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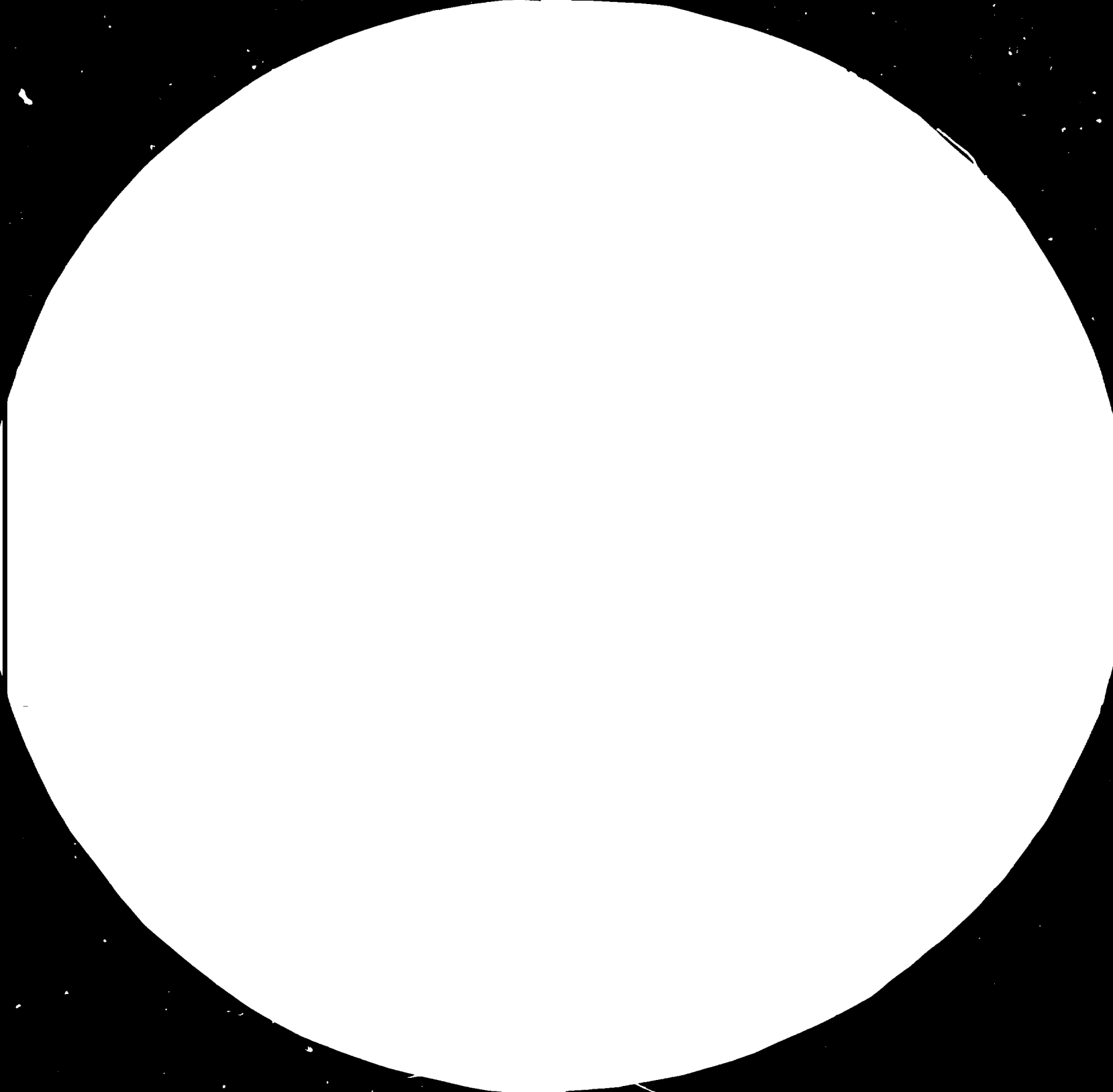
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UNITED NATIONS
DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS
INTERNATIONAL LABOUR ORGANIZATION

FIRST CONSULTATION ON THE BUILDING MATERIALS INDUSTRY

Athens, Greece, 26-30 March 1985

REPORT. (1st consultation
on building materials
industry).

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PREFACE

The Second General Conference of the United Nations Industrial Development Organization (UNIDO), held at Lima, Peru, in March 1975, recommended that UNIDO should include among its activities a system of continuing consultations between developed and developing countries with the object of raising the share of the developing countries in world industrial output through increased international co-operation.^{1/} The General Assembly, at its seventh special session in September 1975, endorsed the recommendation and requested UNIDO to implement it under the guidance of the Industrial Development Board.

Twenty-four Consultations have been convened since 1977 covering the following industries and topics: capital goods, agricultural machinery, iron and steel, fertilizers, petrochemicals, pharmaceuticals, leather and leather products, vegetable oils and fats, food-processing, industrial financing, training of industrial manpower, wood and wood products.

In May 1980, the Industrial Development Board decided to place the System of Consultations on a permanent basis, and in May 1982 it adopted the rules of procedure^{2/} according to which the System of Consultations was to operate, including its principles, objectives and characteristics, notably:

The System of Consultations shall be an instrument through which the United Nations Industrial Development Organization (UNIDO) is to serve as a forum for developed and developing countries in their contacts and consultations directed towards the industrialization of developing countries; 3/

The System of Consultations would also permit negotiations among interested parties at their request, at the same time as or after consultations; 4/

1/ Report of the Second General Conference of the United Nations Industrial Development Organization (ID/CONF.3/31), chapter IV, "The Lima Declaration and Plan of Action on Industrial Development and Co-operation", para. 66.

