



CIB NEWS ARTICLE

International Council for Research and Innovation
in Building and Construction

Providing a global network for international exchange and cooperation in research and innovation in building and construction, in support of an improved building process and of improved performance of the built environment.

September 2007

From the CIB Management

CIB World Building Congress 2007, Cape Town, South Africa, 14-17 May 2007

Conclusions and Recommendations

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On behalf of the delegates of CIB2007, May 2007

Introduction

The International Council for Research and Innovation in Building and Construction (CIB) held its Triennial World Building Congress 2007 in Cape Town, South Africa, from 14 to 17 May. The Congress was attended by 300 delegates from 35 countries. This document presents the "Conclusions and Recommendations" of the Congress. They are followed by an appendix which outlines the subjects discussed in the papers presented at the Congress.

A short version of the contents of this document was presented at the closing session of the Congress which was attended by Honourable Minister Thoko Didiza, Minister of Public Works of South Africa, and Honourable Minister Mosibudi Mangena, Minister of Science and Technology.

Conclusions

We, the delegates of the CIB World Building Congress 2007, agree that the theme of "Construction for Development" which was adopted for the Congress is timely and appropriate, as it recognizes the importance of construction in the development of nations at all levels of socio-economic advancement. For example, we note that construction provides the economic infrastructure which is required to attract foreign direct investment, and enhance national competitiveness. It also offers the possibility to distribute wealth in the societies through work opportunities, including labour-intensive methods and commercial possibilities for small and medium-sized business enterprises.

We reiterate our understanding that the built environment sector, of which the construction industry

forms part, exists to serve society. In particular, we are aware that the construction industry plays a central role in the process of development. We recognize that we have a wide range of stakeholders who can benefit from, or may be adversely affected by, our activities, but who often have different value perceptions and expectations. This increases the complexity of the task facing us as researchers. We recognize that people should be the frame of reference of our work, and that an aim of our endeavours as researchers should be to enhance the quality of life of the people.

We note that, in many countries, the performance of the built environment sector, and in particular, the construction industry, has not met the expectations of its stakeholders. The industry also falls short in several respects when compared with those of other sectors of the economy. For example, accidents, injuries and fatalities in construction injuries are higher than those in other industries.

We recognize that the built environment sector can, and should, make significant contributions to the effort to address the challenges facing the world, including:

- poverty reduction and provision of economic opportunities for all;
- access to education, health and social mobility for all in the society;
- rapid increases in urban populations in most countries;
- climate change and related issues of sustainable development; and
- mass diseases such





as HIV/AIDS and malaria.

We recognize the global challenges which have an impact on the sector, which were among the key sub-themes at the Congress:

- enhancing the value of the outputs and services of the built environment sector to clients, users and society;
- providing value to the employees of the sector;
- globalization and changes in the business environment of enterprises, leading to intense competition among them; and
- rapid changes in technology, making available a range of effective tools and techniques.

We stress that research and innovation can underpin the ability of the built environment sector to address these global challenges. We note the following:

- we face the danger of further fragmentation in our research as each of us focuses on specific topics in a narrow area. We consider an integrated approach to be the way forward. This would not only be multi-disciplinary, but would also consider people, the built facilities and the activities which take place within these facilities;
- we must ensure that we undertake work which will move the frontiers of our areas of knowledge forward if we are to engender confidence in industry and society with regard to the quality of our work;
- we should develop mechanisms to ensure that our work is relevant to the industry and society, seeking to develop theory by using research methods that are steeped in what actually happens in practice;
- we should extend our coverage of issues in our industry to include success stories and positive aspects, on projects, in companies and among individuals, and showcase the results of these works;
- we should explore lessons which the construction process and the industry can teach other sectors; and
- we should develop an enabling environment at the local level which will enable society to be prepared for, and aware of, disaster and hazardous situations, and their management.

We note that opportunities for learning are vital to foster increased professionalism, creativity and the emulation of high performers. We suggest that this should first be realized before we seek to develop lessons from comparators from high-technology and high-profit industries.

We note that there is great benefit in the sharing of information and research findings. However, we observe that transfer of solutions between countries should be tempered with caution. The relationship between researchers and industry (for example, through the establishment of alliances or interest

groups) must be strengthened. We should make efforts to collect and process accurate information, and make it available for use by the industry and other researchers. This would facilitate inter-firm and international comparisons. We also recognize that there is mutual benefit from, and great scope for, technology and knowledge transfer in the collaboration between enterprises, especially local and international firms in developing countries.

