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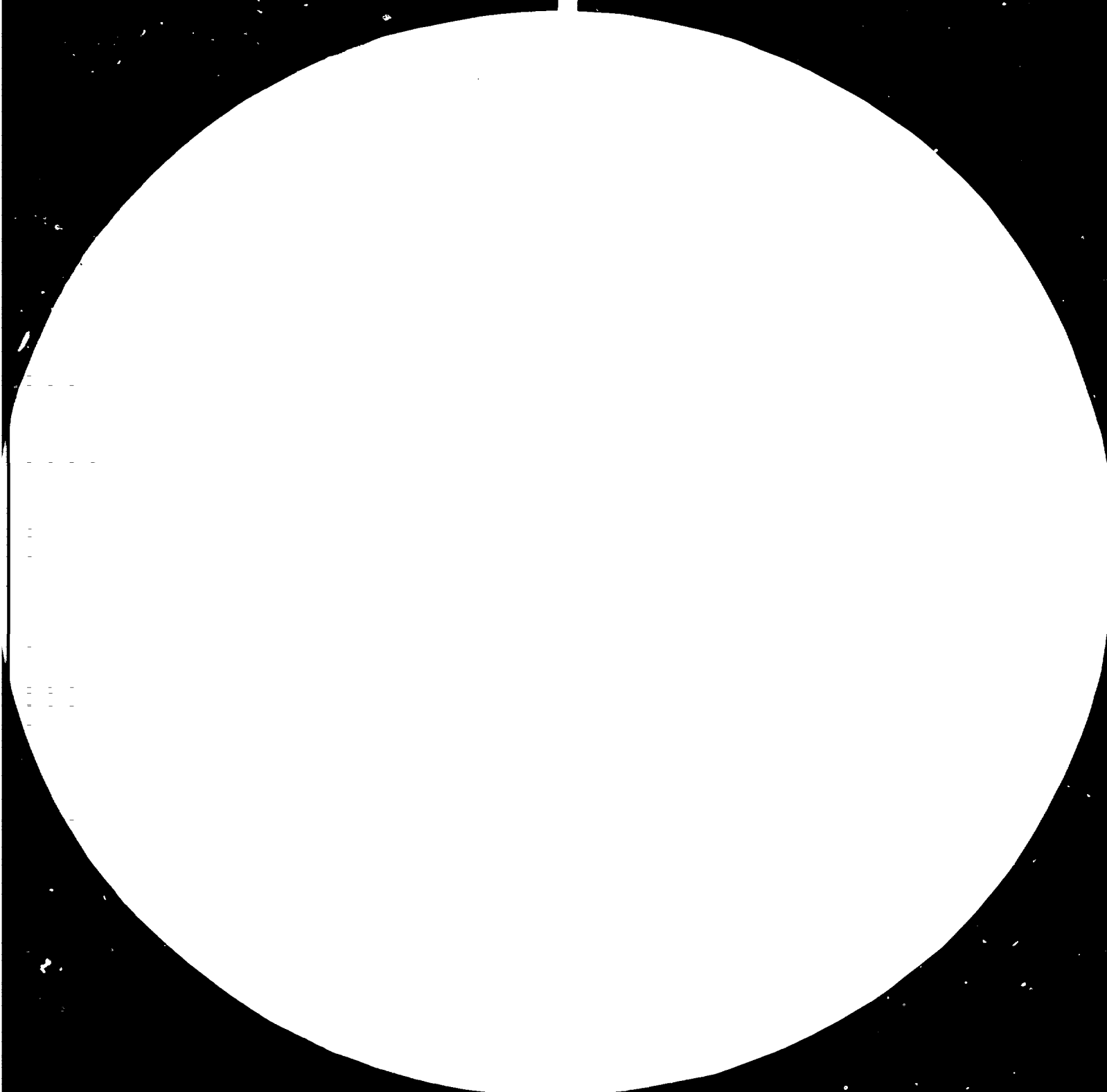