2/ The System of Consultations (PI/84).

3/ Ibid. para. 1.

4/ Ibid., para. 3.

Participants of each member country should include officials of governments as well as representatives of industry, labour, consumer groups and others, as deemed appropriate by each Government; 5/

Each Consultation shall formulate a report, which shall include conclusions and recommendations agreed upon by consensus and also other significant views expressed during the discussions. 6/

The Industrial Development Board, at its seventeenth session in 1983, decided to include the First Consultation on the Building Materials Industry in the programme of Consultations for the biennium 1984-1985. 7/

5/ Ibid., para. 23.

6/ Ibid., para. 46.

7/ Report of the Industrial Development Board on the work of its seventeenth session (Official Records of the General Assembly, Thirty-eighth session, Supplement No.16 (A/38/16)).

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INTRODUCTION

First Consultation

1. The First Consultation on the Building Materials Industry was held at Athens, Greece, from 26 to 30 March 1985. The First Consultation was attended by 160 participants from 73 countries and 21 observers from 16 international organizations (see annex I).

Background to the First Consultation

2. An ad hoc expert group meeting on the building materials and construction industry was held at Vienna, from 15 to 17 December 1982, to review the findings of studies prepared by the UNIDO secretariat on the sector, and to identify issues and possible areas for discussion at the First Consultation.

3. To advise UNIDO and the United Nations Centre for Human Settlements (Habitat) on the selection of the priority issues to be considered at the First Consultation, a global preparatory meeting was held from 24 to 28 September 1984. Discussion papers on possible issues were prepared by UNIDO and UNCHS (Habitat) and submitted to the meeting.

4. The Global Preparatory Meeting recommended that the issues to be considered at the First Consultation should be:

Issue 1: Development of the building materials industry, including financing, planning and programming methods, emphasizing alternative scale plants, particularly in the cement industry.

Issue 2: Measures to strengthen indigenous technological capabilities in the production of building materials, related to, among other things, the appropriate choice of products, selection, adaptation and transfer of technology, training, organization of production, design and production of capital goods, and research and development.

Issue 3: Measures required to develop building materials production in the informal economy, including research and development, information, training and quality improvement.

5. As a follow-up to the recommendations of the Global Preparatory Meeting, UNIDO and UNCHS (Habitat) prepared background documentation for the discussion

of the proposed issues. Also, a comprehensive world-wide study on the building materials industry was prepared by the Division of Industrial Studies, Sectoral Studies Branch of UNIDO.

AGREED CONCLUSIONS AND RECOMMENDATIONS

Issue 1: Development of the building materials industry, and
Issue 2: Measures to strengthen indigenous technological capabilities
in the production of building materials

Planning

Conclusion

6. The First Consultation concluded that there was a need to assess the requirements for construction and building materials and for long- and medium-term forecasts of their demand; and also for developing countries to make inventories of existing and potential raw materials resources, energy sources, infrastructure, available skills, techniques and indigenous capabilities, which would enable those raw materials to be transformed into building materials. In that connection, sound, long-term policies and plans that would have flexibility for short-term adjustments should be formulated.

Recommendation

7. UNIDO should help developing countries to improve their planning systems with respect to the building materials industry, particularly in areas such as:

(a) Strengthening information systems for setting up inventories of resources, assessing requirements, and forecasting demand. Those systems should be available to all users, especially productive enterprises;

(b) Developing long-term strategies for increasing the supply of building materials and for enlarging their variety based on local resources;

(c) Improving planning methods and organization to identify bottle-necks and co-ordinate efforts, in particular those concerning co-ordination with other related sectors;

(d) Intensifying regional co-operation in co-ordination with regional commissions and bodies.

Scale and technology

Conclusion

8. The First Consultation concluded that developing countries should have better access to the technology most appropriate to their socio-economic conditions. It agreed that it was not possible to establish the superiority of one technology or scale of plant over another. Therefore developing countries should have access to such information as was available on technical and economic conditions of different technologies in order to allow them to make the best choice in the acquisition of plant and equipment.

Recommendations

9. The First Consultation recommended that:

(a) UNIDO should provide to developing countries on request up-to-date information, through the Industrial and Technological Information Bank (INTIB), on the principal technological options for building-material production at different scales of operation as well as on the sources of more detailed information;

(b) Governments and non-governmental organizations should be invited to inform UNIDO of building-materials technologies that they have available.

Finance

Conclusions

10. The First Consultation concluded that lack of adequate finance from external and domestic resources constituted a major constraint to the development of the sector. It agreed that the financing of the acquisition of spare parts, training programmes and working capital were not usually taken into account by some financial institutions. The necessity to look at the financial problems of both the construction industry and the production of building materials was stressed, as well as the need to find ways to mobilize and direct domestic savings. It was also agreed that for the industrialization of developing countries in the building materials sector one useful form of co-operation to be further encouraged was direct investment that created co-responsibility of entrepreneurs in the efficiency, profitability, follow-up and success of operations.

Recommendations

11. The First Consultation recommended that:

(a) International and national banking institutions should be invited to give priority to the sector commensurate with its strategic importance to the economy. They should also consider giving adequate importance to the financing of plants, the acquisition of spare parts, training programmes and working capital;

(b) Special credit lines should be made available for the rehabilitation of existing plants, and the promotion of new processes and small-scale units for the production of building materials.

