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PROGRESS REPORT ON THE BUILDING AND CONSTRUCTION
MATERIALS INDUSTRIES PROGRAMME

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I. INTRODUCTION

1.1 Background

1. The building materials and construction industries, by virtue of their basic linkage not only with the development of human settlements but also with many national economic activities, have acquired special importance in both developing and developed countries. In Africa, the difficulties encountered by these industries and the real potentialities that exist for their development have led the governments in the recent past, to assign high priority to the development of these industries within the general framework of the new strategy for economic and social development which culminated in the enunciation of the Lagos Plan of Action in April 1980.
2. This new strategy which stresses the deliberate promotion of an increasing degree of self-reliance, the establishment of new facilities and augmentation of existing ones, and diversification, generally by means of planned actions, underlined the decisions of the ECA Conference of Ministers and the Conference of African Ministers of Industry which led ECA to draw up, for execution in collaboration with UNIDO, UNCHS, UNEP and OAU, the Building Materials and Construction Industries Development Programme.
3. The basic aim of the programme is two-fold: the implementation of practical development projects which are of top priority to African countries and the improvement of the decision-making process and the administrative apparatus of African governments. It is designed to meet immediate and urgent needs of the member States of the Commission while at the same time preparing them to meet future demands effectively.
4. The programme was initially designed to be implemented in two phases: preparatory assistance phase (October 1979-September 1980) and full-scale project phase (October 1979-December 1981). It is worth noting however, that if the programme is to fully realize its objective of assisting the African countries to achieve self-sufficiency in the building materials and construction industries by the year 2000, then its implementation must be continued beyond December 1981.
5. This progress report is devoted primarily to a review of the activities that have been undertaken under the programme since October 1979 and the significant results that have been achieved.

1.2 Objectives of the programme

6. The aim of the programme is to assist African countries in developing a sound indigenous self-sustaining structure of building materials production and construction services in terms of their essential components of raw materials, building materials, skilled manpower, research and technology, and an appropriate policy and implementation infrastructure. Towards this aim, and in order to achieve self-sufficiency in this sector at the continental level by the turn of the century, the following immediate objectives have been set for the programme:

(a) To assist in evolving or improving and strengthening policies and strategies and operational instruments for effective identification, co-ordination and implementation of programmes and projects for development of building materials and construction services mainly for the least developed countries and also on subregional basis;

(b) To draw up guidelines for the creation of new facilities for production of essential building materials based on criteria of appropriate technology, self-sufficiency in basic raw materials, balanced plant size matching the size of local markets within reasonable transport distance, efficiency of capacity utilization and quality standardization;

(c) To promote rationalization of construction systems and services in the interest of their re-orientation to local conditions and requirements and cost-reduction;

(d) To assist in building up and strengthening African building and building materials research and information capabilities as an instrument for developing new practical and low-cost technologies and for modernizing existing and traditional practices.

7. As special considerations, the project also provides for the following:

(a) giving special attention to the needs and developmental priorities of the least-developed countries and newly independent countries of the African region;

(b) promoting technical and economic co-operation among African countries and between Africa and other developing regions.

I.3 Financing of the programme

8. The financial resources allocated for the implementation of the building materials and construction industries development programme have come from the following sources:

(a) The ECA budget in the case of activities in which staff of the Commission participated;

(b) United Nations Trust Fund for African Development;

(c) UNDP under a special project funding;

(d) Contributions from member States of ECA/DAU towards the cost of organizing special meetings of regional or subregional character (only Burundi and Togo have contributed so far);

(e) Bilateral resources for the implementation of specific pilot projects (only Netherlands and India have provided such resources).

9. The total funds so far secured for both phases of the programme amount to 1,185,800 US dollars.

II. PROGRESS IN THE IMPLEMENTATION OF PROGRAMME ACTIVITIES

II.1 Mechanisms for project planning, co-ordination and implementation

10. Studies undertaken by ECA indicate that one of the factors that have hindered the development of sound policies and integrated programmes for the building materials

and construction industries has been the dispersed nature of responsibility for the sector among various government ministries and departments and the lack of co-ordination among them. ECA has therefore, in response to the recommendations of African experts on the building and construction materials industries, prepared preliminary proposals for the consideration of African governments in respect of organizing nodal mechanisms within an existing relevant planning structure of the government as its chief instrument for the full range of tasks of project planning, co-ordination and implementation (exclusively for the building materials and construction industries). Some African governments have since established such nodal mechanisms.

