



Agenda 21 for Sustainable Construction in Developing Countries

First discussion document





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Executive Summary

1 BACKGROUND

The construction industry and its activities are responsible for a substantial amount of global resource use and waste emissions. It also has an important role to play in socio-economic development and quality of life. The need for an internationally agreed agenda for sustainable construction was therefore identified early on. Such an Agenda would help guide the industry in preparing for and implementing the principles of sustainability and support Agenda 21 and the Habitat Agenda. An *Agenda 21 on Sustainable Construction* was published in 1999 (CIB Publication 237). As it was realized that conditions in developing countries may require a different approach to that followed in developed countries, a separate *Agenda 21 for Sustainable Construction in Developing Countries* was commissioned by the International Council for Research and Innovation in Building and Construction (CIB).

The main objectives of this project are:

- To identify the key issues and challenges facing sustainable construction in the developing world, as well as the major barriers to practising sustainable construction.
- To identify a research agenda that focuses on possible responses to the challenges and needs of the developing world.
- To guide international investment in research and development in the developing countries.
- To stimulate debate and encourage the exchange of learning on sustainable construction within the developing world, thus drawing the developing world into the international debate as an equal partner.

2 THE PROCESS BEING FOLLOWED

The first step was to commission nine expert position papers, three each from Africa, Latin America and Asia. The authors were asked to comment on the following:

- The different regional understandings of sustainable construction.
- The issues and challenges facing the regions.
- The impact of the construction industry on the economy, the environment and society in the regions.
- The barriers to sustainable construction.
- The strengths and opportunities presented by the cultures and traditional practices of the regions.
- Suggested actions for the research community, governments and the construction industry.

From these position papers this First Discussion Document have been prepared. The contents of this document represent a synthesis of the nine regional position papers. Its purpose is to set the scene for discussions regarding the scope and contents of the final Agenda. To this end certain common issues, barriers, challenges and opportunities have been identified that the Agenda will have to address. The document also begins to suggest necessary actions by the various role players in the creation of the built environment.

Over the next few months, this document will be used as basis for a broader consultation process. It is intended that this process will use both workshops and the Internet to enable discussion and identify the key priorities for action regarding the creation of sustainable built environments in developing countries, as well as concrete suggestions for the way forward. From the external input received during the consultation process specific issues will be identified and key areas for action identified and prioritised in an expert workshop. For each area of action, specific actions for different stakeholders will be identified. This will form the basis of the Agenda.

A draft Agenda will be prepared and submitted for final comment to the regional expert working group, to CIB members, as well as to other interested parties. The final Agenda will then be readied for publication and launched at the World Summit on Sustainable Development in Johannesburg, September 2002, as well as the Sustainable Building 2002 conference in Oslo, September 2002.

3 THE DEVELOPING WORLD CONTEXT

The developing countries have very different climatic, cultural and economic conditions, yet they have many common characteristics. The following are some of the main characteristics

- The main sources of foreign income for most developing countries remain agricultural products and raw materials, and with the declining value of these commodities, these countries find it increasingly difficult to access the financing necessary to move towards industrialization and a knowledge economy.
- There are also high levels of inequity within developing countries, many countries having developed a dual economy with a wealthy elite that has developed consumption patterns equal to those in developed countries, and the rest of the population living in abject poverty.
- The developing world is further characterised by a lack of infrastructure and basic services and the capacity and resources to improve and maintain existing infrastructure, let alone cope with the demands of rapid urbanisation.
- While the developing world consumes far less resources, and releases far less greenhouse gasses than the developed world, the environmental degradation experienced has a more direct and visible impact and present a more immediate threat to the physical survival of the poor.
- Developing countries still have strong traditions of cooperative society and have developed sophisticated methods of conflict resolution and reaching common agreement.
- There is strong grassroots ability for innovation in the use of building materials, settlement development and institutional structuring that can be regarded as one of the most important resources in developing countries.

4 SCOPE OF THE AGENDA

The *Agenda 21 for Sustainable Construction in Developing Countries* restricts itself to issues which can be addressed through sustainability interventions in the built environment, assuming that issues such as political stability, redistribution of wealth, co-operation between developing countries on an economic and political basis, natural disaster management and the management of pandemics like AIDS and malaria will be appropriately addressed by other actors.

Construction is seen as the broad process/ mechanism for the realisation of human settlements. This includes the extraction and beneficiation of raw materials, the manufacturing of construction materials and components, the construction project cycle from feasibility to deconstruction, and the management and operation of the built environment.