Research and development

Conclusions

12. The First Consultation concluded that there was a need:

(a) To increase technological research activities and the linkage between research institutions and the building materials industry;

(b) To continue to explore local mineral and other resources for building-materials production;

(c) To make an inventory of the other raw materials and energy, usable in building-materials production;

(d) To undertake research on and development of these resources in co-operation with all interested parties;

(e) To increase product research with the goal of improving quality in accordance with the needs and requirements of final utilization and application;

(f) To increase involvement of existing research and development centres, both at the national and international level, to participate in the development of improved technological processes and corresponding equipment, which should be based on the available resources of developing countries in accordance with their financial and human potential;

(g) To increase the flow of information on research activities between all interested parties.

Recommendation

13. The First Consultation recommended that UNIDO, in co-operation with the international organizations and other bodies concerned, should promote

research activities in the building materials industry in the following priority areas:

(a) Domestic raw-material resources and their suitability for the production of building materials;

(b) Product research and development based on the final utilization of the materials;

(c) Testing and evaluation of local building materials and technology. Co-operation in strengthening existing, or in setting up new testing facilities, should also be encouraged.

14. The First Consultation recommended greater involvement of national and international research and development centres, both governmental and non-governmental, to promote better utilization of locally available resources, improvement of existing productive capacities, energy saving and fuel substitution.

15. The First Consultation recommended that Governments should establish or strengthen institutional facilities for research, development and information on building materials and construction. Governments and UNIDO should co-operate with international scientific and technical associations dealing with the building materials and construction industries in order to facilitate participation of developing countries in the activities of these associations.

Standards, codes and regulations

Conclusion

16. The First Consultation concluded that there was need for developing countries to adapt standards, codes and regulations to their socio-economic situations, technical levels and environments.

Recommendations

17. It was recommended that developing countries should establish a framework of regulations based on those existing in national, regional or international organizations and adapt them to their needs.

18. It was also recommended that UNIDO and UNCHS (Habitat), in co-operation with the competent organizations and taking into account existing work in this area, should promote the development of performance-oriented standards, codes and regulations tailored to the specific needs of developing countries in the field of construction and the use of local building materials, while seeing to it that an essential degree of standardization took place at national, regional and international levels.

Consultancy, selection of technologies

Conclusions

19. The First Consultation concluded that more use should be made of existing consultancy capabilities in developing countries.

20. It was also concluded that developing countries needed assistance in the appraisal of offers and selection of technologies. It was agreed that grave mistakes could occur in the selection of technologies resulting in the poor operation of plants, excessive cost and delays in start-up due to lack of consultancy capacity in developing countries.

Recommendation

21. The First Consultation recommended that UNIDO should maintain and possibly strengthen its training activities with respect to appraisal of offers, selection of technologies and negotiating skills.

Co-operation, training

Conclusions

22. The First Consultation concluded that there was a need:

- (a) To increase efforts in training at all technical levels, on both individual and group training bases, emphasizing on-the-job training;
- (b) To tap hitherto unutilized sources of training offered by the public and private industry;
- (c) To train trainers.

Recommendations

23. The First Consultation recommended that Governments in developing countries should elaborate policies for stimulating and improving training in the production of building materials at all technical levels.

24. It was also recommended that UNIDO should assist the Governments of developing countries in using the possibilities of training offered by the public and private industry in both developed and developing countries.

Issue 3: Measures required to develop building materials production in the informal economy, including research and development, information, training and quality improvement

Conclusions

25. The First Consultation concluded that:

(a) The informal building materials sector made an important contribution, especially in the developing countries, to the growth of industry and national economic development through linkages to other sectors of the economy, and that producers in the informal sector could expand their activities through an incremental growth process;

(b) Largely as the consequence of a lack of support, building-materials production in the informal sector operated with severe limitations in terms of poor quality of products, limited range of goods and limited quantities of supply and, sometimes, the high cost of output;

(c) Governments in developing countries had an important function in providing a framework for promoting and improving the informal production of building materials and components, including all items needed in construction, through integrating those sectors in a housing and construction policy. That could be done in part through their current role as leading clients of the building materials industry. In particular, Governments could provide support by purchasing products from the informal sector, mobilizing savings for financing the provision of capital goods and working capital and giving support for local organizations suited to the dissemination of information on technologies appropriate to the informal sector. Those and other types of governmental activities must fully involve local institutions and organizations connected with the sector, as well as the people immediately concerned;

(d) Appropriate building codes and regulations could be important tools, but that it was very difficult to enforce them in the informal sector. In order to overcome that constraint, pragmatic approaches needed to be considered, notably, the production of type designs, adoption of desired regulations in demonstration projects and promotion of standards and specifications to guide producers in the informal sector;

(e) Governments had ample instruments that could be used in implementing a policy to stimulate the informal sector through tenders, public construction contracts, purchasing and financing policies. Governments also had a role in supporting basic studies of the sector and setting up appropriate university research programmes and demonstration projects;

(f) The international community could support Governments in their efforts to promote the informal production of building materials and components, notably in the fields of the transfer and development of technologies, promotion of quality improvement procedures, programmes for improving basic management and vocational skills and support for further empirical studies. Suitable instruments could be found, e.g. by making information available and in supporting local centres for adapted technology as well as in the support for the formulation and dissemination of appropriate norms and standards, preferably using the performance, rather than the materials specification approach;

(g) The international community could support or undertake systematic surveys of the sector, starting with a survey and analysis of existing studies and reports as a basis for identifying the gaps in existing knowledge, developing guidelines for collecting and analysing data and carrying out specific studies where desirable with the objective of providing a basis for arriving at realistic development strategies.