We urge researchers to develop platforms and frameworks which will enable industry practitioners and government to take advantage of the contemporary information and communication technology (ICT) and web-based tools for relevant aspects of their work. We note, in particular, the potential of these tools to facilitate multi-disciplinary and inter-firm collaboration across geographical boundaries.

We note that there is scope for further research in several areas. At the Congress, we highlighted, in particular, the following topics:

- sustainable development in its whole range of ramifications, in particular, climate change, energy management and life-cycle assessment;
- the design process, especially, cross-cultural studies on integrated design and its management;
- poverty alleviation and other societal issues relating to construction;
- development of small and medium-sized enterprises;
- skills and human resource development, including the development of leadership social contracting, and workers' safety and health;
- integration among quality, environmental, health and safety issues and their management on construction projects;
- the informal sector; studying its features and capabilities, and the potential for integrating it with the formal sector; and
- knowledge management.

We commend the CIB for the work it has done so far. It has the potential to realize far more. It needs to develop mechanisms and initiatives which will help it to address the current and future challenges which we have highlighted in this document. We support the CIB's practice of adopting pro-active themes, and commend it for the activities it has launched under its various themes.

We recognize that the government is a major investor, regulator, manager and facilitator of the built environment sector. We note that the sector requires support



from the government and society. For example, judicial and legislative support for initiatives aimed at improving the performance of the sector is essential. We express our appreciation of the leadership and support provided by some governments such as that of South Africa, in formulating and implementing industry development programmes, as exemplified in the initiatives and operations of the Construction Industry Development Board. We also note that several governments provide policy guidance and funding for education, training, research and innovation. We also appreciate the genuine partnership for progress which governments have formed with the built environment sectors in many countries. We would request government, where appropriate, to consider reviewing its regulations and procedures to limit time delays and cost on construction projects.

Recommendations

Our recommendations are addressed to: (i) ourselves as a community of researchers; (ii) our umbrella organization, the CIB; (iii) the practitioners in the built environment sector; and (iv) the governments of our various countries.

i) Researchers

As a community of researchers, we recognize that we should:

- develop greater understanding of the relationship between construction and development. For example, we should establish the most effective ways in which the built environment sector can contribute to poverty reduction and the realization of other societal objectives;
- adopt a broader perspective to our research, and adopt a multi-disciplinary approach, embracing also, social development;
- move forward our work on sustainable development as it relates the activities of the built environment sector, to propose practical solutions to the issues of energy management, resource conservation and minimization of all forms of pollution; and
- establish a common platform of meanings and implications of the same term or expression, a lingua franca, in order to foster dialogue among researchers without misunderstanding
- engage industry, and endeavour to make our work relevant to the needs of industry.

ii) CIB

We urge the CIB to work towards making greater impact on the challenges highlighted in this document by:

- providing global focus on each of the challenges;

- collaborating with other stakeholders to maximize impact, informing both policy and practice;
- establishing a mechanism to facilitate greater speed of innovation and technology and knowledge transfer for the benefit of end users; and
- seeking to increase the level of participation of private-sector enterprises and government departments in its activities, to provide effective dialogue, problem identification and technology and knowledge transfer.

We encourage the CIB to lead the efforts in various countries towards the implementation of the many possible initiatives which have been highlighted under the Revaluing Construction programme. We also urge it to provide leadership in the integration of its previous pro-active themes of Sustainable Development, Performance-Based Building, and Revaluing Construction to provide a framework for continuous research.

We suggest that each CIB Working Commission and Task Group should make itself the real authority in its subject, and be widely recognized as such. Among others, each of them should:

- prepare, or facilitate the preparation of, good practice guides;
- prepare biannual updates of developments, and outlooks of the future of their fields; and
- maintain an up-to-date website as a window of access to the world.