11. The Economic Commission for Africa has also drawn up a proposal for bringing together countries governed by physical conditions of subregional contiguity and promoting a joint subregional consultative and developmental mechanism to assist the subregional economic groupings in identification, planning, execution and follow-up of programmes and projects relating to the building materials and construction industries. As a first step, the possibilities were examined concerning the establishment of a building materials development and consultative council for the CEPGL countries (Burundi, Rwanda and Zaire) to function as a special task force to periodically review progress of the joint actions initiated; identify and overcome bottlenecks; and provide the required technical and logistic support for project implementation. A document on the constitution, tasks and responsibilities of the proposed council has been prepared for consideration of the countries. Follow-up action for the setting up of the proposed development and consultative council is being considered by the secretariats of CEPGL and the Aienyi MULPOC. Work has also been started on the setting up of a similar council for countries of the West African subregion.

II.2 Increased production of building materials based on appropriate technologies

12. The adoption of new concepts and technologies for decentralization of production of building materials (such as cement, clay bricks and tiles); for the establishment of small and medium size plants; for utilization of secondary species of timber; and for the development and utilization of materials such as lime and pozzolana, which could serve as effective substitutes for cement, has received great attention during the implementation of the project. In this context, the project provides opportunities for African experts to gain an insight into the systems and experiences of building materials production and utilization, related technologies, policy and promotional instruments, institutional facilities and services, etc. in the developing countries of other regions which had faced or are facing similar problems as those in Africa and which have developed their own innovative systems and technologies oriented to their particular needs and local conditions.

13. As a first step, the ECA-based project team organized, in co-operation with the Government of India, a study tour and a technical workshop for a group of 12 African experts who visited various centres in India from 20 April to 10 June 1991. The experts had the opportunity to visit plants for small- and medium-scale production of burnt bricks, cement, lime, pozzolana, roofing sheets and also research and development organizations as well as housing development corporations. The experts had opportunity to discuss with Indian experts about what they had seen during the visits and to consolidate their impressions about the technologies and techniques used and their appropriateness to conditions in countries of the African region.

14. An in-plant training for a second group of 10 African experts was scheduled to take place for 6 weeks in October and November 1981, also in India. The participants would be attached to materials production plants, building and building materials research organizations and housing development and promotion organizations, in accordance with their fields of interest in view of their national priorities.

15. Plans are also in progress to organize similar study-tours to Malaysia and Indonesia possibly during the early part of 1982.

16. ECA will organize a regional workshop for experts from African countries during the first half of 1982 in order to evaluate the impact of the study tours and in-plant training programmes in the above mentioned countries and to chart out specific project actions for follow-up. The experts who have participated in the visits to the above countries will act as resource personnel for the proposed regional workshop. Experts from India and the other countries will also be invited to attend the workshop.

17. It is expected that these activities and the further follow-up actions will contribute significantly in making available to African countries technology options that fit into their developmental strategies and the level of resource availability and thus assist in establishing a viable building materials and construction sector that will respond effectively to the needs of both the urban and rural areas.

II.3 Improved standard of construction systems and services and their re-orientation to local conditions

18. It is the conviction of most African countries, and the conclusions of ECA studies and of the two expert meetings on building materials and construction industries (1976 and 1979) as well the meeting of the directors of African building and building materials research institutes (1980), that the existing building codes and regulations used in the African countries, are a historical legacy of the colonial practices and often ill-oriented to the actual conditions and needs of African countries. They have to be reformulated in order to make them more relevant and responsive to the prevailing conditions with a view to fostering the development of local building materials and construction industries. In this connexion, ECA mounted a special study in eight selected countries on building codes and regulations during the period June-August 1980, with the assistance of a consultant, and prepared the basic material for the reformulation of these codes and regulations. The next step of this project activity envisages the preparation of a model code and, after due consultations with governments, its promotion and application in selected countries.

19. Related to the subject of building codes and regulations is the equally important aspect of standard for building materials and components. A questionnaire has been circulated to the governments of States members of the Commission in order to assess the nature of the standards in force, their adequacy, the requirements for formulation or reformulation of standards. Replies have been received from some countries and others are being awaited to permit the compilation of a comprehensive report which will also outline areas for further follow-up action. This project activity is being undertaken in collaboration with the African Regional Organization for Standardization (ARSO).

20. The study tour to India organized for African experts (April-June 1981) was also intended to acquaint them with appropriate building techniques developed and used in that country with the objective of reducing the cost of construction. The experience gained by the experts in this connexion was very illuminating.