Recommendations

26. The First Consultation recommended that Governments in developing countries should elaborate policies for stimulating and improving the development of the informal building materials sector thus helping to expand the production and use of its products. To that effect those Governments were invited:

(a) To recognize the importance of the production of building materials and components by the informal sector and give full support to projects aimed at the development of that sector;

(b) To facilitate in government construction projects the use of building materials produced by the informal sector, for example in simple buildings where their performance could be expected to be satisfactory. In order to provide the greatest possibilities for the informal sector to supply those materials and components, tender and contractual documents should be easy to understand and answer;

(c) To take the necessary measures to work out designs of houses and other amenities to facilitate the utilization of materials and components from the informal sector;

(d) To encourage the acceptance and, if needed, elaboration of guidelines or possibly even standards and specifications that would allow the use of materials and components produced by the informal sector, and systematically introduce those materials and components in building regulations through the performance requirements concept;

(e) To strengthen the activities of local institutions or, if needed, to establish local institutions focusing on the practical application of research, for instance in demonstration projects and quality control, and reinforce the links between international and national research and the informal sector;

(f) To help mobilize savings by recognizing existing traditional savings societies or encouraging the growth of formal as well as informal credit and savings associations; give financial support to, for instance, stockpiling and materials banks; provide those societies with facilities to import indispensable equipment and promote organizations for the leasing of equipment; and invite banks to serve the informal sector also;

(g) To identify and support all local organizations, even those which are not specialized in the building materials sector, that could serve as vehicles for disseminating information to producers in the informal sector, e.g. on simple technologies and quality control;

(h) To support the efforts to supply at the municipal level in connection with housing and building projects, space and facilities that allow informal sector production of building materials and components.

27. The First Consultation recommended that the international community, which was understood to encompass international governmental and non-governmental organizations as well as bilateral arrangements between Governments, be invited to provide support to developing countries in improving the production of building materials and components by the informal sector. In particular, it was recommended that the international community:

(a) Assist in disseminating information on building-materials standards as applied in various countries and in formulating standards and specifications for various local materials;

(b) Assist Governments in strengthening the activities of or, if need be, establishing local technology adaptation centres as focal points for networks of technology exchange between developing countries and for promoting demonstration projects that incorporated adapted technologies;

(c) Facilitate and encourage the application of know-how and information on methods for the management of the production and use of building materials by the informal sector, acknowledging that among the many vehicles for dissemination, illustrated simple manuals and booklets that could be easily understood and demonstrated projects were especially important;

(d) Assist Governments in conducting seminars and workshops in several subjects pertaining to various target groups in the informal sector, and dealing with aspects such as policy formulation, programme development, training activities and technology improvement, giving priority to specific building materials relevant to the informal sector in developing countries;

(e) Seek to establish by collaboration between international bodies a systematic survey of existing data on informal sector production and use of building materials and components, at the same time establishing guidelines for collecting and processing data as well as identifying information gaps and developing analytical tools.

28. The First Consultation recommended that UNIDO and UNCHS (Habitat), in co-operation with other interested international and regional bodies, should study the possibilities for improved regional co-operation in Africa, Latin America and the Middle East with the aim of promoting co-operation between developing countries in the collection and exchange of information, inter-country research and development, consultancy services and training in the production and use of low-cost building materials and components, with emphasis on the informal sector.

I. ORGANIZATION OF THE CONSULTATION

Opening of the Consultation

29. The Executive Director of UNIDO opened the First Consultation on the Building Materials Industry. He thanked the people and Government of Greece for hosting the meeting and welcomed the participants to the Consultation. He then invited the Executive Director of UNCHS (Habitat) to address the Consultation.

30. The Executive Director of UNCHS (Habitat) thanked the Government of Greece for hosting the Consultation. Greece, he said, offered an outstanding example of building materials production and utilization in construction facilities, which were prerequisites to economic advancement. He recognized the difficulty of discussing a sector as complex as the building-materials industry in a global context, and focused on the characteristics and implications of different scales of operation in relation to resource endowments of individual countries.

31. In that connection, he said that small-scale forms of production tended to demonstrate more advantages in meeting the needs of developing countries than large and technologically complex methods. For reasons that he outlined, he hypothesized that small-scale building materials units offered the most promising basis for creating an effective indigenous building materials industry in developing countries.

32. He said that Governments had a role to play in the improvement of small-scale production, and that role was critical in view of the potentially higher rewards accruing to such production as compared to large-scale production. For its part, the international community could assist developing countries by helping them to utilize the immense amount of technological know-how it possessed in the small-scale production of building materials.

33. If the First Consultation succeeded in arriving at a consensus on the high priority issues and indicated possible measures to improve the situation of developing countries, it would serve a double purpose: first, the limits to the capacity to contribute to the sector would be clarified, so that realistic goals could be set; secondly, the stage would be set for a second

consultation that could, he believed, provide a forum for evaluating the response to the objectives of the First Consultation with a view to establishing a specific plan of action for the sector.

34. The Executive Director of UNIDO then addressed the Consultation. He pointed out that the First Consultation was being co-sponsored by UNCHS (Habitat), which demonstrated the co-operation and determination that existed in the United Nations system to assist in the development of the building materials sector.

35. He said that it was in the context of the current uncertain global economic situation, particularly in the developing countries, that the First Consultation would have to examine the problems, constraints and prospects of the building materials industry, taking into account both economic development strategies and human needs.

36. He then spoke of the issues that had been presented to the First Consultation concerning increasing import dependency, the need to orient research and development and the need to establish policies to stimulate the utilization of building materials produced in the informal sector in developing countries. Governments, he said, had a role to play in addressing those problems by providing a developmental framework. The international community should support efforts of Governments in such areas as technology transfer, improvements in quality-control procedures, improvements in basic management and vocational skills, and preparation of empirical studies on the informal sector.

