CIB PRO-ACTIVE APPROACH PRIORITY THEME 1 - SUSTAINABLE CONSTRUCTION

News on CIB and Sustainable Construction

To help focus members' attention on Priority Theme 1 of the Pro-Active Approach we are listing each CIB activity in the area of Sustainable Construction as it is featured in this Issue of INFORMATION together with its corresponding page reference.

By so doing the intention is to evince members' interest and direct involvement in the collective CIB thrust.

Sustainable Construction has been chosen as a Priority Theme. Consequently it justifies Priority Action but Members need to have an accurate insight into what is going on.

- **CIB Publication 237 Agenda 21 for Sustainable Construction**
- **The Sixth Gyula Sebestyén CIB Young Researcher's Fellowship 2000**
- **TG22/RILEM TC 172 EDM - Environmental Design Methods in Materials and Structural Engineering**
  - The work programme of TG22 impacts on Sustainable Construction
- **New Task Group TG39 - Deconstruction**
  - For the visions of the Joint Coordinator
- **TG38 - Urban Sustainability**
  - Workshop and **Task Group Meeting** in Stellenbosch, South Africa on 9th and 10th September 1999
- **W100 - Environmental Assessment of Buildings**
  - **Meeting in Chattanooga, USA on 17th and 18th October 1999**
- **Conference on Shaping the Sustainable Millennium - Collaborative Approaches**
  - Co-sponsored by CIB, QUT and CSIRO, 5th - 7th July 2000

**Agenda 21 on Sustainable Construction**

Agenda 21 is the culmination of an in-depth and searching analysis initiated by CIB in 1995 into the optimal methods of securing international collaboration on research and innovation within the building and construction sector with the objective of attaining a sustainable development.

Sustainable Construction was selected as the focal theme of CIB activities in the period leading up to the CIB World Building Congress 1998 in Gävle, Sweden.

In fact as far back as the early 1980's groups were active in CIB whose scopes and terms of reference were characterised by a direct environmental significance and orientation.

If international collaboration is to be genuinely effective, it calls for consensus along the broadest possible spectrum and so CIB can take justifiable pride in having realised Agenda 21 in partnership with
four other international Organisations acknowledged as being of the highest scientific repute.

How does each of these Organisations see Agenda 21?

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**The Construction Engineering Research Foundation - CERF**

By uniting voices and leveraging resources from across the industry, CERF identifies needs, sets priorities, and organises collaborative projects. The Agenda 21 on Sustainable Construction provides a valuable benchmark and springboard for the future for the building and construction sector globally.

Harvey M. Bernstein  
President

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**The International Union of Testing and Research Laboratories for Materials and Structures - RILEM**

A life cycle view on material resources in building is an obvious need to reach the goal of sustainable development and an environmentally sound construction industry. The Agenda 21 on Sustainable Construction gives essential support to and direction for the work towards a sustainable building and construction sector.

Carmen Andrade  
Vice President

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**The International Energy Agency Implementing Agreement on Energy Conservation in Buildings and Community Systems - IEA ECBCS**

The well-substantiated need to reduce the impacts of the construction industry on the global environment makes it imperative for the industry to undertake substantial and rapid improvements in the way buildings and other structures are designed, built and operated. The contents of Agenda 21 provide a summary of the issues and outline a path forward, which can guide our policy-making and daily
operations towards this desirable and indeed most necessary end.

Richard Karney
Chairman
ECBCS Executive Committee

The International Society for Indoor Air Quality and Climate - ISIAQ

The ISIAQ mandate is to promote the design and construction of indoor environments that support people's health, welfare and productivity. ISIAQ intends to collaborate in Agenda 21 to the utmost of its professional and intellectual energy.

Marco Moroni
President

The statements from such heavyweight bodies are encouraging in that they radiate confidence that the three principal objectives for Agenda 21 will be met.

These are in short:

- to create a global framework and terminology that will add value to national, regional and sub-sectorial Agendas
- to create an Agenda for CIB activities and to facilitate coordinated activities with partner organisations
- to be a source document for defining R&D activities

Certainly Agenda 21 constitutes one of the most significant items of CIB's output in recent years and far-reaching implications will hopefully extend over many years to come. Its message is not a lowering of the curtain on the topic but rather a catalyst for future activities in the global building and construction sector.

All this serves to emphasise how fortunate CIB has been to have Luc Bourdeau from CSTB, France as Editor-in-Chief. He has integrated the various contributions from different experts into a masterly compilation as well as incorporating much of his own highly relevant and practical material. He is the first to acknowledge all the other contributors who are listed by name in the Report.

Luc Bourdeau has been the principal author and editor of Agenda 21. He performed a
Agenda 21. He performed a similar role for the recent highly successful CIB Publication 225 Sustainable Development and the Future of Construction. As Joint Coordinator of Working Commission W082 Future Studies in Construction he has been instrumental in making this one of the most active and relevant in the CIB network.

