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Developing Countries on
Agricultural Machinery

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UNIDO'S ACTIVITIES TO PROMOTE
INDUSTRIAL CO-OPERATION AMONG DEVELOPING COUNTRIES
IN THE FIELD OF THE AGRICULTURAL MACHINERY INDUSTRY*

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1. Introduction

The need to accelerate the economic and social progress of the developing countries has been a continuous pre-occupation of the developing countries themselves as well as various international organizations. The United Nations Industrial Development Organization (UNIDO) continues to play a crucial role in the attainment of these objectives. Within its programme of development assistance to developing countries, agro-industries, including agricultural machinery, constitutes one of the priorities of the Organization.

The Round-Table Ministerial Meeting to develop co-operation projects in a specific sector is one of the activities organized by UNIDO within the framework of ECDC/TCDC. The first one was held in Novi Sad, Yugoslavia, in the food-processing industry, where the participants discussed 109 projects of mutual interest and a major recommendation was made by the meeting that UNIDO should continue to convene this type of meeting in view of the results achieved and the innovative character of the meeting.

In response to the recommendation, UNIDO in co-operation with the Government of Argentina organized a Round-Table Ministerial Meeting on co-operation among a selected group of developing countries in the agricultural machinery industry in Buenos Aires, Argentina, from 3 to 7 November 1986.

The objectives of the meeting were to assist developing countries to develop their agricultural machinery industries and ultimately to increase their food production through promotion of the establishment of long-term co-operative arrangements among developing countries. At the meeting, participants:

- (a) Exchanged experience and information on the status and trends in respect of this sector in their countries;
- (b) Discussed specific co-operation projects and the modalities of their implementation by matching specific needs with existing capabilities;
- (c) Initiated a dialogue and identified areas of further co-operation.

The Round-Table Ministerial Meeting identified around 90 projects for implementation by the parties concerned^{1/}. Meanwhile, the Third Consultation on the Agricultural Machinery Industry was held in Belgrade from 29 September to 3 October 1986. Among others, the Meeting recommended that Governments, international organizations and others, where appropriate, should support the mechanisms to facilitate contacts between small and medium size enterprises in developing countries and those in developed or other developing countries using bilateral and multilateral assistance when appropriate. At the same time, the Director-General of the Entreprise Nationale de Production des Matériels Agricoles of Algeria attended the Round-Table Ministerial Meeting in Buenos Aires. On both occasions, Algeria expressed its wish to contribute to the above-mentioned recommendation and to organize jointly with UNIDO and UNDP a similar exercise in Algeria to promote TCDC/ECDC.

^{1/} Report of the Round-Table Ministerial Meeting on Co-operation among Developing Countries in the Field of the Agricultural Machinery Industry, Buenos Aires, Argentina, 3-7 November 1986 (UNIDO/PPD/27(SPEC)).

There is already a degree of co-operation in this field in some developing countries, but there is a large scope for the co-operation to be extended and strengthened taking into account commonality, similarity and complementarity existing in the developing countries.

The meeting evolves clearly within the full spirit of the Buenos Aires Plan of Action, which emphasized the need to promote and widen technical co-operation among developing countries and recognized that bilateral and multi-lateral arrangements constitute the fundamental aspects of such co-operation.

The convening of this meeting on the agricultural machinery industry - due to its importance both for agriculture and industrial development - will certainly contribute to alleviating one of the key problems facing developing countries today, namely the increase of food production. At the same time, it might also lead to a decrease in urban migration by providing agricultural mechanization in the rural areas.

Finally, for the preparation of this meeting, a list of projects for discussion between the participants and Algeria as well as among the participants themselves, will be distributed at the meeting.

2. Overview of the Agricultural Machinery Industry

The agricultural machinery industry produces a variety of products from hand tools and animal-drawn implements to tractors and complex self-propelled machinery, appropriate for specific agricultural conditions of soil and climate, varying ranges of crops, animal husbandry and other post-harvesting activities, such as handling, sorting and packing, transport and storage of agricultural output. The agricultural machinery industry has a special role in the development of developing countries because of its direct link to agricultural production on the one hand and its ability to encourage the development of engineering skills and manufacturing on the other.

Developed countries produce over 85 per cent of world output of agricultural machinery and 10 multinational companies account for most of the production of tractors and specialized equipment. Developing countries produce only 15 per cent of total world output of tractors of more than 10 H.P.^{1/} and 8 per cent of other agricultural machinery. Moreover, this production is concentrated in a few developing countries and a vast majority of other developing countries do not manufacture even simple hand tools. The critical aspect of this situation was forcefully revealed during the Regional Consultation in Addis Ababa when it was demonstrated that present day farming in Africa is carried out 80 per cent with hand tools, 15 per cent with animal-drawn equipment and 5 per cent with tractors and that this situation was likely to worsen by the year 2000 which will witness the maintenance of more or less the same ratios between the implements used while the population will have nearly doubled.

