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Global Preparatory Meeting
for the First Consultation
on the Construction Industry*

Berkeley, California, U.S.A.
1-3 December 1992

REPORT**

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* Organized by UNIDO in cooperation with the University of California, Berkeley, and the California Foundation on the Environment and the Economy (CFEE).

** This document has not been edited.

CONTENTS

Introduction

1. At its sixth Session (28 May - 1 June 1990) the UNIDO Industrial Development Board approved the Director-General's proposal of Consultations Programme for the biennium 1992-1993. The programme includes the First Consultation on the Construction Industry.[1] This Consultation will be hosted by the Tunisian Government in Tunis, Tunisia, from 3 to 7 May 1993.

2. The System of Consultations of UNIDO is organizing the First Consultation on the Construction Industry in cooperation with the United Nations Centre for Human Settlement (UNCHS-Habitat) and the Tunisian Centre for Building Materials (CTMCCV).

3. In the process of preparation for this Consultation, UNIDO, in cooperation with the University of California, Berkeley, and the California Foundation on the Environment and the Economy (CFEE), organized the Global Preparatory Meeting in Berkeley, California, USA, from 1 to 3 December 1992. The Meeting was attended by 20 participants (including 3 lecturers) from 9 countries in Africa, Asia, Europe, Latin America and North America. HABITAT also participated at the Meeting.(The list of participants is attached as Annex 1).

Objectives of the Meeting

4. The main objectives of the Meeting were to analyse the trends and the different processes involved in the construction industry and to identify the major constraints hampering its development in different countries. More specifically the Meeting focused on the following key areas:

a) managerial aspects of the industry
b) financing of construction programmes
c) energy savings
d) the role of the main actors
e) sustainability of development of the construction sector
f) environmental issues.

The meeting also had the fundamental objective of identifying the main issues to be developed by UNIDO and HABITAT for discussion at the First Consultation of the Construction Industry.

Documentation

5. Annex II contains a list of documents prepared for and presented at this Global Preparatory Meeting.

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[1] GC. 4/2. IDB 6 Dec. G (R).

I. AGREED CONCLUSIONS AND RECOMMENDATIONS

6. At the closing session on 3 December 1992, the Meeting recommended the following key issues to be considered at the forthcoming Consultation:

(i) The construction sector, which is very complex, fragmented and highly cyclical, is not well understood. Although the overall importance of the sector is recognized, knowledge of the linkages between actors and linkages between the sector and other components of the economy are limited.

(ii) The sector is constrained by a poorly formulated and static macro- and micro-policy environment. At the country level, numerous macroeconomic policies related to monetary and fiscal objectives, resource allocation, price controls and international trade, frequently harm the sector. Several countries lack sufficient policies relating to environmental protection, technical standards, and land use planning. However, practical experiences in many countries have proven that the excess of regulations and bureaucratic implementation can increase construction costs significantly.

(iii) Much of the sector's production activities pertaining to materials, buildings and facilities are energy-inefficient. As a consequence, construction outputs claim too many resources in terms of the energy content of building materials and building operation.

(iv) Several construction sector activities are not environmentally sustainable and often consume too many non-renewable resources. Action should be taken to enhance the use of renewable resources in a more sustainable manner.

(v) Future demand for construction services and products is substantial and many countries face severe shortages of capital for project development. More efficient means should be found to manage fluctuating construction requirements, capital budgeting, and formal and informal methods of project financing and cost-recovery.

(vi) There is an urgent need to improve the productivity and quality of construction output consistent with the incomes and the amount which each country can afford. This calls for consultation at the national, local and enterprise level to create a conducive policy environment for the industry and to improve the sector's access to finance, physical resources and technologies. Such initiatives should reflect the particular needs and responsibilities of all actors of the industry including, small, medium and large contractors and specialized subcontractors, building materials and products suppliers, public and private enterprises, and the informal sector as well as different types of construction such as housing, infrastructure, maintenance and rehabilitation works.

