Agenda 21 for Sustainable Construction in Developing Countries

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1. INTRODUCTION

Since the 1992 Earth Summit in Rio, when Agenda 21 was formulated as an international blueprint for sustainable development, all sectors of society have been in the process of interpreting and pursuing sustainability and sustainable development within their specific context. The ability to meet most of our basic human needs relate in one way or another to the creation and performance of human settlements. To address the role of human settlements in sustainable development, a second international action plan, the Habitat Agenda, was prepared. As the construction industry has a major role to play in terms of the sustainable development of human settlements, the need for an internationally agreed Agenda on Sustainable Construction was highlighted early on and the Interational Council fro Research and Innovation in Building and Construction(CIB) published its *Agenda 21 on Sustainable Construction* (CIB Report Publication 237) in 1999 after an extensive collaborative research process.

The CIB Agenda 21 was intended as a global intermediary between the international Agendas, and national/regional Agendas for the built environment and the construction sector. Its main objectives were to create a global framework and terminology that will add value to all national or regional and sub-sectoral Agendas and to provide a source document for defining R&D activities related to sustainable construction. The Agenda document provided a detailed overview of the concepts, issues and challenges of sustainable development and sustainable construction, and posed certain challenges to the construction industry. As the majority of the contributors were from the developed countries, the CIB Agenda 21 suffers from an understandable bias towards the issues, challenges and solutions of the developed world, and this is emphasised in the report.

However, creating a sustainable built environment in the developing world requires a different approach to that taken by the developed world and this is not often clearly understood and discussed. Not only are the problems and their scale, the development priorities, the capacity of the local industry and governments, as well as the skills levels often radically different, there are also certain cultural and worldview differences between the developed and developing world countries that impact on the understanding and implementation of sustainable development and construction.

Therefore, a special Agenda 21 for Sustainable Construction in Developing Countries was commissioned as part of the Action Plan for the implementation of the CIB *Agenda 21 on Sustainable Construction* and to further the CIB's pro-active approach on sustainable construction. Although the process is driven by the CIB, it is not a CIB exclusive project but a

participative process involving many other networks on sustainable human settlement development and developing countries, and is supported by UNEP-IETC.

The main objectives of this project were:

- 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

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 a First Discussion Document have been prepared. This document is available for comment on: http://www.cibworld.nl:600/pages/begin/A21SCDC.html [1]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.

The First Discussion Document has been used as basis for a broader consultation process. Using both workshops and the Internet to enable discussion, the consultation process identified the key priorities for action regarding the creation of sustainable built environments in developing countries, as well as concrete suggestions for the way forward. For each issue, key areas for action have been identified, with specific actions for different stakeholders. From this, the final Agenda was prepared and launched at the World Summit on Sustainable Development in Johannesburg, 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

[1] A full description of the project and participating authors can be found at http://www.sustainablesettlement.co.za

- 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 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 of 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 living in these countries.
- 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. KEY ISSUES IDENTIFIED

4.1 Urbanisation and rural development

There are several interlinked issues under this heading. The first is that not enough attention is being paid to the linkages between urban development and investment strategies, and the impact this has on rural areas, as well as the possible synergies that can be developed through, for instance, transportation links and tourism. The second is that we need to reassess our ways of assigning value and ownership to land to enable densification of cities and reflect the true value of agricultural land. The third issue concerns the practicalities of making sure that new buildings and other construction projects in the formal sector creates sustainable built environments, and that existing buildings and other urban elements are used in ways that contribute to sustainability. There is an overall request that we need to rethink city patterns to support the new model of development and suggestions are made that models for new patterns can be found in the traditions of the developing world and its use of villages as the basic building blocks of human settlement.

4.2 Sustainability in housing

The integrated concept of housing as part of the urban fabric is not often contemplated by the construction industry or governments, yet it is one of the most pressing problems of the developing world. The housing problem concerns both formal and informal housing provision, as well as the policies that regulate housing provision. The informal sector is the biggest producer of housing stock in most developing countries and it is imperative that ways be found of harnessing the sustainability benefits offered by this sector.