37. Finally, he hoped that the discussions would lead to the identification of areas for international co-operation and to recommendations to help the developing countries overcome the constraints identified.

38. The Minister of Public Works of the Government of Greece welcomed the participants on behalf of his Government. He stressed the importance of the building materials industry since it fulfilled basic human needs and was an aspect of concern for public policy. In the specific context of developing countries, he said that they should evolve endogenous technologies in order to reduce their import dependence in the sector, and noted several instances of his country's co-operation with those countries that had served to enhance

the technological alternatives available to them. He wished the First Consultation all success in arriving at forms of co-operation in the sector to meet the needs of the developing countries.

Election of officers

39. The following officers were elected:

Chairman: Theodossios Tassios (Greece), Professor,
National Technical University of Athens

Rapporteur: S.T. Patil (India), Chairman
Lokapur Cements Private Ltd.

Vice-Chairmen: Josef Hradsky (Czechoslovakia), Director,
Research Institute of Building Materials

José Libert (Belgium), Secrétaire général,
Conseil Central de l'Economie

Bintou'a-Tshiabola (Zaire), Ambassadeur extraordinaire
et plénipotentiaire

Warren G. Woodham (Jamaica), Managing Director,
Jamaica Industrial Development Corporation

Adoption of the agenda

40. The following agenda was adopted:

1. Opening of the Consultation
2. Election of Chairman, Vice-Chairmen and Rapporteur
3. Adoption of the agenda and organization of work
4. Presentation of the issues by the secretariat
5. Discussion of the issues
 - (a) Development of the building materials industry
 - (b) Measures to strengthen indigenous technological capabilities in the production of building materials
 - (c) Measures required to develop building materials production in the informal economy
6. Conclusions and recommendations for further action
7. Adoption of the report of the meeting

Establishment of working groups

41. The participants decided to have two working groups to discuss the issues presented. The first working group considered issue 1: Development of the building materials industry, and issue 2: Measures to strengthen indigenous technological capabilities in the production of building materials. The second working group considered issue 3: Measures required to develop building-materials production in the informal economy, including research and development, information, training and quality improvement.

42. Doe-Bruce Akouété (Togo), Directeur, Centre de la Construction et du Logement, was elected Chairman of the Working Group on Issue 1 and Issue 2, and Klaus Blach (Denmark), Head, International Secretariat, Danish Building Research Institute, was elected Chairman of the Working Group on Issue 3.

Adoption of the report

43. The report of the First Consultation was adopted by consensus at the final plenary on 30 March 1985.

Documentation

44. Documents issued prior to the First Consultation are listed in annex II.

II. REPORT OF THE PLENARY SESSIONS

Opening plenary

Presentation of the issues

Issue 1: Development of the building materials industry

45. A representative of the UNIDO secretariat presented issue 1 (ID/WG.434/2 and Add.1). He stressed the critical role of the building materials industry in construction and economic development, and said that in developing countries construction usually accounted for over 50 per cent of the total gross fixed capital formation, for which building materials constituted a major input.

46. In recent years, in developing countries, growth in construction had been higher than growth in the production of almost all building materials. That had led to an escalation of imports and a negative balance of trade in building materials of \$US 32 billion in 1980. Even the most pessimistic projections for growth in per capita gross domestic product (GDP) in developing countries indicated that their demand for building materials would at least double by the year 2000. If current trends were allowed to continue the imbalance between supply and demand was bound to increase, therefore the development of the sector was a priority for any national policy aimed at satisfying the needs of the population and decreasing import dependency. Therefore long-term planning was of great importance.

47. The high cost of installing some types of building materials industry, which were among the most capital-intensive industries, was a major constraint preventing the realization of development plans.

48. Regarding plant scale, past trends had been towards larger-scale plants, which had often led to the under-utilization of production capacities and difficulties in mastering complex technological processes. However, in certain industries, such as the cement industry, the current trend seemed to be, even in some developed countries, towards the installation of smaller-scale plants.

49. Those problems demonstrated the need for identifying current and future demands for building materials in developing countries at national, regional and interregional levels in order to formulate a core list of the most critical building materials required and to analyse the constraints on their production. That would help to establish a basis for international co-operation to improve planning for the building materials industry.

Issue 2: Measures to strengthen indigenous technological capabilities in the production of building materials

50. Another representative of the UNIDO secretariat presented issue 2 (ID/WG.434/3). He pointed out that the patterns of consumption of building materials in developing countries were leading to an increasing import dependency and unnecessary expenditure of scarce foreign exchange. Therefore there was a need to substitute domestic materials for imports. Some obstacles to that were the lack of information on domestically available raw materials as well as inadequate standards, quality control and building codes.

51. Often developing countries could not utilize their existing technologies because those technologies were not suited to the available manpower, management and organizational capabilities, energy and available raw materials. Therefore measures were needed to improve their capabilities to select the right kind of technology that would match their organizational and operating capabilities, infrastructure and available raw materials. There was a need to assess both the qualities and quantities of raw materials available domestically. In order to achieve those objectives, such measures as the establishment of industrial information centres and regional consultancy services could be contemplated.

52. He mentioned that numerous technical assistance projects had been undertaken in developing countries by UNIDO, UNCHS (Habitat) and the regional commissions to provide training and an exchange of information on appropriate building materials for local production.

53. He reiterated the need for international co-operation in research, and the collection and dissemination of information on the problems as outlined.