(vii) A concerted effort focusing on both long and short term training and human resource development is needed in all aspects of the sector, especially relating to project planning, design and appraisal, financial management, tendering and bidding of projects, efficient construction methods, better utilization of materials and energy and resource-conserving design.

(viii) Research and development activities in the sector are limited and highly fragmented. Efforts should be made to increase and better disseminate R & D to sector actors, such as private contractors and consultants, promoters, financiers, government policy-makers, researchers, unions and consumers of construction products and services. Building strong networks between the various actors at the local, national and international level is vitally important to expand and accelerate the diffusion of new technologies, techniques and policies.

II. ORGANIZATION OF THE MEETING

Opening of the meeting

7. The Director of the System of Consultations Division welcomed the participants on behalf of the Director-General of UNIDO and extended his appreciation to the University of California, Berkeley, as well as to the California Foundation on the Environment and the Economy (CFEE) whose sponsorship made the Meeting possible. He briefly described the System of Consultations, the function of which - as a policy-oriented system - is to promote industrialization in the developing countries. He stressed the need for more interaction between the different actors in the construction industry. Such action is encouraged by UNIDO which is increasingly geared to cooperate with the private sector, universities and research institutions. This form of cooperation could facilitate, among other things, investment opportunities and joint-ventures in the construction sector between industrialized and developing countries.

8. The representative of the University of California in his brief presentation thanked UNIDO for the opportunity to jointly organize the Meeting. He pointed out that an assessment of grass-root problems of the sector needed to be made in order to identify the major areas of issues and provide appropriate approaches for improving its productivity.

9. In his introduction, and in the frame of Agenda 21, recently adopted at the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, Brazil, 3-14 June 1992, the HABITAT representative stressed the need for promoting sustainable development of the construction industry. He added that the fluctuating demand on the construction sector is the cause of many constraints, particularly in the planning process. A dialogue is therefore needed between the actors of both the formal and informal sectors of the industry and policy-makers. He stressed that a proper strategy is necessary to reform in particular the small-scale construction sector, in addition to reinforcing capacity building of this sector. He drew particular attention to the need to prevent deterioration of the environment through physical disruption caused by construction activities and chemical pollution from production of building materials.

10. Finally, the President of the CFEE welcomed the participants and mentioned that it was the first time his organization had been involved with both UNIDO and HABITAT in convening such a meeting. He briefly mentioned his organization's role as a non-profit foundation which cooperated with many institutions on matters related to, inter alia, the environment, trade and energy as well as with labour unions in construction and utility companies.

Election of officers

11. The following officers were elected:

- Chairman: Mr. P.F. Mason, (United States of America), President, California Foundation on the Environment and the Economy (CFEE), San Francisco, California

- Vice-Chairman: Mr. J. Montenegro Passarelli, (Guatemala) Chamber of Commerce for Construction, Guatemala City.

- Rapporteur: Mr. T.N. Gupta, (India), Executive Director and Advisor, Building Materials and Technology Promotion Council, (BMTPC) Ministry of Urban Development, New Delhi.

Adoption of the Agenda:

12. The following agenda was adopted:

i) Opening of the Meeting

ii) Introductory remarks by:

- the Director of the System of Consultations of UNIDO
- the Representative of the University of California, (Berkeley)
- the UNCHS (HABITAT) Representative
- the President of the California Foundation for the Environment and the Economy (CFEE)

iii) Election of the Chairman and officers

iv) Presentation of the background documents (followed by discussion)

v) Presentation of the lecturers' papers (followed by discussion)

vi) Presentation of the participants' papers (followed by discussion)

vii) Adoption of the conclusions and recommendations.

III. *SUMMARY OF THE DISCUSSIONS*

13. One participant noted that due to the importance of the construction industry in the development process of a country, appropriate policy measures should be formulated for its promotion. The role of the State is fundamental in the formulation of policy matters for the industry. In addition, the joint role of both the public and the private sectors were equally instrumental in the implementation of those policies as well as in the promotional efforts.