It is rarely recognised that the shack, and informal settlements, represents a level of sustainable construction that many formal buildings and housing development projects will never be able to achieve. And while it does present some of the problems of inadequate shelter such as overcrowding, bad indoor air quality, inadequate services and insecure land

tenure; the formal low cost housing developments do not necessarily improve on these problems.

Several problems around rural housing were also identified. These centre on the effects of Western-style development models and attitudes to traditional materials and construction technologies, as well as the unavailability of financial and professional support for rural housing.

Housing policies that focus on quantity, instead of quality, and that ignore the most basic sustainability guidelines, as well as the fact that many developing countries have no housing policy to speak of, are further issues that need to be addressed.

4.3 Education

Ignorance and a lack of information on sustainable construction issues and solutions is a major obstacle that needs to be overcome. To bridge this gap will require interventions at all three levels of education, continued education programmes for professionals and technicians, education and awareness raising programmes for government officials and politicians, and a concerted public education programme. It is also necessary to create better mechanisms to allow transference of knowledge from research institutions to the market.

4.4 Innovation in building materials and methods

Sustainable construction can make a huge difference to global environmental sustainability, particularly through a drastic reduction in the use of natural resource consumption and energy intensive materials like cement, steel, aggregates and aluminium. Availability of conventional construction materials will fall considerably short of their demand despite improved productivity, and it is necessary to develop alternatives for them. One area that is receiving much interest is the use of agricultural waste products and other biological materials as building products. The other is innovative re-use and recycling. It is also necessary to support local economic development studies on how to marry traditional materials and construction methods with modern processes and technology in micro-production facilities. Above all the development of new materials and technologies need to take into account that the majority of the population is poor with very limited investment capacity and that technologies and materials that represent increased costs will not easily be adopted.

4.5 Modernising the traditional

Traditional communities have practical experience of the fact that humans are dependent on the earth's life support system, and have developed construction practices that make use of the natural materials from their immediate environment, re-using what they can and leaving demolition waste to biodegrade. Whether these practices are still viable in the current urban context is uncertain, but it is necessary to learn the lessons offered by these technologies and adapt them to modern times. However, these traditions not only provide us with examples of more sustainable construction patterns, but also with examples of processes for social sustainability and cosmological models that encourage more sustainable settlement patterns that can be used to inform modern solutions. It is suggested that the built environments created for cultural tourism are providing good examples of how the traditional can be modernised.

4.6 Gender equity

In many of the developing countries, women are still considered second-class citizens. It is important that the role of women as legitimate owners, users and producers of the built

environment is recognised. Among informal sector workers, women doing construction work are some of the worst victims of discrimination and special efforts need to be made to improve their skills levels and earning capacity, as well as to make the construction site more female-friendly.

4.7 Financing and procurement

There is a need to develop financing and procurement systems and regulations that will provide a level playing field for small, local contractors in tendering for government projects; that enable and encourage ecologically responsible building practices; and that assist poor home builders and those in the informal sector to access financing for housing and house improvements.

4.8 Governance and management

It is necessary to radically improve the capacity of government at all levels to play an active role in sustainable construction. This would mean improving the understanding of strategic decision-makers, training local government officials and finding financial resources to support them; and developing government procurement policies and legislation that encourage sustainable construction. The capacity of the construction industry itself to deal with sustainable construction also needs to be improved.

4.9 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.

We are beginning to realise the price we have to pay for the kind of development the world has pursued for the past few centuries. The environment is rapidly deteriorating, social structures have been destroyed and the gap between rich and poor is bigger than ever before. In response, the developing countries are beginning to ask if Western-style development is the best route to take and if catching up with the West really represent development. One thought that came out clearly is that economic growth by itself is not development, nor are higher standards of living as measured by the ability to consume. What is needed is 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 marginalised members of society their rightful place, 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.

5. 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 and ability to pay for services; 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 in developing countries.

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 resource use, mobilising financial and human resources, improving environmental health and safety and developing new procurement approaches can be tackled.

6.CONCLUSIONS

While the process of formulating the *Agenda 21 for Sustainable Construction in Developing Countries* has not been completed at the time of writing this paper, 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 need 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.

7. REFERENCES

Du Plessis, C. (ed.) 2001. *Agenda 21 for Sustainable Construction in Developing Countries – First Discussion Document*. CSIR, Pretoria and CIB, Rotterdam.