Issue 3: Measures required to develop building materials production in the informal economy, including research and development, information, training and quality improvement

54. A representative of UNCHS (Habitat) introduced issue 3 (ID/WG.434/4). He described the main characteristics of the production of building materials in the informal economy in developing countries. The advantages offered by such production were its ability to fulfil the requirements of widely scattered construction activity, its utilization of small and dispersed sources of indigenous raw materials, which could reduce import dependence, and its potential as a cost-efficient supplier of building materials. In many instances such production formed a foundation for the building materials industry and met the demands of large segments of the populations of developing countries.

55. He pointed out four main constraints to the role that the informal sector could play in the development of the building materials industry. First, there was a lack of standards and quality control; secondly, available credit, managerial and entrepreneurial skills were limited; thirdly, output was restricted due to the unavailability of appropriate technology; and fourthly, there was an absence of linkages between technological research and development and their commercial application. In part, those constraints had persisted due to insufficient government intervention in favour of the sector.

56. He suggested that developing countries could play a more active role in promoting building-materials production in the informal sector by favouring that sector in their purchasing policies for construction projects, by adopting appropriate quality-control procedures and by linking successful research results to commercial production. The international community, for its part, could assist developing countries by disseminating information on existing technological know-how, thereby stimulating the adoption of more appropriate techniques, and assisting in the provision of facilities and procedures for quality improvement of building materials produced in the informal sector.

Summary of discussion

57. Several participants called the attention of the First Consultation to planning in their countries to develop the building materials industry, including the informal sector. While welcoming those efforts, other participants pointed out that many factors should be taken into account in such planning and the requirements of developing countries should be assessed on that basis. Some participants accepted the importance of the informal sector, but sought guidance as to where and in what form international co-operation would be most meaningful. One participant said that development plans should provide for all scales of projects, the point being that those different scales of projects should be integrated within the development framework.

58. Some participants stated that efforts should be made to use the indigenous means and techniques of production available in developing countries. Another participant stressed the need to combine research on production techniques with research on alternative energy sources and on the raw materials available in developing countries in order to find more suitable solutions to the problems confronting them.

59. Several participants distinguished between trade and the need to find means to enhance genuine mechanisms of co-operation. It was felt that trade did not involve the long-term relationships required of development co-operation. That distinction was accepted by others, but one participant said that direct foreign investment remained the best form of international co-operation, since it tied commercial relations with responsibilities for production.

60. Many participants pointed to the importance of dialogue, such as that provided by the First Consultation, which could harness the vast technological knowledge available internationally to the requirements of developing countries.

61. One observer stressed the need to look at the building materials industry and the construction industry as connected, and suggested that the Second Consultation encompass both sectors.

Closing plenary

62. There was a consensus on a motion regarding the usefulness of follow-up action to the First Consultation by UNIDO and UNCHS (Habitat), including the possibility of holding a second consultation on specific subjects related to the building materials industry and its application. Those subjects should be chosen after appropriate consultation.

63. Statements were made by participants concerning the fruitful outcome on the problems confronting the First Consultation, and the productive co-operation between UNIDO and UNCHS (Habitat).

64. The session was addressed by a representative of UNCHS (Habitat), who noted the close and useful co-operation between his organization and UNIDO in the preparations for and conduct of the First Consultation.

65. A representative of the UNIDO secretariat expressed appreciation of the constructive spirit that had prevailed during the Consultation and of the fruitful outcome of the discussions. He assured the First Consultation of the secretariat's determination to undertake appropriate follow-up activity based on the agreed conclusions and recommendations. He finally thanked the Government of Greece, especially the Ministry of National Economy, for the logistic support given to the First Consultation.

66. The Chairman, in closing the First Consultation, also voiced appreciation of the useful and active participation of all concerned.

III. REPORT OF THE WORKING GROUP ON ISSUE 1: DEVELOPMENT OF THE BUILDING MATERIALS INDUSTRY, AND ISSUE 2: MEASURES TO STRENGTHEN INDIGENOUS TECHNOLOGICAL CAPABILITIES IN THE PRODUCTION OF BUILDING MATERIALS

67. Several participants considered that there was a need to assess the long-term demand for building materials in order to be able to adopt the necessary policies to encourage the supply required. One participant mentioned that such planning had to be flexible in order to take into account the changes in social patterns. Another participant stressed that the planning of the production of building materials should be included in the overall planning system. Another participant pointed out the importance of project planning in the sector at all stages, including the feasibility study, the installation of plant and management. One participant said that during periods of intense construction activity imported building materials had an important role to play. He mentioned that cycles were inevitable in construction and that in such periods, in the absence of imports, competition might drive up prices to a point where construction activities might be hindered, reducing investment and therefore economic growth.

68. Several participants highlighted the need for inventories of raw materials in developing countries as a prerequisite to the decisions on the product mix. Several participants discussed the advantages of the application of stabilized soil as a cheap walling material in low-cost rural housing and stressed the need to carry out further investigations to improve its properties, particularly durability and water resistance.

69. It was agreed that developing countries should diversify the production of their building materials, making greater use of locally available resources. However, some participants voiced concern about the detrimental effect of the use of certain raw materials for building, for example, soil where the land was scarce or wood where forest resources were not abundant. One participant expressed the view that too much emphasis was put on the use of soil as a building material, as it should only be considered as a transitory building material.

