differing roles and interests – along with differing definitions of “th” issues, priorities and possible solutions.

A conceptual framework is needed, one that covers all aspects of SBC and incorporates clear terminology that can be understood and used by all parties concerned.

Three existing publications or projects could be cornerstones of such a framework and terminology. This publication has been translated into Spanish, Portuguese, Czech and Catalan. A Russian version is in the works. The English and Czech versions can be downloaded from, respectively, www.cibworld.nl/pages/begin/AG21.html and www.cibworld.nl/pages/begin/CzechA21.html. For the other versions, contact the CIB Secretariat at secretariat@cibworld.nl.

Agenda 21 on Sustainable Construction

Agenda 21 on Sustainable Construction was strongly dominated by thinking about what could or should be accomplished in developed countries. Barriers and challenges regarding SBC in developing countries are substantially different because of social, economic and institutional characteristics – so much so that some of the suggested approaches may not be feasible for developing countries.

Consequently, a project was begun to produce a special agenda for developing countries. Agenda 21 on Sustainable Construction in Developing Countries was published in 2002 by the South African research agency CSIR Building and Construction Technology (known as Boutek) with funding by CIB, UNEP-DTIE-IETC, Boutek and the South African Construction Industry Development Board. It can be downloaded at www.csir.co.za/akani/2002/nov01.html.

This agenda is not so much a conceptual framework, but rather is more action-oriented than Agenda 21 on Sustainable Construction. It focuses on short, medium and long-term actions to develop technological, institutional and cultural enablers for SBC in developing countries.

The CRISP project

The European Thematic Network on Construction and City Related Sustainability Indicators (known as CRISP) is funded by the European Commission. Led by the Centre Scientifique et Technique du Bâtiment (CSTB) of France and VTT Building Technology of Finland, it also involves 22 other European organizations. It is working to develop an integrated system of performance indicators and related assessment methods for sustainability in the building and construction sector – as broadly defined.

More information on the project, its current status and expected outcome can be found at http://crisp.cstb.fr. The results, presented at a conference in June 2003, are expected to be published in October 2003.

It is hoped that use of this publication and the Agenda 21 books will improve understanding among international and national organizations representing the various decision makers, professionals and other stakeholders as regards application of SBC measures, and that it will help harmonize the agendas for action that are being developed.

Sustainable development and the building and construction sector

The main challenges facing the building and construction sector in achieving SBC may be summed up as follows:

- The sector pays lip service to the social and economic dimensions of SBC, but they are not well understood, let alone appropriately incorporated in decision making related to building and construction projects.
- There is no clear, consensus-based definition of the sector that includes all stakeholders and enables them to feel part of a stakeholder community, with joint responsibility.
- In many international debates local governments, project developers, owners and regulatory agencies are not well represented.
- A common conceptual framework and key terminology are lacking, which impedes efforts to reach a common basis of understanding of the issues to be jointly addressed.
- These issues should be addressed what is perhaps the biggest challenge in efforts to achieve SBC: lack of resources to address the decisive issues.

For example, among the multitude of events that took place as part of or in conjunction with the World Summit on Sustainable Development...
(W SSD) last year in Johannesburg, only one 

focused on SBC: the launching of the Global 

Alliance for Building Sustainability (GABS). 

Among the thousands of W SSD attendees, fewer 
than 100 demonstrated any interest in building 
and construction issues.

The situation in general is much the same — especially as regards politicians, but also on 
the part of the general public, which is directly affect-
ed. Few seem to realize, or have a real interest in, the 
enormous contributions that the building and 
construction sector could make towards sustain-
able development. We in the sector are all aware of 
the magnitude of its social and economic 
impacts, the scale of employment in the sector, the 
amount of waste it generates, the energy it con-
sumes, and the long lives of its products. Howev-
er, somehow we are not able to get the message 
across to the political figures who establish nation-
al and international RTD budgets in support of 
sustainable development.

The European Commission, for example, may 
be the single biggest funder of RTD worldwide, 
and its strategy — for example, in the Sixth Frame-
work Programme — explicitly presents contri-
butions to sustainable development as a key goal. Yet 
it prefers to focus its considerable resources on 
more high-tech, mediagenic sectors.