14. Many participants mentioned the case of appropriate instruments for promotion purposes. In India, for instance, National Construction Councils were set up in key regions across the country. In addition six national bodies operated with the construction sector on a tripartite basis, namely, the State, the professional associations and the unions. The Indian Building Congress also played a key role with both the public and the private sectors in identifying major areas for promotion and development. Participants also mentioned the existence of contractors and professional associations in their own countries. In Chile, Brazil and Guatemala, for example, those associations played a key role in the construction sector.

15. The problem of transfer of technology was also discussed during the meeting. One delegate noted that appropriate technology was necessary to enhance effectiveness and productivity. In many cases, however, the technology transfer was not appropriate for the recipient country mainly due to poor assessment of local conditions. In addition, human resources and the level of qualifications were not adequate. A participant pointed out that often no particular technological innovation had materialized in the recipient developing countries even though new technologies from industrialized countries had been transferred years earlier.

16. Another participant stressed that the construction sector for infrastructure works was highly mechanized as opposed to the building sector in most developing countries. The housing sector, in particular, relied heavily on traditional labour-intensive techniques. If long-term development strategies were to be implemented for promoting the industry, the labour-intensive technology would not contribute much to the promotion efforts. For the developing countries, balance should be focused, on the one hand, between technology transfer to upgrade quality and productivity, and on the other hand, labour-intensive techniques, taking into account the availability of manpower in those countries.

17. Many delegates mentioned the problem of quality in construction which was closely associated with the level of technology. There was a limited number of certified products used in the industry in many developing countries. As a result of the preference for labour-intensive construction systems in many countries, quality became questionable. They also noted that there was a high level of waste which could be prevented through appropriate planning at site level as well as design stage.

18. Research and development as indicated by a participant offered the proper means to improve the industry in many areas such as production technology, quality output and productivity. However, the introduction of new products with appropriate code and standards and new construction methods as a result of appropriate research might face difficulties from end-users as well as contractors and professionals. Acceptance of innovative products could be a problem unless the innovation was able to secure an increased market share of the products. Low level of investment in research is an additional constraint.

19. The fragmented nature of the construction industry was pointed out by a participant. The main actors i.e. professionals, contractors, suppliers, researchers, investors and policy-makers, were operating practically separately from one another; the dialogue was also limited. As a result of that fragmentation there was a lack of focus in the development strategies for the industry. The fragmented market structure also inhibited research and development and the standardization of products in addition to limiting the diffusion of information on new technologies.

20. One participant spoke of the lack of database in the process of evaluation of the demand for housing and infrastructure. Statistical information regarding demand for construction was lacking in most developing countries, a consequence of which meant that forward planning to meet the demand for housing and infrastructure was not a feasible service. He noted that a proper evaluation of the demand would also serve the purpose of assessing the needs for materials and equipment as well as training requirements.

21. A participant spoke of the need for sound management if the industry is to achieve timely scheduling and cost effectiveness of construction operations. Enhanced management capabilities could be achieved, he noted, through continuous training of both professionals and contractors in the complex and diversified operations. He also stressed that human resources development and long-term commitment to training must be an integral part in technical assistance package.

22. A participant from a private company handling World Bank and US-Aid funded projects in developing countries presented concrete experiences concerning training in the case of small contractors. Based on the results of those projects he noted that training in managerial aspects was essential for improving entrepreneurship and expanding business activities of those small enterprises. Training of technicians, artisans, and in particular, training of owners in proper managerial and financial aspects of small enterprises was also essential in order to secure successful operations. He observed that one of the major constraints in improving the capacity of the small enterprises was the lack of financing and access to credit institutions. Under-capitalized firms, in general, are unable to fully exploit new technologies.