Since this sector is of utmost importance for developing countries because of its role in attaining their food security and self-sufficiency, it seems that it is urgently required to optimize the vast opportunities for co-operation among developing countries in this field.

^{1/} UNIDO/IS.408/Add.1, September 1983; Table 3 (Yearbook of Industrial Statistics, Vol. II, 1980 Edition, UN New York, 1982).

2.1. The Importance of Agro-Industry in general and the Agricultural Machinery Industry in particular for Developing Countries

Agriculture is a strategically vital sector for the developing countries, especially for the least developed countries. Today more than before, agricultural development is an indispensable source of growth in predominantly agrarian societies, and it is a major element in increasing the income-earning opportunities of the poor. However, the development of agriculture and industry are closely interrelated. In view of the basic complementarity between industry and agriculture, every attempt should be made to promote agro-based or agro-related industries. The agricultural machinery industry, through its capacity of generating more income and employment - apart from increasing the availability of food - constitutes a major element for political and social stability.

As in other developing regions, this aspect is more acute in the African continent. The satisfaction of the basic needs of the African people through the achievement of self-sufficiency in food production constitutes a basic goal of the governments of African countries as set down in the broader objectives of the Industrial Development Decade for Africa as well as those of the Lagos Plan of Action.

In this connection, under a long-term strategy it is expected that more and more importance will be attached to the processing of local resources and agricultural production, and that production must be increased and diversified.

The actual situation in Africa shows that it is becoming more imperative to adopt and implement an integrated approach in the development of agricultural production, since:

- a) food aid alone does not solve the problems of hunger and malnutrition;
- b) experience shows that industrial inputs account for about 50 per cent in any successful agricultural model.

It should be emphasized that UNIDO, (in close co-operation with the FAO), while tackling these critical aspects in terms of sectors and regions, also attaches great importance to the different stages of development of the regions in general and the countries in particular.

These activities must be understood as being complementary to an international co-operation effort in this sector for which new effective mechanisms are also being tried, such as the efforts to bring together co-operators of developed and developing countries. However, from the recent mass coverage given to the famine in certain parts of Africa, the importance and the contribution that the agricultural machinery industry could provide for the existing scarcity of food in poor countries, and especially in this part of the globe, is obvious. Thus, this particular exercise within the ECDC concept of convening this meeting bringing together developing countries at different stages of development so that existing capacities and needs of developing countries can be matched on a mutual beneficial basis, is a clear example of this pre-occupation.

3. Review of the Main UNIDO Activities Related to the Development of the Agricultural Machinery Industry

Different types of activities are being undertaken to cope with the different aspects of industrial development and the needs of developing countries. These activities range from assistance given by UNIDO in the reviewing and (re)designing - whenever necessary - of the policies and strategies of developing countries, through the preparation of studies to help those countries to define critical areas for action and directing technical assistance, up to the establishment of special programmes like the System of Consultations and the implementation of promotion programmes.

3.1. Technical Assistance

Over the past years, UNIDO has undertaken a number of technical assistance programmes in the agricultural machinery and implements sector in many developing countries. Special attention is now being paid to this sector's technology, including the development and transfer of appropriate manufacturing technology, selective importing, testing and evaluation, and the acceleration of the expansion of local production.

Many countries produce agricultural tools and implements at the artisan or small-scale level, but the quality is often poor because of a lack of common engineering services and basic facilities. Although a few developing countries are assembling or manufacturing standard tractors, engines and pumps, there is almost a complete gap in the local development and manufacture of equipment in the intermediate category, such as improved agricultural implements and simple low-horsepower machines. Accordingly, UNIDO emphasizes the need to develop self-sufficiency in the local manufacture of agricultural machinery, including post-harvest equipment and equipment for irrigation and storing grain. Assistance is also rendered for establishing small workshops to manufacture agricultural implements, tools and allied equipment, with emphasis being placed on local design and development and maintenance and repair services.

UNIDO technical co-operation activities in the agricultural machinery industry during 1984-1986 were concerned with the improvement of national capabilities in product design, production, repair and maintenance. In Africa, assistance was provided to Ethiopia, Somalia, Uganda and the United Republic of Tanzania in the establishment of development centres and pilot plants for national design and production technology. Through the development of national capabilities in product design and production technology and the subsequent manufacture of low-cost agricultural machinery and implements, increased output and greater labour productivity could be achieved. A number of developing countries in Asia and the Pacific including Bangladesh, China, India, Mongolia, Nepal and Pakistan were assisted by UNIDO in the establishment of an applied research base. Using updated scientific devices and methodology, UNIDO also assisted Poland in strengthening research and design in its agricultural machinery industry.

In an effort to promote local production of agricultural tools and implements in Haiti, UNIDO organized a study tour of African countries which enabled Haitian officials to select those items of equipment suitable for adaptation to local conditions. After local testing and eventual modification, the equipment will be used as prototypes for local manufacture.