We encourage the CIB membership and its leadership to recognize that it is an organization that has the potential to make a difference.

iii) Built Environment Sector

We urge the built environment sector and its constituent parts to identify and prioritise the challenges which it faces, and develop appropriate responses to them. The sector should:

- undertake design with respect for, and knowledge of, local history, identity, culture, nature, ecological system, climate and social and national characteristics;
- realize that research and innovation can be the foundations of sustainable competitive advantage;
- communicate its needs and problems to the research community; and
- forge linkages with academia to ensure more effective application of research results.





iv) Government

We urge governments, where appropriate, to:

- recognize the strategic importance of the construction industry and appreciate its dynamics;
- formulate and implement industry development initiatives;
- review legislative and financial instruments that are barriers to the sector, with the need to strike the right balance between intervention and allowing the industry some space for the gestation of new and improved practices. We urge governments to enhance the consultation process and explore the use of mechanisms such as industry champions to promote uptake of new statutes, policies and schemes;
- provide support for innovation, research and development, and strategic human resource development; and
- consider forming a global or regional groupings of ministers in charge of construction which could meet annually, along lines similar to the World Bank and IMF meetings of Ministers of Finance.

APPENDIX; SYNOPSIS OF TOPICS COVERED IN PAPERS PRESENTED

The work presented at this Congress shows the progress that has been made in efforts by researchers to find solutions to problems in various aspects of construction. This appendix to the "Conclusions and Recommendations" presents a synopsis of the topics which were covered in the studies in the papers presented.

Sustainable construction has attracted the attention of researchers in construction since the mid-1980s. At this Congress, the work presented included studies on design responses to climate change; comfort and energy performance in buildings; and the development of evaluation and decision support systems. An example of such support system was the Life-cycle Evaluation of buildings and systems. An aspect on which several papers were presented included the selection of building products and materials (including Smart Materials), such as the application of insulation.

The papers on Laws and Regulations were on both single jurisdictions and comparative studies of a number of countries. Statutes on health and safety were covered in a number of papers. The studies on procurement focused on innovation in the process including incentive contracts. The integration of the supply chain was the focus of some studies. The papers on Public-Private Partnerships covered issues such as client involvement and risk management.

The subject of Inclusive Design was covered, as was that of effective, sustainable Facilities Management. Another subject was Construction and Disaster Management and Reconstruction.

The management of the resources used in the construction process was also a major broad area. Papers were presented on the management of human, material and financial resources. The subject of Women in Construction received some attention. Relating to human resources, studies on effective Education and Training, and on aspects of Safety and Health in Construction were presented. Work on materials management included waste reduction and management, and recycling.

The papers on project performance suggested that "the contractor's trilogy" (time, cost and quality) should be revised to include other parameters including productivity. There were also a number of papers on Risk Management.

The business management topics which were covered in the studies presented included Corporate Competitiveness, and the development of Small and Medium Enterprises. There were also papers on Leadership in Construction, and its development.

Topics on technology which were covered in the studies presented include the application of industrialized processes. Specific approaches included Lean Construction. Lessons which could be drawn from methods which have proved successful in other sectors (such as manufacturing) were also highlighted. Low-cost Housing received attention. An example was a study on ready-made shacks. Innovation and Technology Development was also covered. An aspect was technology and knowledge transfer. Possible vehicles which were discussed included innovation circles for the exchange of technology and experience.

Strategies to enhance the use of Information and Communications Technology (ICT) to address the many complex problems in the construction process were explored in a number of papers. These included the potential applications of advanced 3D and nD modeling, and the use of fuzzy expert systems in decision making. Another subject was knowledge creation, management and sharing.

Issues on culture which were covered included the principles of the Chinese traditional beliefs embodied in geomancy ("feng shui"), and its possible impacts on design. Cultural issues relating to Corporate and Project Management were also explored. The topic of ethics, and issues relating to corruption were also addressed in the papers and discussions.

Summary

The studies on which papers were presented at the Congress covered a wide range of subjects. The hierarchy (from the macro level) was: broad issues at the national level including policies and laws, subjects at the urban level relating to design and development, corporate level considerations, issues at the level of projects, and topics relating to the individual such as leadership. The papers ranged from theoretical considerations such as quantitative modeling, and applied research and case studies.

The papers showed differences in practices and experiences in various countries. Many of the papers proposed initiatives at the national, corporate or project levels. There were also many useful tools, methods and models which can be applied to improve performance in business enterprises and on projects. Taken as a whole, the papers presented at the Congress also showed the need for further research and for good practice in many of the areas which were covered. An issue that also emerged is the potential for collaboration, networking and sharing of information, ideas and experiences.

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