5 PERCEPTIONS OF SUSTAINABLE DEVELOPMENT AND SUSTAINABLE CONSTRUCTION

There is general agreement that sustainable development should be seen as an integrative and holistic concept, striving for harmony and balance between the three spheres seen as integral to development: the biophysical environment, society and culture, and the economy. As much of our development takes place within human settlements, the processes of creating and operating these settlements have a major role to play in sustainable development. Sustainable construction is therefore one of the integral processes of sustainable development and is seen as a holistic process aiming to restore and maintain harmony between the natural and the built environment, and create settlements that affirm human dignity and encourage economic equity. In this document sustainable construction is also used to describe those aspects of urban sustainability that relates to the creation and use of the built environment.

6 IMPACT OF THE CONSTRUCTION INDUSTRY

6.1 Environmental impact

The construction industry is often referred to as the 40 per cent industry as it is responsible for roughly 40 per cent of all resource consumption and 40 per cent of all waste production (including greenhouse gas emissions). Construction activities, whether through the manufacturing of materials or through the operational activities of

actual construction, also lead to a number of other environmental problems. These include loss of arable land, release of toxins into the biosphere, deforestation, and noise and dust pollution.

6.2 Social impact

Given that the products of the industry are used to underpin and facilitate all facets of socio-economic relations, it is possible to enhance social sustainability through the construction process. This is particularly the case with the labour intensive nature of construction activities and the opportunities it presents for poverty alleviation. Social sustainability also requires that construction activities and the design of settlements allow for cultural continuity, social inclusion, and other quality of life issues. Negative social impacts include disruption caused by limited employment periods for contract workers, as well as the impact of types of construction projects like large tourism complexes and big dams.

6.3 Economic impact

The construction industry also has the potential to enhance economic sustainability through its structure, conduct and performance. The key contribution of the construction industry to economic sustainability is manifested through:

- Sustained employment opportunities through formal construction.
- Sustained employment opportunities through material production and distribution.
- Sustained employment through related services like transport, financial, marketing and rental/sale of property.
- Sustained employment through operation and maintenance during the economic life span of the buildings.
- Sustained investment and capital formation opportunities for the economy.
- An economically efficient construction industry also enhances environmental sustainability by ensuring least cost methods of construction and optimal allocation of resources and discouraging wastes.

7 KEY ISSUES IDENTIFIED IN THE FIRST DISCUSSION DOCUMENT

Several issues were identified, with one underlying theme informing them all – the need for a new model of development. A summary of the issues identified is available in Table 1 below.

7.1 Needing a new model of development

The developing nations are today following the developed nations' policy of achieving economic growth through macro-industrial production, which revolves around the concept of large-scale production and high-consumption patterns. The consequent environmental impact is often overlooked. The question asked is whether the developing countries should continue pursuing this development model.

The contributing authors of the Discussion Document make a strong point for the need of a new development paradigm based on moderate demands on the earth's resources and their more equitable redistribution. This would mean moving to a simpler lifestyle, evolving development strategies and processes that express local conditions, aspirations and control over resources; according women and other marginalized peoples their rightful place in society; and considering religious and spiritual ethics and values when formulating the new paradigm. It is necessary to reflect on the cultural alienation and social de-rooting caused by industrialisation and urbanisation. It distances people from their own religious beliefs, spiritual values, cultural heritage, social norms, community behaviour and codes of personal conduct – in other words that which enables people to maintain a harmonious relationship with nature and society. Reinventing the relationship between people, and people and their environment and rediscovering the values that defined it, is crucial.