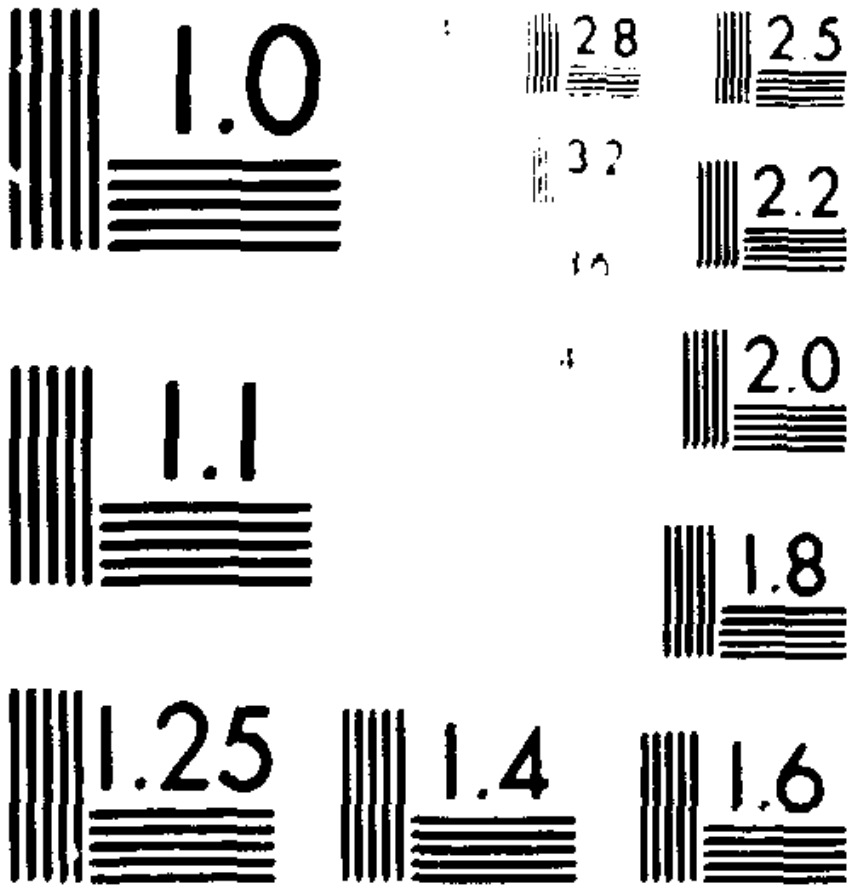
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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

# FIRST REGIONAL CONSULTATION MEETING ON THE AGRICULTURAL MACHINERY INDUSTRY

Addis Ababa, Ethiopia, 5–9 April 1982

# REPORT

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## PREFACE

The Second General Conference of the United Nations Industrial Development Organization (UNIDO), held at Lima in March 1975, recommended in paragraph 66 of the Lima Declaration and Plan of Action on Industrial Co-operation and Development[1/] that UNIDO should include among its activities a system of continuing consultations between developed and developing countries with the object of raising the developing countries' share in world industrial output through increased international co-operation.

The General Assembly, at its seventh special session in September 1975, decided that the system of consultations called for by the Lima Declaration and Plan of Action should be established at global, regional, interregional and sectoral levels (General Assembly resolution 3362 (S-VII), part IV, para. 3), and that UNIDO, at the request of the countries concerned, should provide a forum for the negotiation of agreements in the field of industry between developed and developing countries and among developing countries themselves.

The Industrial Development Board at its fourteenth session in 1980 decided to establish the System of Consultations on a permanent basis with the following main characteristics (including those described in its past decisions):

(a) The System of Consultations should be an instrument through which UNIDO would serve as a forum for developed and developing countries in their contacts and consultations directed towards the industrialization of developing countries;[2/]

(b) Consultations would also permit negotiations among interested parties at their request, at the same time as or after Consultations;[3/]

(c) 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;[4/]

(d) Final reports of the Consultations should include such conclusions and recommendations as agreed upon by consensus by the participants as well as other significant views expressed during the discussions.[5/]

The First Consultation on the Agricultural Machinery Industry, held at Stresa, Italy, from 15 to 19 October 1979[6/] dealt essentially with the questions of strategy for the development of the agricultural machinery industry and the basic facilities required for the production of machinery.

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1/ See Report of the Second General Conference of the United Nations Industrial Development Organization (ID/CONF.3/31), chapter IV.

2/ Official Records of the General Assembly, Thirty-fifth Session, Supplement No. 16 (A/35/16), vol. II, para. 151 (a).

3/ Ibid., para. 151 (b).

4/ Ibid., para. 152.

5/ Ibid., Thirty-second Session, Supplement No. 16 (A/32/16), para. 163.

As recommended by the First Consultation, the Board, at its fourteenth session in 1980, took note of the recommendations on the First Consultation on the Agricultural Machinery Industry and authorized the convening of a regional consultation on the agricultural machinery industry in Africa.7/

In accordance with the results of the survey undertaken by UNIDO, the consultative group of UNIDO, FAO, ECA and OAU decided to submit the following issues to the Regional Consultation:

Issue 1: Present situation, prospects, and strategical choices for the development of agricultural machinery in Africa, in the context of the Lagos Plan of Action

Issue 2: Measures for promoting the agricultural machinery production capabilities in Africa

Issue 3: Tentative proposal for the formulation of an African development plan for agricultural machinery and equipment

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6/ Report of the First Consultation on the Agricultural Machinery Industry, Stresa, Italy, 15-19 October 1979 (ID/239).