Luc is Head of the R&D Directorate - European Affairs at the Centre Scientifique et Technique du Bâtiment.

- A pdf copy of the full contents of Agenda 21 on Sustainable Construction can be downloaded [here](#).
- A pdf copy of the flyer, which includes the Executive Summary can be downloaded [here](#).

But what better way to acquaint readers with Agenda 21 on Sustainable Construction than by reproducing in extenso the Executive Summary featured in the Report?

Chris Pollington

**Executive Summary**

Sustainable Development was defined in the Brundtland Report 1987 as a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

The pursuit of sustainable development throws the built environment and the construction industry into sharp relief. This sector of society is of such vital innate importance that most other industrial areas of the world society simply fade in comparison. Proper housing and the necessary infrastructure for transport, communication, water supply and sanitation, energy, commercial and industrial activities to meet the needs of the growing world population pose the major challenge. The Habitat II Agenda lays stress on the fact that the construction industry is a major contributor to socio-economic development in every country.

The construction industry and the built environment must be counted as two of the key areas if we are to attain a sustainable development in our societies. As an example, in the European Union, buildings are responsible for more than 40% of the total energy consumption and the construction sector is estimated to generate approximately 40% of all man-made wastes. In addition, the construction sector is the Union's largest industrial sector, contributing with approximately 11% to the GNP and having more than 25 million people directly and indirectly engaged.

CIB, as the leading international organisation for research collaboration in building and construction, recognised early on the importance of environmental concerns and commitment in all its multifaceted activities.
In 1995 it was decided to take a definitive step and to make Sustainable Construction the focal point of the three year period leading up to the 1998 World Building Congress in Gävle, Sweden. The Congress Theme was defined as Construction and the Environment. Right from the very start the ambition was to make the Congress the important vehicle in the work process as the means to introduce and reinforce the Theme in all CIB activities, and also to be the stepping stone for the next goal - a global collaboration to attain a sustainable future in the construction sector. The need for an internationally agreed Agenda on Sustainable Construction to help guide the work in implementing the principles of sustainability in the construction sector had early matured and the 1998 CIB World Building Congress was assigned a key role in this process.

The Agenda 21 on Sustainable Construction is intended to be a global intermediary between those general Agendas in existence, i.e. the Brundtland Report and the Habitat Agenda, and the required national/regional Agendas for the built environment and the construction sector current or in the course of development. It should be a conceptual framework that defines the links between the global concept of sustainable development and the construction sector and enables other Agendas on a local or sub-sectorial level to be compared and co-ordinated and to define detailed measures appropriately responsive to the local context.

The three principal objectives for this Agenda 21 for Sustainable Construction are:

- to create a global framework and terminology that will add value to all national or regional, and sub-sectorial Agendas
- to create an Agenda for CIB activities in the field, and for co-ordinating CIB with its specialised partner organisations
- to provide a source document for defining R&D activities

**Concepts of Sustainable Construction**

Sustainable construction adopts different approaches and is accorded different priorities in different countries. It is hardly surprising that there are widely divergent views and interpretation as between countries, with marked differences between developed market economies, transition economies and developing countries. The mature economies are in the position of being able to devote greater attention to creating a more sustainable building stock by upgrading, by new developments or the invention and use of new technologies while, naturally and hopefully, the developing economies focus more on social equality and economic sustainability.

The understanding or interpretation of sustainability in building and construction has likewise undergone change over the years. In the beginning the emphasis was on how to deal with the issue of limited resources, especially energy, and on how to reduce the impacts on the natural environment. Also a decade ago, the emphasis was placed on the more technical issues in construction such as materials, building components, construction technologies and on energy related design concepts. Today, an
appreciation of the significance of the non-technical issues is growing and it is realised that these so-called 'soft' issues are at least as crucial for a sustainable development in construction. Economic and social sustainability must be accorded explicit treatment in any definition. More recently also the cultural issues and the cultural heritage implications of the built environment have come to be regarded as pre-eminent aspects in sustainable construction.

**Issues and Challenges of Sustainable Construction**

Sustainable construction is seen as a way for the building industry to respond towards achieving sustainable development on the various environmental, socio-economic and cultural facets. The main issues and challenges which are detailed in this Agenda are introduced below.

**Management and Organisation** is a key aspect of sustainable construction and the subject must engage not only technical issues, but social, legal, economic and political matters as well. It is therefore a very complex and difficult subject to address due to the breadth of their inter-relationships and to a major characteristic of the construction sector which is the strikingly large number of actors involved in the process of activities, from the development phase up to the deconstruction or demolition phase through the operation phase of each component of the built environment.

The barriers to progress are high and the challenges to be tackled deal with several different aspects such as the design process, the environmental quality of construction, the re-engineering of the building process, the development of new building concepts, the human resources, the decision making processes, the building owners' and clients' demand, education, public awareness, standards and regulations or research.