With regard to large- and medium-scale industrial production, UNIDO assistance also centred on the simultaneous development of both the agricultural machinery industry and subsidiary or related industries in order to utilize fully existing or potential production capacities. In Togo and Burkina Faso, for example, agricultural implements are being manufactured on a series basis. At the artisan and small-scale industry levels, particular attention was given to the use of suitable raw materials, jigs and fixtures in order to assure quality of products and a reduction in production costs.

Technical assistance projects on the development of low-cost pumping technologies in Ethiopia and Kenya reached a successful conclusion, and the experience gained will be of benefit to other developing countries. A project financed jointly by the UNDP, United Nations Capital Development Fund (UNCDF) and United Nations Industrial Development Fund (UNIDF) is under implementation in Mali to manufacture water pumps and to strengthen the maintenance, repair and spare parts manufacturing capacities of the existing workshop. Following the successful completion of a project in Senegal, a workshop on the installation, operation and maintenance of irrigation pumps was held in Dakar (Senegal) with the participation of other West African countries, in particular those of the Sahelian zone. Further progress was made in the delivery and installation of special machine tools for a workshop in the United Republic of Cameroon which would allow the manufacture of spare parts for local small-scale industries.

Co-operation continued to be strengthened with a number of United Nations bodies including the regional commissions, the United Nations Capital Development Fund and the United Nations Financing System for Science and Technology for Development, as well as with economic communities and regional agricultural institutions. At the regional level, support continued to be given to the regional network for agricultural machinery in Asia and the Pacific involving co-operation with the United Nations Social and Economic Commission for Asia and the Pacific (ESCAP) as executing agency, and the Food and Agriculture Organization of the United Nations (FAO) as associated agency, in the fields of agricultural equipment and implements design and production technology. Co-operation was also strengthened with the African Regional Centre for Engineering Design and Manufacturing (ARCEDEM).

To assist developing countries further in the development of their agricultural machinery industry, UNIDO organizes meetings, disseminates information and carries out studies. Upon request, UNIDO is always ready to provide assistance to developing countries, either alone or in co-operation with FAO, in expanding existing agricultural machinery plants or in establishing new ones. Emphasis will be given to appropriate product lines; technology and level of manufacturing; training, and the development of local engineering and technological capabilities. UNIDO is also able to offer assistance in developing appropriate projects, including the preparation of the initial proposal so as to obtain funding.

3.2. Sectoral Studies

The work of UNIDO's Sectoral Studies Branch related to the development of agricultural machinery and implements industries follows the three-stage approach usually applied by the Branch to all sectors, namely, analytical appraisals of current and future trends, elaboration of elements of alternative sectoral strategies and the application of research findings through action-oriented programmes. Studies at the first stage, analytical appraisals

of industrial sectors, are addressed to public and private institutions and organizations, enterprises, researchers or other persons interested in the sector. These studies are widely disseminated to developing and industrialized countries. Studies at the second stage of research elaborate strategies, policies and concrete action measures that can be taken by developing countries in the promotion of the various sectors. Activities at the third stage are usually undertaken in close co-operation with UNIDO's technical assistance programme and aim at practical testing or application of study results, with a view to strengthening the technical assistance capability.

Since 1 January 1983 the Sectoral Studies Branch has undertaken eight studies on the agricultural machinery industry in developing and developed countries.

Within the first stage a study was completed which surveyed the industry in North America and Western Europe (UNIDO/IS.503). This study revealed the substantial re-organization this sector has undergone, which has allowed it to achieve a break-even point at far lower levels of output.

The current global situation of the agricultural machinery industry was surveyed in two volumes, issued simultaneously. These volumes aimed at giving a broad-brush background analysis of trade and production in different regions of the world as well as a factual background to selected aspects of international co-operation. Volume I (UNIDO/IS.408) gave a global appraisal of the situation in world industry and the major factors behind this situation prior to 1983. It discussed the response of the producers and the principal considerations behind possible industrialization strategies of the developing countries. An overview of global production and trade, including a tentative projection of the consumption of agricultural machinery in the years 1990 and 2000, was followed by regional summaries trying to highlight this specific situation and the main problems in each world region. Volume II (UNIDO/IS.408 Add.1) of the global appraisal contained the statistical compendium to Volume I and presented the detailed data supporting the conclusions reached in Volume I.

Also within the first research stage are a number of studies on the sector in Latin America. The latest structural changes were dealt with in UNIDO/IS.408 and Add.1. A survey of the present status of and the main outlook for the Latin American agricultural machinery industry was presented in UNIDO/IS.407 and 581. Besides detailing the current situation, these studies identified obstacles to production and outlined possibilities for expanding the sector. An analysis of the multi-purpose approach in small and medium-sized agricultural machinery (UNIDO/IS.607) was made with the aim of defining the possibilities for international co-operation between similar enterprises of the region producing related products. This study also presented a critical appraisal of the multi-purpose approach in general, and the need for a national and regional strategy to develop the multi-purpose approach.