7/ Report of the Industrial Development Board on the Work of its Fourteenth Session (ID/B/248), para. 150.

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## INTRODUCTION

1. The First Regional Consultation Meeting on the Agricultural Machinery Industry was held at Addis Ababa, Ethiopia, from 5 to 9 April 1982. The Consultation was attended by 116 participants from 49 countries and 9 international organizations (annex I).

## AGREED CONCLUSIONS AND RECOMMENDATIONS

### Issues 1 and 2: Present situation, prospects and strategical choices for the development of agricultural machinery in Africa in the context of the Lagos Plan of Action

### and

### Measures for promoting the agricultural machinery capabilities in Africa

2. The following conclusions and recommendations on issues 1 and 2 were adopted by the Consultation:

#### Diagnosis of the present situation

(1) The diagnosis of the present situation concerning development and production of agricultural machinery in Africa as presented in the background document (UNIDO/IS.288) is generally accepted. The situation, although critical, is however not hopeless provided that urgent co-ordinated efforts at the national and international level are made based on the full utilization of the available local resources to meet the real needs of farmers.

#### Areas for possible action for promoting the agricultural machinery production capacities in Africa

##### Development of political prerequisites

(2) Agricultural development should be a priority area in the national development policy. Establishment and support of local production of agricultural machinery and improved training and education should be decisive factors in such a policy.

##### Creation of a viable demand for agricultural machinery

(3) At present, nearly no comprehensive incentives and subsidy schemes exist at the national level for farmers to acquire equipment. There are also insufficient trade and customs agreements between African nations that would prompt common effort in this field. Such arrangements would help create the necessary demand and thereby improve the conditions for the development of the African agricultural machinery industry. The appropriateness of the design of the agricultural machinery to local conditions and its cost is also believed to have a bearing on demand.

Production of low-cost agricultural equipment: related government support measures

(4) Trade policies in some instances favour import of implements at the expense of the development of local manufacturing industries. Incentive and tax policies, as well as trade regulations, should be developed at an early stage to suit the development of new agricultural machinery industries.

Standardization as a means of reducing requirements for resources

(5) Substantial savings in human and other resources could be achieved through proper selection and standardization of equipment and specific raw materials to be used, adapted or manufactured in developing countries.

Adaptation and selection of imported and domestically produced equipment

(6) The conditions prevailing in Africa call for the adaptation of imported equipment; this is already being done for certain equipment. However, there is a need for vastly improved capacity for such adaptation. The proper selection of equipment to be imported or domestically produced would, however, greatly reduce the need for subsequent adaptation.

Scope for co-operation in the field of agricultural machinery industry

(7) There is ample untapped scope for co-operation between Africa and the rest of the world, as well as among African countries themselves. Several direct forms of co-operation among African Countries can be initiated rapidly without elaborated intergovernmental arrangements.

## Issue 3: Tentative proposal for the formulation of an African Development Plan for Agricultural Machinery and Equipment (1982-1990)

3. The following conclusions and recommendations on issue 3 were adopted by the Consultation:

(1) There was agreement with the main proposals of the document prepared by the UNIDO secretariat (ID/WG.305/7) for increasing food self-sufficiency by making appropriate agricultural equipment available to the farmers and increasing the production of such equipment in Africa.

(2) Integrated national programmes linking agriculture and industry would, by reference to the UNIDO document, include Collective Action Programmes (CAPs) 1 and 2: the Immediate Action Programme (CAP 1) and the Support Programme for National Decision-makers (CAP 2).

(3) Subregional programmes would include elements of programmes 3 and 4: Priority Subregional Programmes (CAP 3) and the technological programmes Research, Experimentation and Promotion of Suitable Mechanization Systems and Rural and Agricultural Machinery and Equipment (CAP 4a) and the Development of African Capacity for the Design and Manufacture of Agricultural and Rural Equipment (CAP 4b). The regional technical institutions, particularly ARCEDEM, should be strengthened. The CAP 4a and 4b programmes should be integrated within programme CAP 3. In reformulating these programmes, the UNIDO secretariat should take into account the amendments submitted. The reformulated document would be prepared after the Consultation and sent to the participants. It was understood that these subregional programmes should make use of all existing institutional mechanisms.