**Product and Building issues** are concerned with how to optimise the characteristics of buildings and products in order to improve the sustainability performance taking into account such background factors as climate, culture, building traditions and stage of industrial development. By increasing the number of parameters and exploiting suitable indicators, building performance environmental methods will lead to a better assessment of the final construction works. As far as the manufacturing of products is concerned, the important issues are to reduce the embodied amount of material and energy of the products, to lower emissions from products in use and to improve repairability and recyclability. On another side, Indoor Environment Quality should be enhanced to reach healthy and productive living conditions inside buildings.

**Resources consumption** does of course pose an important challenge for the construction sector. Energy saving measures, extensive retrofit programmes and transport needs constitute strong challenges linked to energy use. Reduction in the use of mineral resources and conservation of the life support function of the environment require use of renewable or recycled materials, pertinent selection of materials and prediction of service life. Water management in buildings should be developed. In several countries, management of land is affected by construction. Some related issues are the choice of site and land use,
The longevity of new buildings, and the use of land for production of building materials.

**The impacts of construction on sustainable urban development** are of paramount importance as far as continuing urbanisation reinforces the importance of creating a built environment that is sustainable for future generations. The built environment constitutes one of the main supports for economic development and social well being. The provision of infrastructure, buildings and utilities are major resources that are used by nations, communities and business. Major issues are linked to environment quality, life quality, dwelling quality and governance aspects, and urban growth and waste management are two main transversal aspects. Sustainability of settlements in developing countries raises additional specific questions.

Apart from waste, several other **environmental loads** of the construction industry are presented in the Agenda, linked to production, operation and decommissioning of buildings and construction works.

Finally, **social, cultural and economic issues** are briefly discussed. Although hitherto far less developed in the literature, they were nevertheless specifically stated in the Habitat II Agenda which stresses the fact that the construction industry is a major contributor to socio-economic development in every country. A sustainable construction can be seen as providing a contribution to poverty alleviation, creating a healthy and safe working environment, equitably distributing social costs and benefits of construction, facilitating employment creation, developing human resources, acquiring financial benefits and uplift for the community.

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**Resulting Challenges and Actions**
As previously stated, successful improvement strategies for sustainable construction will have to be more-or-less compatible with climate, culture, building traditions, stage of industrial development and nature of the building stock. However, this section on resulting challenges and actions gathers together a spectrum of initiatives that can be launched, while keeping in mind that the mix and relative emphasis on one or the other will depend on the local conditions and will have to be detailed in local Agendas.

Regulation, energy pricing, enabling and support mechanisms, incentives and demonstrations, measures to change market demand, research themes are some of the items which are introduced. Certain different detailed strategies are also discussed.

Specific challenges raised in the previous chapters have been formulated in such a way as to orientate them towards the various families of stakeholders in the construction sector, and some technical and R&D challenges are listed.

In conclusion, an Appendix catalogues on-going and planned CIB activities on Sustainable Construction.

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### Full and Associate Members are Invited to Apply for

**The Sixth Gyula Sebestyén CIB Young Researcher's Fellowship 2000**

**Research Projects must relate to one or more aspects of**
**SUSTAINABLE CONSTRUCTION**

CIB Members are free to decide which aspect(s).

**Objective**

Its objective is to enable a young researcher from a CIB Full or Associate Member Institute to spend a period at another CIB Member Institute of his or her choice for the purpose of research.

**Value**

The monetary value of the Fellowship is Ten Thousand Dutch Guilders and in addition, the cost of one (economy class) return ticket between the two Institutes involved will be refunded to the recipient.

It is in your interest to ensure that when formulating your application full account is taken of the Requirements and Selection Criteria below.

**Requirements**

- The candidate must be employed by a CIB Full or Associate Member Institute and must be engaged wholly or to a substantial part in research.
- The candidate must be approved by the Director of his or her Institute and the Host Institute (letters of endorsement are desired).
- The candidate must be under 35 years of age on 1st January 2000.
- The candidate must commence his or her research project in 2000 and must ensure that it is satisfactorily completed within a reasonable period thereafter.
- The candidate must provide appropriate publishable output in the form of a Report upon conclusion of the project.

**Selection Criteria**
Professional Background
The curriculum vitae of the candidate must be sent and this should include education, experience, significant accomplishments, selected list of publications and information on research currently being undertaken.

Research Proposal
The research project for which the Fellowship is sought should relate to one or more aspects of Sustainable Construction.

Specific reference should be made to the following:

- Project Title
- Project Objective
  (Describe the objective and duration of the project in one or two sentences.)
  Place the project within the broader context if possible and indicate how it may be of potential interest to the wider CIB membership.

Please send your application before **1st November 1999** to the CIB General Secretariat.

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