II.4 Strengthening building and building materials research and information capabilities

21. The Economic Commission for Africa accords high priority to the development of building and building materials research as a means of promoting progress in the building materials and construction industries in Africa. To this end, the ECA organized, in collaboration with UNCHS (HABITAT), UNIDO, UNEP and the Government of Burundi, a meeting of the directors of African building and building materials research institutes at Bujumbura (Burundi) from 30 April to 3 May 1980 in order to recommend priority and further areas of research, and formulate schemes for organizing and undertaking building research on a collective basis, including modalities for co-operation among building research institutes within and outside the African region in the field of information, generation and exchange. The participants emphasized the following points:

- (i) establishment of comprehensive research centres at national, subregional and regional levels backed by formulation of appropriate policies;
- (ii) planning and implementation of specific training programmes for developing a local cadre of professional and para-professional research personnel;
- (iii) establishment of user-oriented information and documentation systems and services as a base for research;
- (iv) co-operation arrangements in the field of research at the national, subregional, regional and inter-regional levels.

22. Following that meeting, ECA organized, in collaboration with the Government of Togo, a mission to Benin, the Ivory Coast, Guinea, Mali, Niger, Togo and Upper Volta, between August and October 1980, to study the existing facilities and planned schemes for research in these countries, and to obtain the views of the governments on co-operation arrangements in the field of research particularly in relating to the transformation of the "Centre de la Construction et du Logement (CCL)" at Cécavelli, Lomé (Togo) into a subregional building research centre. A meeting of experts from the above seven countries, organized jointly by ECA and the Government of Togo in Lomé (Togo) from 13 to 17 April 1981, accepted the ECA proposal for the regionalization of CCL as a viable and practical basis for the promotion and operation of a joint subregional research centre and recommended it to the governments concerned.

23. ECA also fielded a mission to the CEPGL countries (Burundi, Rwanda, Zaire) in July 1981 in connexion with their request for assistance in studying the feasibility of creating a joint building research centre to support the development of the building materials and construction industries in those countries. Further assistance will be provided for implementing the recommendations of the mission.

24. The preparation of directories on African building and building materials research institutions as well as on building and building materials research scientists and technologists in Africa is currently in progress. Returns to the questionnaire circulated

among States members of the Commission in this regard are being analysed. The directories are expected to be published before December 1981. These directories will facilitate contacts among the research institutions as well as among researchers and also help to promote collaboration in research.

25. The gradual building up of a comprehensive regional network of building and building materials information system and services with subregional and national linkages is another priority activity of the programme for the development of the building materials and construction industries in Africa. Through the services of a consultant, field studies are currently being undertaken to aid preparation of a scheme setting out the details of the network and the modalities of its establishment and operation, taking due cognizance of its relationship with the ECA Pan-African Documentation and Information System (PADIS).

II.5 Co-operation with other agencies

26. Special efforts have been made to associate other organizations within and outside the United Nations system in the work of the programme. These include the United Nations Industrial Development Organization (UNIDO), the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), the United Nations Centre for Human Settlements (HABITAT), the United Nations Education Scientific and Cultural Organization (UNESCO), the Organization of African Unity (OAU), subregional groupings ENTENTE, ECOWAS, CEPGL, UDEAC, etc.), international bodies and donor agencies.

27. The links established with expert organizations in India (e.g. National Buildings Organization, Central Building Research Institute, Cement Research Institute, etc.) through the special training programmes organized by ECA for African experts in that country in 1981, will constitute an important component in future technical co-operation arrangements between India and Africa in matters related to the rational development of the building industry in the African region.

III. PROGRAMME PERSPECTIVES FOR 1982-1986

28. The Lagos Plan of Action adopted in April 1980 by African Heads of State and Government stressed the need for African countries to endeavour to achieve self-sufficiency in cement and building steel by 1990 and in the building materials and construction industries as a whole by the year 2000. In the light of this decision, the next phase of the programme (1982-1986) will be devoted to consolidating the actions initiated during the period 1979 to 1981 through the necessary follow-up activities, and embarking on other supportive activities which together will promote the full realization of the immediate objectives set out for the current phase of the programme and the achievement of the long-term objective of self-sufficiency in the building materials and construction industries.

29. Emphasis will continue to be laid on co-operation between African countries and developing countries in other regions of the world in respect of technology development and promotion. The co-operation links established particularly with India in 1980/1981 will be strengthened to ensure maximum benefit to African countries from the advances made by India in the development and promotion of appropriate technologies in the building industry.

30. An outline of the principal activities planned for the period 1982-1986 is given below:

31. It is expected that the national nodal mechanisms and subregional building materials and construction industries development councils for the CEPGL and West African countries, for which substantial work has been done to date, will become operational by early 1982. The project will continue to give the necessary technical assistance to ensure the continued and efficient functioning of these mechanisms through consultations, organization of periodic meetings, assistance in undertaking prefeasibility and feasibility studies, and assistance in implementation of joint projects. It is proposed to promote the establishment of similar nodal mechanisms and development councils in the other subregions of Africa, namely Central Africa, Eastern and Southern Africa, and Northern Africa. Existing economic groupings will as much as possible, form the basis of the subregional development councils.