A major study at the second research stage has been undertaken (UNIDO/IS.337 and 379) on agricultural machinery and rural equipment in Africa. This study outlined a new approach to a growing crisis as well as the action African countries should take in order to develop the agricultural machinery sector. The methodology developed in this study is being adapted to the situation of the agricultural machinery industry in Latin America; similar studies are planned for Asian countries.

3.3. The Non-Governmental Organizations (NGOs) and Co-operation among Developing Countries

Although it is recognized that ECDC/TCDC should be organized by and between Governments (which can, for this purpose, promote the participation of public organizations) indigenous as well as international non-governmental organizations (NGOs) should be seen as additional resources for increased co-operation among developing countries. UNIDO has long recognized the important role the non-governmental organizations can play in the promotion of industrialization of developing countries and international co-operation. In order to cover urgent needs, as perceived by the developing countries and their institutions and enterprises, UNIDO has been led to consider practical ways to involve non-governmental organizations (including private and public enterprise) in its technical co-operation programmes and other activities designed to promote international co-operation. It is well-known that much of the know-how of modern technology, expertise and research and development facilities has been developed in, and is available from, the private sector and NGOs. Many of these organizations have been co-operating with UNIDO in different fields of ECDC/TCDC.

In this connection, it is worth mentioning that UNIDO has vigorously pursued a more action-oriented programme, based on cost-sharing projects with NGOs. These projects were better adapted to working relationships of developing countries with each other. UNIDO will continue to serve as catalyst and promotor of ECDC/TCDC through better involvement of NGOs and private sector enterprises, disseminating knowledge of expertise, technology and training possibilities widely available in developing countries and by encouraging their increased utilization. Within its programme for co-operation with NGOs, UNIDO can actively assist governments and interested organizations from developing countries in identifying suitable centres of expertise such as universities, co-operative organizations, foundations, research and development institutes and other relevant organizations involved in the food-processing sector, and assist in facilitating the establishment of contractual arrangements between the requesting developing country and the institutions from other developing countries involved. Such contractual arrangements may take the form of service agreements for provision of expertise, training, technology transfer and other forms of co-operation.

Many international NGOs are very active in development activities including the promotion of international co-operation, either directly or by collaborating with NGOs in developing countries, particularly in the field of rural and agricultural development. Governments of developing countries should contribute to such positive development by involving NGOs in project formulation and whenever possible, in implementation, using their technical and programming expertise. In addition, very often international and indigenous NGOs could provide complementary funding resources. For this purpose, UNIDO has maintained, since 1976, a Section for Co-operation with Non-Governmental Organizations and Industrial Enterprises, with the main objective to promote and co-ordinate co-operation between those organizations and enterprises and UNIDO, in order to mobilize and channel their available resources into the industrial development process of the developing countries.

Two examples serve to illustrate this co-operation among developing countries:

a) A Workshop on Technical and Economic Co-operation between Latin American and Arab Countries in the Food-Processing Industry, organized by UNIDO, was held in Barcelona (Spain) in July 1986. The Workshop represented the first contact of its kind between the two regions, through the Arab Federation for Food Industries (AFFI) and the Latin American Association of Food Processors (ALICA).

The Workshop identified specific subsectors of food processing for co-operation between the two regions; Latin American technology was requested for a number of projects which are being launched in Arab countries; commercial relations for the purchase by Arab States of raw materials and finished products from Latin America, was a highlight of the Workshop; an agreement for co-operation between AFFI and ALICA with UNIDO acting as focal point for that co-operation, was signed at the meeting. Thus, the meeting paved the way for the establishment of concrete industrial co-operation between the Arab and Latin American regions.

b) A Symposium on the Mechanization of Harvesting and Subsequent Processing of Agricultural Products in Tropical Africa and the Manufacturing of Relevant Agricultural Implements, was organized in co-operation with the International Commission of Agricultural Engineers (CIGR), the Ministry of Agriculture and the Centre National d'Etude et d'Experimentation du Machinisme Agricole, U.R. Cameroon.

The meeting, held in February 1985 and attended by 44 participants from 23 countries, provided a forum to exchange knowledge and experience among African manufacturing enterprises, research and development institutes and national authorities concerned with the promotion of agricultural mechanization, including storage and first processing and the development of the agricultural equipment industry in Africa, linked with the needs of small and medium farms. One of the important recommendations was the creation of an African Regional Centre for Consultation and Manufacturing of Agricultural Implements, to which the involvement of/and co-operation among a number of African countries would be expected.

3.4. Investment Promotion Activities

The Industrial Investment Division of UNIDO furthers industrial growth through the promotion of co-operation at the enterprise level between project sponsors in developing countries and potential partners in industrialized and selected other developing countries. This is part of the overall technical co-operation activities of UNIDO, which include other pre-investment work, such as the preparation of feasibility studies, as well as training and assistance in industrial planning and factory establishment and management.