23. Financing and risks in the construction industry were also debated. One participant noted that generally large contracting firms have more easy access to specialized banking or credit institutions for their construction projects than the small firms. Expansion of small enterprises, if any, could generate financial strains. In addition, access to credit facilities is limited. Further risks in the industry are a result inter alia of fluctuation in demand, procurement, incorrect cost estimation and damage to property. The risk factors create uncertainties and are a major constraint to financing for developers and particularly for the small construction entrepreneurs.

24. A participant from a private firm in a developed country explained that his company specialized in contract negotiations for construction works world-wide and he discussed innovative methods of financing infrastructure works. The innovation stems primarily from the lack of government capital to fund increasingly expansive construction of i.e. water supply, sewerage and transportation facilities. The design-built contract is one of the approaches which offers advantages in reducing design and construction time in addition to limiting risks and leading to higher certainty of controlling ultimate construction costs. The design-built approach is useful when the public sector has been able to pay for an initial stage of engineering and has resolved the environmental questions regarding the project.

25. Other financing methods were mentioned, such as turnkey and super-turnkey contracts which allow a shift in higher levels of risks from the public sector to private enterprises. The turnkey approach obliges the private sector to plan, design and build a project with specific performance as required by the client. The super-turnkey project includes, in addition to the turnkey, responsibilities and obligations to operate and maintain the project at previously agreed annual costs. He pointed out that committed partnership between the public and private sectors is necessary to ensure positive results.

26. The question of social housing construction programmes was also debated at the meeting. The demand for social housing constitutes an important input to the construction industry in many countries, particularly in Europe and the developing world. Very few developing countries have succeeded in formulating policies and establishing adequate instruments for such programmes. However, in the case of Tunisia, for instance, a participant noted that credit was allocated to new home-owners by specialized institutions within the framework of appropriate national housing policies. Equally, financing to construction entrepreneurs was made possible by appropriate credit institutions for the implementation phase. Other types of housing programmes specifically in France and Italy, where major parastatal institutions were created for promoting social housing programmes due to the market demand, were also mentioned.

27. Regarding energy consumption one participant remarked that developing countries and the countries in Eastern Europe were faced with escalating demand for energy to support their development. Between 1973 and 1988, he noted, annual growth in energy consumption averaged 5.4 per cent in the developing countries and 2.3 per cent in Eastern Europe compared to an average of 0.9 per cent in the OECD countries. In order to meet their development objectives, a basic issue in these countries is how best to enforce appropriate policies with the view to save energy. The participant noted that electricity tariffs were subsidized particularly in the developing countries. Proper construction technologies and standards regarding, for instance,

insulations and glazing could increase significantly energy conservation thus reducing the demand.

28. Many aspects of the construction industry relating to the environment were mentioned. The rapid increase in construction activities, the demand on the natural resources of a country, in addition to the pollution caused by the manufacturing of materials for construction, i.e. steel, copper, aluminium, glass - to name a few - are imposing severe environmental damages. It was added that physical disruption due to the exploitation of the natural resources for raw materials and the chemical pollution from the manufacturing processes of building materials and products create serious environmental issues.

29. The Meeting stressed that all the actors concerned with the construction sector as a whole, including those from government and private industries should work together to prevent further environmental degradation. For the sustainability of the development of the construction industry, specific policy framework was required relating to management of the natural resources for construction, taking into account environmental conditions. The reinforcement of institutions necessary for implementing environmental protective measures including land-use planning, is equally important.

30. The participants agreed that international assistance and technical cooperation programmes can significantly improve the capability of the industry in the developing countries. The industry was also well suited for investment opportunities and joint-ventures for North-South as well as South-South cooperation.