| Table 1: KEY ISSUES IDENTIFIED | |
|---|---|
| Urbanization and rural development | Development of synergistic urban-rural linkages and the impact of infrastructure investment strategies on urban sprawl and rural depopulation. |
| | Rapid urban growth exceeding institutional capacity and resources. |
| | Alternative land valuation systems, equitable land distribution and sustainable land use practices. |
| | Formal sector adoption of construction practices supportive of sustainable development. |
| | Alternative city development patterns based on developing country model of village as basic building blocks of larger settlements. |
| Sustainable housing | National and international housing policies that ensure adequate, affordable and sustainable housing. |
| | Quality and environmental impact of formal sector affordable housing provision. |
| | Focusing on the strengths of informal settlements. |
| | Lack of financial, professional and technical support for rural housing and traditional technologies. |
| Innovation in building materials and methods | Finding renewable alternatives to energy and resource intensive conventional construction materials. |
| | Reducing overall resource consumption through built environment activities. |
| | Stimulating local economic and SMME development through new material and technological development that make use of traditional skills and knowledge, as well as modern technology and zero emissions production processes. |
| Modernizing the traditional: Cultural Sustainability | Strengthening the developing country culture of community solidarity, mutual aid and cooperative decision-making. |
| | Improving, modernizing and re-introducing traditional construction technologies, building designs and settlement patterns. |
| | Strengthening traditional spiritual value systems that encourage harmony with and respect for nature and society. |
| | Using cultural tourism as an aid for the preservation of traditional architecture and cultural practices. |
| Gender equity | Legitimising the role of women as owners, users and creators of the built environment. |
| | Improve conditions for blue-collar female construction workers. |
| Financing and procurement | Developing financing mechanisms to enable and encourage use of sustainable technologies. |
| | Levelling the playing fields for local contractors through procurement systems that encourage local economic development. |
| | Encouragement of sustainable construction through government procurement |
| | Encouragement of alternative financing mechanisms for low-cost housing. |
| Governance and management | Development of policy instruments for sustainable construction, as well as regulatory systems and measures that is responsive to local conditions. |
| | Lack of institutional capacity to deal with implementation, monitoring and evaluation for sustainable construction. |
| | Improving the skills levels and capacity of local construction industry role players. |
| | Absence of necessary government and private institutions to facilitate the process. |
| Education | Integration of sustainability awareness into mainstream education. |
| | Graduate and continued professional education to improve sustainability awareness and skills. |
| | Mechanisms for the transference of knowledge from research institutions to the market, government and professionals. |
| | Setting up of regional centres of excellence to promote training, awareness raising and exchange of knowledge between developing countries. |

8 BARRIERS, CHALLENGES AND OPPORTUNITIES

Lack of capacity in both the construction sector and in government, an uncertain economic environment, lack of accurate data on which to base decisions, poverty and the subsequent low urban investment, the lack of interest by stakeholders in the issue of sustainability, and technological inertia and dependency due to entrenched colonial codes and standards were identified as the main barriers to the realisation of sustainable construction.

Sustainability as a concept has only recently been introduced to developing countries and is not yet a priority. The major challenge for sustainable construction would be to get sustainability on the agendas of the industry, educational institutions, financial institutions, national governments, local authorities, and the public/consumer. Once this has been achieved, the challenges of reducing resources use, mobilising financial and human resources, improving environmental health and safety and developing new procurement approaches can be tackled.

9 SUGGESTED ACTIONS

Throughout the document sustainable construction has been identified as the joint responsibility of various stakeholders who need to join efforts. These stakeholders can be identified as the research community, national governments, local authorities, the construction industry in its broadest sense, non-governmental organisations, and the public. A list of suggested actions for each of these stakeholders have emerged from the scoping exercise, but does not as yet present a concrete Plan of Action with definite tasks and targets. It is hoped that such a Plan of Action can be developed through the consultation phase of the project.

10 CONCLUSIONS

While the process of formulating an *Agenda 21 for Sustainable Construction in Developing Countries* has not been completed, some key issues and responses have emerged that are common to developing countries.

As a percentage of total environmental impact, the impact of the construction industry is probably more important in developing countries than it is in developed countries. However, biophysical considerations in the built environment have not been clearly articulated beyond the impact on environmental health and the industry does not pay adequate attention to its broader environmental impact. Lack of appropriate legislation/incentives and capacity for implementation has led to a construction industry with very little regard for environmental considerations. There is also no clear understanding yet of the tremendous innovation in building materials, service systems and construction processes that will be required – that to save the planet we will have to completely reinvent our built environments. This is one of the key issues that needs to be addressed by both developed and developing countries.

Further, despite the sizeable environmental impact experienced, it is clear that the socio-economic components of sustainable construction are viewed to be the most challenging. Provision of affordable housing and related services has been clearly articulated in most government development strategies and policy, as has job creation, entrepreneurship, capacity building and gender equality, even if these are not always implemented. There is no doubt that most of the resources available to different stakeholders will continue to be directed to this challenge.

In a way, the required shift to a new development model would be easiest for the developing countries. Not only do they still have a living memory of life in another paradigm with other values, they are, by nature of the survival challenges experienced, used to innovation, adaptation and doing more with less. It may be that the developing countries are holding one part of the key to sustainability. However, we have to remember that both developed and developing countries hold knowledge and values that can contribute to a new vision for development, as well as the practical know-how needed to make it work. Establishing this dialogue on an equal footing is one of the first actions that have to be taken. In that light, it is intended that the Agenda not just concern developing countries, but also hold up some alternatives for the developed countries in their quest for sustainability.