In order to improve the recording and dissemination of information related to pre-investment activities, the Industrial Investment Division created the Investment Promotion Information System (INPRIS), which consists of five searchable computerized data banks (project file, investor file, bank file, institution file and sponsor file) and sets of country data. A description of the contents of the project and investor files appears below.

Project File

The project file contains summarized information on some 2,700 industrial investment project proposals in developing countries that require some form of foreign co-operation, such as joint-venture or other partnerships, acquisition of technology, management expertise and marketing assistance. UNIDO actively identifies such projects from private and public sources in developing countries such as ministries of industry, development corporations, investment promotion agencies, local manufacturers, etc. Essential data on these projects are entered in the project file, which at present contains information on 20 projects in the agricultural machinery sector. A list of titles of these projects appears in Annex I.

Once a project is recorded in the project file, it is promoted principally in one of two ways. First, lists of the projects being promoted are published two or three times a year. About 3,500 copies of these lists are distributed to potential partners, as well as to development finance institutions, official aid agencies and similar organizations. Secondly, the Industrial Investment Division receives requests from entrepreneurs for information on projects in specific industrial sectors, countries or regions or on projects seeking a particular form of co-operation, such as a joint-venture partnership, the supply of technology, participation in equity, etc. Replies to such requests take the form of computer print-outs giving the desired information.

Investor File

The investor file is a directory of about 3,000 public and private enterprises that have indicated a willingness to consider participation in industrial projects in developing countries. These enterprises are located in industrialized countries and in developing countries that are capital-surplus or that dispose of technology or other investment-related resources. At present some 134 firms are listed in the investor file as having an interest in projects in the agricultural machinery sector. Of these firms, 19 are in developing countries. A list of products whose manufacture in a developing country may be undertaken in co-operation with one of these firms is given in Annex II.

Firms that are entered in the investor file regularly receive copies of the project lists referred to earlier. Their names also appear in searches of the data base when inquiries are received from ministries of industry, investment promotion agencies, etc., in developing countries for information on potential partners for a particular scheme.

Since the project file contains information on industrial projects in developing countries seeking foreign co-operation and since the investor file includes firms in developing countries that are themselves seeking opportunities to participate in industrial projects in other developing countries, it is clear from the cross-flow of information between the two files described above that this is an effective method of promoting South-South co-operation in the field of agricultural machinery. In order to improve the effectiveness of this method, more information on industrial projects in developing countries in the agricultural machinery sector as well as industrial firms in developing countries disposing of know-how in the agricultural machinery sector should be brought to the attention of the Industrial Investment Division.

4. Industrial Co-operation among Developing Countries: Objectives, Components, UNIDO's Institutional Arrangements

The need to accelerate the industrialization of developing countries is the main driving force for establishing, developing and implementing concrete actions on industrial co-operation among developing countries with a view to ameliorating their economic situation.

The international community recognizes this aspect and during the last Fourth General Conference of UNIDO, a resolution was adopted concerning the strengthening of economic co-operation among developing countries.

The following five mutually supporting components constitute the basic elements recommended and previously adopted in broader terms by the General Assembly and specified and monitored by the UNIDO Industrial Development Board. An attempt is made to relate them wherever possible to the specific subject of the agricultural machinery industry. They are primarily intended:

- a) To promote the spirit of solidarity and to increase the awareness of the necessity and possibility of economic and technical co-operation among developing countries.
- b) To encourage the developing countries to adopt policies and measures favourable to ECDC/TCDC in order to obtain maximum benefit for them;
- c) To promote co-operation in specific industrial projects as well as specific projects in order to strengthen the indigenous capabilities of the developing countries.

As mentioned before, within UNIDO's mandate, the promotion of industrial co-operation among developing countries constitutes one of the highest priorities. The co-ordination of such activities deemed it appropriate to create a separate section within UNIDO's structure. The Section for Economic Co-operation among Developing Countries (ECDC) was established within the UNIDO Secretariat on 1 June 1977.

4.1. Organization of Solidarity Meetings in Least Developed Countries

Twelve Solidarity Ministerial Meetings which provide a new venue for assisting the least developed countries in their economic and industrial development have been organized. The main objective of the Solidarity Meetings is to identify means of co-operation whereby the participating developing countries can help in implementing specific industrial projects in the host least developed countries. In addition to enhancing the spirit of collective self-reliance, these meetings serve to develop practical mechanisms to facilitate the progress of technical and financial development of the host country. The mechanisms of co-operation agreed upon take various forms, such as loans or grants for purchase of machinery and equipment, joint ventures, exchange of technology and know-how, training, industrial research and experts services. As a result of the Bangladesh Solidarity Meeting, a new sugar mill was established with the assistance of Pakistan. Examples are provided in Annex III.

4.2. The Promotion and Development of Joint Programmes in Specific Industrial Sectors

Programmes carried out jointly by UNIDO and some more advanced developing countries are proving to be an effective way of optimizing, in a global way, the scarcity of resources available for the industrialization of developing countries with special emphasis on the least developed countries. Agricultural machinery is a priority sector of UNIDO's programme.