ANNEX 1

GLOBAL PREPARATORY MEETING FOR THE FIRST CONSULTATION ON THE CONSTRUCTION INDUSTRY

Berkeley, California, USA, 1-3 December 1992

List of Participants

Brazil

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Mr. Attilio Piraino Filho, Executive Counsellor, Instituto Brasileiro de Tecnologia e Qualidade da Construcçao, Av. Barao de Limeira, 539, Sao Paulo

Canada

Mr. Michael Nisbet, Director, Environmental Affairs, Lafarge Corporation, 606 Cathcart Street, Montreal H3B 1L7

Chile

Mr. José Manuel Cortinez, Ministerio de Vivienda y Urbanismo, Comité Asesor del Ministro, Alla Media, Santiago

Mr. Francis Pfenniger, SABINCO, Manufacturas La Forja S.A., Américo Vespucio 551, Quillicura, Santiago

France

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Greece

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Guatemala

Mr. Jorge Montenegro Passarelli, Cámara Guatemalteca de la Construcción, Guatemala City

India

Mr. T.N. Gupta, Executive Director, Building Materials and Technology Promotion Council, Ministry of Urban Development, Government of India, New Delhi

Tunisia

Mr. L. Barhoumi, PDG, Centre technique des matériaux de construction, de la céramique et du verre (CTMCCV), Cité El-Khadra, No. 5, Tunis

United States of America

Mr. David Dowall, Professor of City and Regional Planning, Institute of Urban and Regional Development, University of California, Berkeley

Mr. Patrick F. Mason, President, California Foundation on the Environment and the Economy, 909 Montgomery Street, 3rd Floor, San Francisco, California 94133

Dr. Ashok Gadgil, Lawrence Berkeley Laboratory, Berkeley (Lecturer)

Prof. James Nicholas, College of Law, University of Florida (Lecturer)

Mr. Jeff Yarema, Nossaman, Guthner, Knox and Elliott, Los Angeles, California (Lecturer)

Mr. Mario Brunasso, P.E., Project Manager, Mission Energy Company, 18101 Von Karman Avenue, Suite 1700, Irvine, CA., 92715-5588

Mr. Donald H. Camph, President, ALDARON, Inc., 4975 Marshall Drive, Culver City, California

Mr. Michael D. Coleman, Senior Vice-President, International Parsons DeLeuw, Inc., 1133 15th Street, N.W., 8th Floor, Washington, D.C. 20005

Specialized agencies and other international organizations

United Nations Centre for Human Settlements (Habitat)

Mr. Kalyan Ray, Chief, Building Infrastructure Technology Section, Research and Development Division, P.O. Box 30030, Nairobi, Kenya

ANNEX 2

LIST OF DOCUMENTS

a) by UNIDO:

- Considerations for the promotion of the construction industry in the developing countries and international cooperation (IPCT.170 (SPEC.))
- Structure and function of the construction industry with emphasis on the developing countries (ID/WG. 528/1)
- Improving the performance of the construction industry: Issues and opportunities. (ID/WG. 528/2)
- La politique du logement social en Tunisie, 1956-1992 (ID/WG. 528/3)
- The mechanisms of the construction sector and the role of the actors as applied to social housing - A comparison between France and Italy. (ID/WG. 528/4)

b) by HABITAT

- Construction-sector policies for sustainable development of the construction industry.

c) by the participants:

- Industrializacion y tecnologia en la construccion en Chile - Una aproximacion general, by F. Pfenninger. (Chile)
- El proceso de industrialization de la construccion habitacional en Chile, by J.M. Cortinez (Chile)
- The Brazilian programme for technology in housing. by D.M.Calder (Brazil)
- Technologies in the Habitat, by L. Machado (Brazil)
- Activities of the Brazilian Institute of Technology and quality of construction, by A. Piraino Filho (Brazil)
- Guatemala y la problematica de la construccion, by J. Montenegro Passarelli (Guatemala)
- Evolving infrastructure financing technology: certain Mexico and USA paradigms, by J. Yarema (USA)
- Impacts of environmental regulations of construction industry performance, by C. Nicholas (USA)
- Energy savings in construction and building technologies, by A. Gadgil (USA)
- Need for improving industrialization of the construction sector for efficient housing policy, by T.N. Gupta (India)