32. The achievement of self-sufficiency in cement in Africa will necessitate increasing the existing production capacity, as well as rationalizing the use of cement through the development of other materials that could effectively substitute cement in some construction applications. The promotion of the development of burnt bricks, lime, pozzolana and stabilized soil, will accordingly receive priority attention. In this regard, pilot and demonstration production plants will be set up in the subregions to popularize appropriate technologies for the production of these materials. The production of cement in mini-cement plants based on small limestone deposits and, in some cases, to serve small isolated pockets of demand, will be examined further. The experiences of other developing nations like India in the production of the above mentioned materials will be utilized where applicable.

33. Due to time and resources constraints, no activities were undertaken during the period 1979/1981 on developing wood and wood-based products for the construction industry. An important element in the 1982-1986 work programme will be concerned with the promotion of studies, research, pilot and demonstration projects aimed at the rational and increased utilization of wood and wood-based products in construction.

34. ECA in co-operation with the African Regional Organization for Standardization (ARSO), will undertake actions geared to the preparation of proposals for standards, covering quality requirements of selected building materials and components like burnt bricks, tiles, lime, mortars, timber doors and windows, cement and asbestos, cement products, steel reinforcement, stabilized soil blocks, etc., and their processing through the ARSO technical committees for issuance as African regional standards and for adoption by member States. The adoption of such standards will lead to greater efficiency in the building industry in Africa through the efficient utilization of local building materials as well as promoting trade and co-operation among African countries.

35. The training of personnel for the construction industry will constitute an essential element in the 1982-1986 programme of work. Training courses, seminars and workshop will be planned and organized for different grades of personnel, particularly site agents, engineers, building technologists and contractors. The facilities and expertise of established building research institutes as well as housing development units attached to universities will be utilized as much as possible. Efforts will be made to strengthen the facilities at these centres, if required, to ensure a satisfactory quality of training.

36. ECA will continue to promote the strengthening of national centres/laboratories for building research and undertake follow-up activities in connexion with the establishment

and operation of joint subregional research centres in West Africa and in the CEPGL countries. The setting up of similar subregional research centres, utilizing as much as possible the existing facilities, will be studied in collaboration with the concerned countries and subregional economic groupings. The promotion of subregional and regional co-operation among African building research institutes will be nursed through, inter alia, organized attachment training for researchers in African research institutes, organizing meetings for researchers and directors of research for exchange of views and experiences on subjects of relevance to the rational and rapid development of the building materials and construction industries, and assisting the formation of technical working groups/committees to initiate research on subjects of subregional character and application, and which will lead to the development of new or improvement of existing building techniques and practices.

IV. CONCLUSION

37. The activities that have been undertaken so far, in connexion with the implementation of the regional programme for the development of the building materials and construction industries, have received the commendation and support of African governments, as evidenced by the various resolutions on the programme at regional meetings and conferences and through special invitations to the ECA project team to visit countries for consultations and assistance in the formulation of proposals for action geared to the development of the industries. However, the various kinds of activities initiated or planned will be almost impossible to undertake unless African countries provide additional impetus to the regional programme.

38. It has to be recalled that this programme has been designed in such a way that it requires real participation on the part of all States members of the Commission. They are called upon to evaluate their needs and specify areas where assistance is required. They must also agree to undertake, with the help of international organizations, if necessary, various kinds of institutional and administrative restructuring and the establishment at the national, subregional and regional levels of the machineries needed to fulfill their objective of individual and collective self-sufficiency with regard to the building materials and construction industries within a reasonable time. Some of the activities provided for under the programme, especially those at the subregional level, can be launched and executed only on the initiative of the governments concerned. It is of utmost importance, therefore, that African governments take the necessary steps to conclude agreements among themselves, where necessary, for the successful execution of such project activities.

39. The continuation of the building materials and construction industries development programme beyond December 1961 is imperative in view of the long-term activities envisaged in the area of building materials and construction industries. The foundations that have been laid through the programme during the past three years should provide a sound basis for future actions. The resources available to the programme in terms of expert personnel and finance should be strengthened substantially to facilitate the implementation of project activities without undue delay. In this regard, ECA would like to pay tribute to UNDP and the various governments, both within and outside the African region, whose financial contributions have enabled ECA to maintain the tempo of the implementation of the programme.