The convening of this Round-Table Meeting at the ministerial level now in Argentina shows the application of cross-linkages between the overall concept of ECDC/TCDC and its application in concrete terms to the priority sectors of importance for developing countries. A new impulse is being provided by way of systematically preparing inventories of the potentials existing in those more advanced countries so existing capabilities and required needs of countries at a lower stage of development can be matched.

4.3. Promotion and Development of Multinational Production Enterprises and Enterprise-to-Enterprise Co-operation among Developing Countries

Multinational production enterprises as pursued in UNIDO's programme and in accordance with the General Assembly Mandate on ECDC are confined to equity arrangements among two or more developing countries or their nationals to increase their industrial manufacturing output and/or encouraging national resource development through a process of mutual and concerted actions for creation, expansion and/or better utilization of their production potentials as well as fostering their intra-trade flows and their bargaining position in the world market. They should guarantee reciprocal benefits from economies of scale, specialization and resources complementarities. In this connection, multinational production enterprises of developing countries (MPEDCs) are a specific component of a much broader concept of enterprise-to-enterprise co-operation arrangements (ETEC) among developing countries^{1/}.

Moreover, and in order to clearly define multinational production enterprises among developing countries versus transnational corporations which emerge mainly in the North, the fulfillment of the following criteria is required:

1. The terms of distribution of the benefits, exercise of control, access of technology and other relevant resources of the venture should be based on principles of equal treatment of all investors;
2. Contribution to the achievement of specified national goals and needs previously set up and defined by the parties concerned;
3. Promotion of investors' technological build-up and strengthening their bargaining power vis-à-vis the outside world;
4. Contribution to better use of available local resources and setting up conditions for the economies of scale and specialization;

^{1/} See the report of the meeting on Enterprise-to-Enterprise Co-operation within the Latin American Plastics Industry, Buenos Aires, Argentina, 4 to 6 November 1985 (UNIDO/PC.131).

5. Facilitating other forms of ECDC among the countries concerned, such as the involvement of consultancy services for developing countries.

The first phase of this programme was completed by defining this phenomenon in developing countries and its potential for a better utilization of the existing resources and the preparation of guidelines for the establishment of such arrangements^{1/}. It is expected that they will generate the interest of the participants in this meeting to consider the implementation of such enterprises in this sector, as already experienced in the food-processing sector, where countries in Latin America decided to establish a multinational co-operative arrangement for the production, processing and commercialization of milk and milk products.

4.4. Support Measures to the Implementation of the Caracas Programme of Action on Economic Co-operation among Developing Countries

Since the Programme of Action was adopted in Caracas in 1981, UNIDO has paid special attention to the support measures towards its implementation in promoting and implementing technical co-operation among developing countries. Apart from participating in a number of meetings organized in 1982 and 1984 by the Group of 77 and making its contribution, direct support was given to specific aspects. UNIDO supported the "Meeting of Experts on Technical Co-operation among Developing Countries in Energy", in Vienna from 24 to 27 May 1983 and the "Meeting of Experts on Economic Co-operation among Developing Countries in Industrialization", held in Vienna, from 30 May to 3 June 1983. In addition, several background papers on a sectoral basis were prepared, such as the one on manpower development, presented in Bucharest in 1983.

Paragraph 82 of the Caracas Programme of Action recommended assistance to requesting developing countries, particularly least developed countries, in specific tasks concerning identification, preparation or evaluation of industrial projects through the utilization of existing expertise in other developing countries. The spirit of this recommendation has also been applied in the design of agro-industrial strategies, planning systems and development of human resources. Several projects implemented by UNIDO in this sector are closely related to the relevant recommendations and requirements of the Caracas Programme of Action.

4.5. Follow-up of Conclusions and Recommendations of Consultation Meetings

The System of Consultations is also a forum for dialogue among developing countries. The Third Consultation considered two main issues which are closely related to the subject of this meeting:

1. Perspectives of interregional co-operation in the Agricultural Machinery Industry, with emphasis on small- and medium-scale enterprises.

^{1/} See the report of the Expert Group Meeting on the Establishment of Multinational Production Enterprises in Developing Countries, Vienna, Austria, 25 to 28 November 1985 (UNIDO/PC.133).

2. Strategies for an integrated development of agriculture with local production of irrigation hardware and other agricultural equipment by small- and medium-scale manufacturers.

The Report of the Third Consultation which took place from 29 September to 3 October 1986 in Belgrade (Yugoslavia) will be distributed to participants at the meeting.

5. Programme of Action in the Agricultural Machinery Industry within the Framework of ECDC

As referred to before, this meeting is expected to act as a bridge for matching needs and existing capabilities in the interest of all participants and energetic effort should be made to that concrete results can be achieved. As a medium-term strategy, UNIDO has requested all participants to provide the meeting with elements regarding:

- a) The situation of the agricultural machinery industry in their countries, its policies and mechanisms for developing this industry;
- b) The main difficulties in increasing and strengthening co-operation among developing countries in this sector;
- c) Already existing mechanisms for implementing actions in this field.