(4) The national and subregional programmes should enjoy the technical support of UNIDO, FAO, ECA and OAU. Financing for such programmes should be sought in the framework of existing procedures within the United Nations system as soon as interested countries requested assistance programmes, as well as through bilateral voluntary contributions.

(5) Within the various subregions, meetings should be convened as soon as possible. The participants would be representatives of the national committees, groups or co-ordination focal points, consisting of representatives of agriculture, industry, planning and other interested parties in order to constitute the executive bodies responsible for defining and implementing the subregional programmes. These meetings should be convened on the joint initiative of ECA, UNIDO, FAO and OAU.

(6) International co-operation should be developed in order to contribute to the implementation of African agricultural mechanization programmes. Such co-operation with the more advanced developing countries, and the developed countries, should operate at various levels: first, to solve the problems of the use and maintenance of imported equipment and to ensure that Africa did not remain a graveyard for machines; second, to contribute to the establishment of new manufacturing units suited to African needs and to facilitate the mastering of industrial operations; and, finally, to secure the financial means for the execution of national and subregional programmes.

(7) A second regional Consultation should be organized in order to promote inter-African co-operation in this field when the subregional and national programmes had reached a sufficient level of maturity to permit a fruitful exchange of experience regarding the lessons to be drawn from implementing those programmes.

# I. ORGANIZATION OF THE REGIONAL CONSULTATION

## Opening of the Consultation

4. The First Regional Consultation on the Agricultural Machinery Industry in Africa was opened by the Deputy Director, Division of Policy Co-ordination and Head of the Negotiations Branch, UNIDO. Idris M. Nur, Head of the Natural Resources Division, OAU, read the statement of the Assistant Secretary-General of the OAU in charge of the Economic Development and Co-operation Department on behalf of the OAU Secretary-General. He expressed his personal satisfaction at the excellent spirit of co-operation existing between UNIDO, FAO, ECA and OAU. He said that the development of an agricultural machinery industry in Africa was a vital factor in attaining self-sufficiency in food and in alleviating the malnutrition of millions of Africans. In order to increase productivity, it was necessary first to produce machinery for intermediate mechanization as well as improved hand-tools and animal-drawn implements before proceeding to more advanced mechanization.

5. He referred to the Lagos Plan of Action, which emphasized that agricultural mechanization should be related to industrial development and should not further increase the dependency of African countries on the developed countries. He further noted that the Lagos Plan of Action acknowledged that agricultural mechanization had a priority role in increasing agricultural production and added that, given serious attention, the agricultural machinery industry could be the nucleus for African industrial development.

6. Over the past two decades, he added, the food and agricultural situation in Africa had undergone a drastic deterioration, leading to an increase of dependence on food imports and a drain on foreign exchange reserves. To correct this situation, it was necessary, inter alia, to induce small farmers to achieve higher levels of productivity and to adapt and implement new agricultural policies.

7. G.E.A. Lardner, Director, Policy and Programme Co-ordination Office, delivered a statement on behalf of the Under-Secretary General and Executive Secretary of the United Nations Economic Commission for Africa (ECA). He pointed out that because food production in African countries was decreasing there was urgent need to intensify crop and food production, to adopt measures to avoid post-harvest losses as had been stated in the 1976 Freetown Declaration of Ministers and in the Regional Food Plan for Africa. However, it was also necessary to increase the production of agricultural raw materials for industrial processing.

8. He noted that African countries had already developed and embryo of an agricultural machinery industry, producing hand-tools at the rural artisan level and in the light metal-working sector, e.g. animal-drawn and power-operated implements, and assembling power-operated machinery and tractors with locally-made parts. However, further development was subject to a number of constraints and as a principal objective the Consultation should examine means by which those development problems could be alleviated, ensuring at the same time that the evolution of the industry reflected the realities of tropical African agriculture, its physical and social environment and the implications of self-reliance and self-sustainment. Thus, the development of the agricultural machinery industry would constitute an important contribution towards the Industrial Development Decade for Africa, which is itself a component of the Lagos Plan of Action.

9. M.S.C. Nicholas, Director, Agricultural Services Division, FAO, stated that the development of the agricultural machinery industry in Africa necessitated co-operation between the African countries, UNIDO and FAO and he welcomed the practical co-operation between UNIDO and FAO.

10. African farmers needed greater access to improved farming methods in order to increase their productivity. Among other things that called for improved hand-tools, better animal drawn equipment, the appropriate use of mechanically powerd equipment and the establishment of close links between agriculture and industry. The aim should be to introduce technologically and economically feasible means of reducing drudgery while not destroying the very basis of farming - the soil.