Clearly the building and construction sector 
has a major communication problem. Policy mak-
ers, politicians and other decision makers on 
resources for sustainable development do not 
seem to recognize the sector’s potential impor-
tance and prefer to fund other sectors. For the 
many international organizations that represent 
stakeholders in the building and construction sec-
tor, this may be the biggest challenge: to join 
forces, jointly develop a strong message about 
what the sector is capable of and how it wants to 
play a substantial role in achieving sustainable 
development, and convince those who allocate 
national and international resources that a dollar 
spent on RTD for sustainable development in 
building and construction will have a bigger 
impact than in any other sector.

Developments towards worldwide 
sector cooperation

Organization of the building and construction sector is very fragmented: all professionals have 
their own representative organizations, and almost 
al organizations focus on one specific role in 
the process (e.g. planning, design, construction, facili-
ties management) and/or on one level of activity 
(construction materials and components, whole 
buildings, the built environment). There is little 
integrated or holistic thinking. This situation is 
reflected in the scope and objectives of almost all 
international organizations in the sector. Most, if 
not all, state that contributing to SBC is among 
their prime strategic objectives, but each goes 
about achieving this in its own way, reflecting its 
own members’ interests and almost never in coop-
eration with other international organizations. 
The organizations that do incorporate other players’ roles and other levels often focus on one aspect 
of SBC, such as energy consumption or renewable 
energy for buildings, or waste from construction.

When looking at initiatives directed towards a 
more integrated, inclusive approach to SBC in, 
say, the last five years, at the international level five 
are of potentially major importance.

**CIB: International Council for Research and 
Innovation in Building and Construction**

As its name indicates, CIB has a strong focus on 
research and innovation. However, its members 
include representatives of all professions and other 
stakeholders in the sector, and its objective is to 
stimulate and actively facilitate worldwide 
exchange and cooperation. CIB’s worldwide 
membership and wide scope are reflected in its 
projects, covering all aspects of building and con-
struction. It has concentrated on the theme of 
SBC since 1995, having refocused many of its 
expert commissions and established new ones, 
undertaken international cooperative research and 
conferences, and issued publications such as the 
Agenda 21 books mentioned above. It has also 
launched strategic partnerships on SBC with 
international organizations such as the IEA, 
ISIAQ, the International Federation of Surveyors 
and UNEP DTIE’s International Environmental 
Technology Centre (IETC), which is the focal 
point for SBC within UNEP. For a summary of 
CIB activities especially related to SBC, see 
www.cibworld.nl/pages/begin/Pro2.html.

**iiSBE: International Initiative for Sustainable 
Built Environments**

Launched as an organization in 2000, iiSBE has 
primarily individual experts as members. Their 
joint objective is to facilitate and promote the 
adopter of policies, methods and tools to accel-
erate the movement towards a global sustainable 
built environment. A key activity is the manage-
ment of the Green Building Challenge process, 
whose intent is to develop the theory and practice 
of environmental performance systems for build-
ings. Other activities include the establishment of 
a dedicated RTD database and joint responsibil-
ity, with CIB, for a series of international Sustain-
able Building conferences. More information can 
be found at http://iisbe.org.

**GABS: Global Alliance for Building 
Sustainability**

GABS was launched in 2002 at W SSD as a vol-
untary alliance of individuals and organizations. 
Its objective is to raise awareness for sustainable 
development in four areas: land, property, con-
struction and development. Although at present 
it functions as a “virtual” organization only, it has 
been recognized by the United Nations as a “Type 
2 partnership.” For more information, see 
www.earth-summit.net.

**SB04/05 Conferences**

CIB, iiSBE, and (more recently) UNEP DTIE are 
responsible for a series of international confer-
ences that have developed into major events on 
the SBC scene worldwide. They bring together 
the widest possible range of experts to discuss 
several aspects of SBC. The next main Sustain-
able Building Conference is schedule for Tokyo in 
2005, with preparatory regional conferences in 
Eastern Europe, Southern Africa, Latin America 
and Asia in 2004. These events are expected to be 
a focal point for many national and international 
projects.

Those responsible for these organizations and 
initiatives are beginning to recognize the need to 
cooperate or at least align their activities as much as 
possible. At the same time, platforms are being 
established for the more focused or specialized 
international organizations that will contribute to 
SBC. So far, most activities are more or less voluntary 
and somewhat incidental, or not really commit-
ment based. But they could provide the founda-
tion for a further, possibly decisive step. Many in 
the field believe the time may be almost right to 
start addressing the possibility of establishing a 
worldwide SBC center in which international 
organizations overcome traditional differences, 
learn to speak the same language, define their com-
mon goal for SBC, and join forces to present the 
world with a united sector whose contribution to 
achieving sustainable development may be bigger 
than that of any other single sector.