It is expected that this will constitute an important tool for the analysis of the actual problems and their solutions existing in developing countries so that a realistic programme of action might be drawn up.

6. Innovative Approach

A general description of the main mutually supporting components which form the basis for promotion of UNIDO activities within the spectrum of economic co-operation among developing countries was given before.

Although there are some concrete examples of actions/programmes of co-operation among developing countries in the field of industry, there are on the one hand, a considerable number of factors and constraints, and on the other hand, it seems to be difficult to establish workable and results-oriented mechanisms for promoting ECDC.

Apart from the so-called traditional activities within the ECDC/TCDC context, namely fellowships, orientation visits and exchange of experience, UNIDO has established other mechanisms for increasing and strengthening effective co-operation among developing countries.

UNIDO decided to initiate, as a supplement to the Solidarity Meetings, another type of exercise, namely Round-Table Ministerial Meetings, which are organized on the basis of mutual benefit under the general guidelines of ECDC/TCDC, and on specific industrial sectors. These Round-Table Ministerial Meetings serve the purpose of overcoming some of the constraints of the programme of Solidarity Ministerial Meetings. If the areas of common interest for co-operation can be well identified, the developing countries will participate in the meeting voluntarily and the follow-up of the agreements

reached will be actively carried out by the co-operating partners themselves, with or without UNIDO's involvement. In organizing the meeting, full use of the experience gained in the Solidarity Ministerial Meetings and their advantages will be made available.

For the purpose of achieving maximum results, the following principal guidelines should be observed:

a) Solidarity and Mutual Assistance - The developing countries have a common desire to develop their national economy and to improve the living conditions of their people. They undertake common tasks to establish the New International Economic Order. The meeting should be guided by the spirit of solidarity among the developing countries. The participating countries should appreciate each other's needs and difficulties and try to help each other as much as possible.

b) Equality and Mutual Benefit - The co-operation will be based on equality and mutual benefit. This means that all the co-operating partners are equal and the co-operation activities should be beneficial to all. The co-operation should not be simply "give and take", but rather each party could benefit from the co-operation technically and/or financially. There are no simple donor countries and recipient countries. Each one will give something to others and at the same time, it will get something from others as well. If they co-operate commercially, the terms of the deal could be better than that with the developed countries.

c) Stress on Practical Results - The co-operation should be arranged on the real needs and capabilities of the co-operating countries. The co-operation should directly promote the development of the selected industrial sectors and bring practical results.

d) Diversity in Forms - The forms of co-operation should be very flexible. They could be exchange of experience, expertise and training opportunities, joint research and design, joint venture and multinational production enterprises among developing countries, etc. The diversity of conditions determines the different forms of co-operation. The form can be developed from simple to complex and from individual to comprehensive, depending on the wishes and conditions of the co-operating countries.

e) Orientation of Concrete Action and Projects - The meeting should be action-oriented and the co-operation should be project-wise. For this purpose, before the meeting, missions of consultant and/or staff member, to the potential co-operating countries are essential, to identify the possible projects of co-operation and to prepare the project portfolio for co-operation. It is not enough for the Ministerial Meeting to only adopt a declaration and programme of action, but it is more important to reach agreements on the specific co-operation projects, bilaterally and/or multilaterally, and to decide the concrete follow-up action.

This Round-Table Ministerial Meeting is the second of its kind and has been organized within the parameters referred to above.

7. Conclusion

As referred to before, this sector is of utmost importance for developing countries due to its role in attaining their food security and self-sufficiency. In fact, demand for increased food supplies is related both to population increase and income; after all, population growth is higher and income is lowest in developing countries where large segments of the population are malnourished or actually hungry. Even with increased production and processing of food, the population growth quickly absorbs this increase and a disquieting paradox persists. The already well-fed people are able to expand their food production faster than their requirements demand, whereas for the poorly fed people, the reverse is the case.

This situation is more acute in certain countries within the African continent, and no single or simple solution exists. Progress has to be organized in certain concurrent directions, such as:

- a) Increasing agricultural inputs;
- b) Strengthening research, agricultural services and rural institutions;
- c) Concerted expansion of international trade and foreign aid, and,
- d) creation and rational utilization of resources leading to a sound integral development of the agro-industry sector in general, and agricultural machinery in particular.

In view of the above, the question remains how this progress could be attained. When analyzing the situation in developing countries in this vital sector, it seems that ECDC/TCDC is a promising way out. The practical approach applied in the organization of this meeting will substantially promote ECDC/TCDC since a tangible outcome of this meeting is expected. The positive response given by developing countries to this initiative of UNIDO is an important element of the firm determination of developing countries of following a more pragmatic approach for the promotion of their economic and technical co-operation even with the actual constraints being faced by them, especially in those aspects where foreign currency is required to implement the projects agreed upon between themselves.