70. The question of scale was amply debated. One participant expressed the view that mini-cement plants would not meet the envisaged increase in demand for cement in developing countries. However, a large number of participants

considered that small-scale plants could be an adequate solution in countries with low per capita income, insufficiently developed transport infrastructure or widely dispersed population. Some participants pointed out that generalizations could not be made about optimum scales of production since for some products small-scale might be an optimum solution, whereas for others medium- or large-scale was the only way to guarantee low cost and efficiency. It was recognized by some participants that small-scale did not mean a product of lower quality or a simple scaling down of large plants. In that regard one participant expressed interest in having access to the latest technology on small-scale plants in developed countries. Another participant said that one of the advantages of the use of small-scale plants was the possibility of producing the equipment locally. Most participants agreed that the major determinant of the scale of the plant was the size of the market. Some participants indicated the importance of establishing multinational enterprises to serve regional markets.

71. In connection with the import of turnkey plants, a participant gave examples of the detrimental effects of the acquisition of plant, equipment and technology.

72. Several participants emphasized the importance of energy in the production of building materials. One participant expressed the view that when planning the building materials industry, the availability of energy resources should be taken into account in addition to that of raw materials. Another participant stressed the need for increased research and the use of alternative energy sources for the building materials industry.

73. One participant expressed the view that many developing countries were maintaining codes and regulations dating back to colonial times, and that those had to be adapted to new uses and local conditions. There was general agreement that in order to promote the increased use of local building materials, codes and regulations in developing countries had to be reformulated. To that end, one participant suggested that such reformulation should be developed by international agencies.

74. One participant mentioned the interest developing countries might have in promoting the use of pozzolane concrete. He proposed the creation of a committee in order to develop standards for the use of that type of material.

75. One participant expressed the view that since many of its small-scale plants had been closed down due to the establishment of one large scale modern highly sophisticated factory, the small factories could be deployed to developing countries. He informed the First Consultation that his Government was encouraging the establishment of those small-scale plants in developing countries.

76. Several participants stressed the need for establishing national and regional training centres. The need to increase research and its linkages to industry was voiced by several participants. Several participants also indicated the usefulness of establishing national and regional centres to improve the maintenance of plants and to solve the problems of the supply of spare parts. One participant suggested that developed countries should offer their assistance in that respect.

77. Some participants indicated their concern with the problems arising from pollution caused by cement industries, whose environmental effects should be taken into account as early as the feasibility study stage. The cost of the measures of protection to be taken, bearing in mind the Government's policy in that regard and the resulting regulations, should be included in the estimated investment and operating costs.

78. Several participants stressed that since building materials were not end-products and were used by the construction industry, the building materials industry could not be considered separately from the construction industry.

79. One participant elaborated on the importance of the collection and dissemination of information with respect to alternative products and technologies. Several participants stressed the importance of establishing a network of research and development institutions, non-governmental organizations and universities on a regional basis to communicate results of specific studies as an operational information input to the industry.

80. Some participants requested UNIDO to consider the creation of an office for the collection and distribution of information related to the production and use of building materials in developing countries. It might be possible to seek a host country that could assume a major portion of the necessary annual expenditure.

81. One participant raised the question of the durability of the performance of building materials and suggested that accumulated information on that subject might be disseminated and additional investigation carried out.

82. One participant suggested using existing consultancy capabilities in developing countries through the activities of international organizations.

83. It was agreed by some participants that emphasis should be given to the establishment of national systems that would revise, design and monitor the standards, codes and regulations of the building industry.

84. One participant felt that support should be given to the existing national research and training centres rather than the creation of new institutions. He emphasized the advantages of regional co-operation between existing institutions.

85. It was felt that timber had an increased role to play as a building material in those countries endowed with forest resources, since it is a renewable locally available building material that does not require large energy inputs in its processing and does not cause pollution. In order to achieve this, however, the authorities who make specifications and financiers should be educated in the merits and limitations of timber as a building material, architects and engineers trained in its correct usage and existing building codes and stress-grading rules modernized. On this occasion an attempt should be made to utilize as far as possible the commercially less acceptable species and those should be grouped according to strength. The First Consultation noted with interest recent developments in the use of coconut-stem wood in construction.

86. One participant indicated that UNIDO had not yet used training possibilities offered by private industries. Another participant pointed out the importance of the training of trainers and of quality-control technicians.

87. In connection with the local production of tools, spare parts and simple equipment, some participants stressed the frequent non-availability of raw materials, semi-products, foundries, skilled personnel and basic know-how.

IV. REPORT OF THE WORKING GROUP ON ISSUE 3: MEASURES REQUIRED TO DEVELOP BUILDING MATERIALS PRODUCTION IN THE INFORMAL ECONOMY, INCLUDING RESEARCH AND DEVELOPMENT, INFORMATION, TRAINING AND QUALITY IMPROVEMENT

88. Most participants agreed that the characteristics of the informal sector lay mostly in the nature of inputs used for production, such as the meeting of land requirements through squatting, unauthorized manufacturing in residential premises, the reliance on traditional credit systems, the use of family labour and of locally produced equipment. Some participants also mentioned the types of material produced, the labour intensity of the production process, the production quantity and level of technology as specific characteristics of the informal sector.

89. The participants then discussed how Governments could provide an organizational mechanism that would enhance the contribution of the informal building materials sector to economic development. Participants agreed that Governments had an important role to play as potential purchasers of building materials from the informal sector because they were the largest clients of the construction industry. Most participants agreed with the measures described in paragraph 12 of the issue paper (ID/WG.434/4), which called for Governments to use purchase and tax incentive policies to stimulate the production of building materials in the informal sector. One participant felt, however, that there was little practical value in tax exemption and subsidy schemes since the informal sector operated largely out of reach of those mechanisms. One participant emphasized the need for government tenders to be stated in terms of performance standards rather than materials specifications. Other participants observed that there could be a negative impact on the informal sector from decisions taken in the formal sector, and that the linkages between the two sectors should be taken into account in governmental planning and policies.