Annex I

LIST OF 20 ACTIVE INDUSTRIAL INVESTMENT PROJECTS IN THE AGRICULTURAL MACHINERY
AND IMPLEMENT SECTOR BEING PROMOTED BY THE INDUSTRIAL INVESTMENT DIVISION

000495	3822	ANG/004/V/83-06	Manufacture of Agricultural Machinery (AIFAG)
000629	3822, 3824, 3842	BGD/031/V/83-12	Establishment of an Engineering Workshop
001384	3822	BKF/038/V/84-10	Agricultural Tools and Implements; Joinery and Furniture Production
000461	3813, 3822, 3823	CHI/049/V/81-07	Expansion of Iberia Foundry
001036	3822	COL/107/V/84-03	Agricultural Machinery Assembly
001887	3811	EGY/164/V/84-11	Agricultural Hand Tools
001081	3822	GBS/005/V/84-05	Agricultural Tools and Equipment
000513	3822	LES/019/V/83-05	Animal-Drawn Farm Implements
001123	3811, 3822	NIR/045/V/84-04	Agricultural Implements and Tools
002132	3811	PNG/034/V/84-09	Agricultural Hand Tools
002601	3822	RWA/008/V/85-08	Agricultural implements (project idea)
001929	3811, 3822	SOM/033/V/84-11	Agricultural Implements and Hand Tools
002073	3811, 3822	SUD/140/V/84-10	Agricultural Tools and Spares
000542	3822	SWA/010/V/83-04	Tractor Project
001193	3811	TRI/003/V/84-10	Agricultural Hand Tools
001199	3811	TRI/009/V/84-10	Agricultural Hand Tools
001201	3822	TRI/011/V/84-10	Tractor Implements and Trailers
001238	3811	TRI/050/V/84-10	Agricultural Hand Tools
002519	3822	URT/083/V/86-06	Agricultural tools and implements
001949	3822, 3843	YEM/020/V/84-10	Spare Parts for Vehicles and Agricultural Implements

Annex II

LIST OF AGRICULTURAL MACHINERY PRODUCTS WHOSE MANUFACTURE IN A DEVELOPING
COUNTRY MAY BE UNDERTAKEN IN COOPERATION WITH CERTAIN INDUSTRIAL FIRMS IN OTHER
DEVELOPING COUNTRIES

000375	3822	Agricultural, earthmoving and land levelling equipment	BRA034
000412	3822	Dairy equipment	IND003
000472	3822	Post-harvest agricultural equipment, grain silos	IND065
000490	3822	Agricultural implements	IND083
001142	3822	Agricultural implements	IND127
001173	3822	Agricultural tractors	TUR004
001178	3822	Agricultural implements	IND128
002179	3822	Agricultural equipment	IND135
002445	3822	Agricultural tractors	BRA002
002461	3822	Plough and harrow discs and other agricultural implements	BRA018
002467	3822	Agricultural sprayers, dusters, air blast sprayers and turbo atomizers	BRA024
002669	3822	Agricultural machinery	ARG002
002675	3822	Agricultural tractors and farm implements	IND143
002706	3822	Agricultural implements	BRA035
002891	3822	Manual and power operated sprayers and dusters for plant protection, threshers, weeders, seed drillers and wheel hoes	IND166

ANNEX III

EXAMPLES OF CO-OPERATION PROJECTS IN THE AGRO-INDUSTRY SECTOR
DISCUSSED DURING THE SOLIDARITY MINISTERIAL MEETINGS

Technical and Industrial Training

Project alcohol, textile manufacture cotton waste mill, sisal manufacture, sugar factory, clay roofing common facilities centre (Tanzania/Brazil).

Prefeasibility, Feasibility and Market Studies

Training centre for textile industry (Sudan).
Leather and leather industry (Sudan/Brazil).
Quality control centre for textile industry (Sudan/India).
Cattle feed and manufacturing project (Burkina Faso/Tunisia).

Consultancy and Expertise

Textile project, non-alcohol brewery, modernization of industrial plant processing (Sudan/Greece).

Technical and Industrial Training

Fertilizer-Urea production project (Rwanda/Algeria).

Establishment of Plants, Laboratories, etc.

Development of the cotton and textile industry through the supply of a full set of cotton spinning equipment (China/Nepal).

Establishment of a sugar mill (Pakistan/Bangladesh).

Establishment of a quality control and test laboratory in the food-processing industry (Yugoslavia/Afghanistan).

Establishment of a manioc processing plant (Brazil/Haiti).

Provision of a rice bran oil extraction plant (China/Bangladesh).

Several other projects are being initiated as a result of the commitments made by the participants at the Solidarity Meetings, such as the visit of the Rwandese Director for Agro-Industries to the Philippines to discuss possible co-operation in the implementation of two projects (ramie spinning and banana fibre processing), and the visit of five Chinese experts to Sana'a, Yemen Arab Republic, to implement the first stage of a project entitled "Consultancy services and executing the necessary changes to complete the oil factory which belongs to the Cotton Company at Hodeidah".