90. On the question of norms and standards, many participants said that there was a need for flexibility and adaptation to local conditions and requirements if they were to benefit from the development of the informal sector.

91. With regard to mobilizing savings for the provision of capital goods and credit, the participants agreed with the measures identified in paragraph 14 of the issue paper (ID/WG.434/4), which suggested that Governments should help

to support the establishment of appropriate credit and savings societies. One participant emphasized the need to promote local organizations for leasing equipment and tools. Another participant stressed the need for financing the stock piling of building materials produced by the informal sector. Some participants reported favourably on their experience with building materials banks and specialized credit facilities.

92. One participant noted that the lack of working capital had resulted in building materials factories in his country working below capacity.

93. Regarding governmental support for informal organizations or associations, one participant was sceptical of their usefulness whereas others were more positive. Those participants said that information could also be channelled through organizations other than those that specialized in building materials, and that Governments could assist them. The role of local authorities in that context was stressed because of their familiarity with local circumstances. A few participants gave examples of successful experience of industry associations in assisting the informal sector.

94. The participants next discussed the support that could be provided by the international community. The necessity of improved co-ordination among the United Nations bodies active in promoting the informal sector, particularly UNCHS (Habitat), UNIDO and the International Labour Organization (ILO) was stressed. They endorsed the measures, such as assisting in the creation of demonstration projects, establishment of local technology-adaptation centres and technical assistance to support local production of capital goods, that concerned the development and transfer of appropriate technology as specified in issue paper 3. Some participants supported the use of demonstration projects as part of quality improvement programmes.

95. Several participants said that projects, instead of being designed around what industrialized countries could supply, should be closely adapted to the needs of the developing country where they would be implemented. In that regard the use of local materials was stressed. Also attention to environmental problems and safety factors was advocated.

96. Several participants noted the vast amount of information available in industrialized as well as developing countries with regard to the appropriate

technology for the informal sector. Those participants emphasized the importance of improving the flow of that information between countries and the need for efficient channels of transmission including demonstration projects.

97. The participants then considered how the international community could assist the sector in relation to programmes to improve basic management and vocational skills. The participants agreed with the suggestions of issue paper 3, concerning the preparation of illustrated manuals, the provision of information on methodological tools for vocational training centres and conducting workshops and seminars. Several participants said that practical on-the-job training was important and it should use simplified illustrated manuals in disseminating information that was relevant to the requirements of the informal sector. One participant noted that such manuals should be widely distributed.

98. Another participant suggested that films and video tapes might be useful in supplementing illustrated manuals. With regard to the provision of training materials, a few participants stated that rather than emphasizing the creation of new materials, it would be better to disseminate already existing instructional materials. Those participants suggested that a catalogue of the existing materials could form the background for preparing information kits for potential users of those materials. One participant underlined the importance of disseminating information on the safe and effective use of the simple types of mechanical tools often used in the informal sector.

99. Regarding support by the international community for training centres, one participant noted the useful role that a vocational institute had played in his country and suggested that international assistance to such centres should continue. Several participants agreed on that point, in particular on the strengthening of existing institutions. One participant said that local training centres should be suited to local needs and resources.

100. Concerning the need for the collection of basic data for the development of the sector, some participants said that a census approach would be difficult; instead specific studies of the informal sector in developing countries could be undertaken, which could indicate the building materials utilized and the methods of production employed. Other studies could also

assess the economic contribution of the informal building materials sector in developing countries, provide analytical tools to local agencies, facilitate information exchange and provide a basis for the organization of seminars. One participant said that systematic surveys of the sector would facilitate an assessment of the contribution of the sector to economic welfare and development, and also identify gaps in knowledge and develop guidelines for collecting and processing data. The international community could offer research grants in order to facilitate such studies and surveys. The starting point should be the review and analysis of information available from various national and international agencies. Some participants pointed out that information on raw materials was already available in developing countries, including geological survey data, on minerals that could be important for the production of building materials in the informal sector. Such information could be a valuable element in studying the prospects for such production.



Annex I

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Annex II

LIST OF DOCUMENTS

Issue papers

Issue 1: Development of the building materials industry	ID/WG.434/2
Addendum to issue 1: Financing of the building materials industry in developing countries	ID/WG.434/2/Add.1
Issue 2: Measures to strengthen indigenous technological capabilities in the production of building materials	ID/WG.434/3
Issue 3: Measures required to develop building materials production in the informal economy, including research and development, information, training and quality improvement	ID/WG.434/4

Background papers

Small-scale building materials production in the context of the informal economy	ID/WG.434/1
Research priorities for the building materials industries in developing countries	ID/WG.434/6 (ID/WG.425/1/Rev.1)
Outline of a policy for mastery and selection of technology in relation to capital goods for cement, brick and plaster manufacturing - International co-operation in these industries	ID/WG.434/7 (ID/WG.425/4/Rev.1)
Long-term forecasting and planning of the construction and building materials industries	ID/WG.425/2 and Corr.1
Measures and actions to increase the production of indigenous building materials industries in the context of enhanced import substitution	ID/WG.425/3
The building materials industry in developing countries: An analytical appraisal	UNIDO/IS.512*

Information papers

Report of the Global Preparatory Meeting for the First Consultation on the Building Materials Industry (Vienna, Austria, 24-28 September 1984)	ID/WG.425/7 and Corr.1
Promoting the use of wood in construction	ID/WG.395/2

* Available in English only.