11. He introduced two documents which he hoped would be valuable in the work of the Consultation, first, "Agricultural mechanization in development: guidelines for strategy formulation" (FAO Bulletin 45). He said that the purpose of the study was to define the relationship between agricultural mechanization and overall national development objectives in developing countries and to provide guidelines for the formulation of mechanization strategies. The second document, entitled "Agricultural mechanization and the demand for agricultural machinery in African countries up to the year 2000" (ID/WG.365/2) pointed to the need for a substantial increase in the number of tractors and associated equipment in Africa, together with a major increase in draught animal equipment in sub-Saharan Africa. This study shows the order of magnitude of the investment required in agricultural machinery, including hand tools, draught animal equipment, tractors and associated machines.

12. A message from Dr. Abd-El Rahman Khane, Executive Director of UNIDO, to the Consultation was also read. He stressed that this was the first Consultation to be held at the regional level and that it assumed a unique and fundamental importance since it was concerned with the agricultural machinery industry in Africa. In this connection, he recalled that the Lagos Plan of Action had expressed the need to produce, among others, sufficient quantities of agricultural tools and machines in order to be able to obtain self-sufficiency in food.

13. The First Regional Consultation should, therefore, focus not only on how to produce machines but also on which machines were required given that an important constraint to African agricultural productivity was the non-availability of suitable equipment. He therefore stressed the importance of the tentative proposal for the elaboration of a plan of action in this field which had been prepared by the UNIDO secretariat. While taking into account existing production capabilities and the specific requirements of African countries, the proposed Plan of Action suggested how the production of agricultural machinery could be a first step for the establishment of the industrial infrastructure required for the manufacture of capital goods. Furthermore, the proposed plan of action would make an important contribution to the Industrial Development Decade for Africa.

Election of Officers

14. Mohamed Ramdani, (Algeria) Directeur général des Activités Industrielles, Ministère de l'Industrie Lourde, was elected Chairman.

15. The following Vice-Chairmen were elected:

Telmaco Gonzalez (Argentina), Charge d'Affaires, Embassy of Argentina, Addis Ababa

Peter Rost (German Democratic Republic), Director, Veb Agro-Consult Dresden

Claude Uzureau (France), Directeur, Centre d'Etudes et d'Expérimentation du Machinisme Agricole et Tropical

Wang Wanjun (China), Vice Director and Chief Engineer, Chinese Academy of Agricultural Mechanization Sciences

Adoption of the agenda

16. The following agenda was adopted:

1. Opening

2. Election of officers

3. Consideration of the following issues:

Issue 1: Present situation, prospects and strategical choices for the development of the agricultural machinery industry in Africa in the context of the Lagos Plan of Action

Issue 2: Measures for promoting the agricultural machinery production capabilities in Africa

Issue 3: Tentative proposal for the formulation of an African Development Plan for agricultural machinery and equipment (1982-1990)

4. Recommendations for future action

5. Adoption of the report

Establishment of working groups

17. The Consultation decided to establish two working groups in order to discuss the issues under consideration and to propose conclusions and recommendations for the consideration of the plenary session. Working Group I concerned itself with issues 1 and 2; Working Group II discussed issue 3.

18. Arno Gego (Federal Republic of Germany), Director, Kloeckner-Humbolt-Deutz AG, was elected Chairman of Working Group I and Ernest Roland Ela Evina (United Republic of Cameroon), Directeur, Centre National d'Etudes et d'Experimentation du Machinisme Agricole (CENEEMA), was elected Chairman of Working Group II

Adoption of the report

19. The report, including the reports of the Working Groups, was adopted by consensus on Friday, 9 April 1982, at the closing session of the Consultation.

Documentation

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

## II. REPORT OF THE PLENARY

### Introduction by the UNIDO secretariat

### Issue 1: Present situation, prospects and strategical choices for the development of agricultural machinery in Africa in the context of the Lagos Plan of Action

21. The UNIDO secretariat recalled that participants at the First Consultation on the Agricultural Machinery Industry (October 1979) had supported the approach adopted by FAO and UNIDO which focused on a strategy for mechanization, integrating agriculture and industry. This approach led UNIDO to raise the question of which machines should be produced to suit local requirements and conditions and how to produce them.

22. For this purpose, case studies in 16 African countries were carried out in order to collect information on the needs, market, industrial and artisan production, institutional framework, experience acquired, projects planned and difficulties encountered. At the same time, collaboration was established with both ECA and FAO in order to prepare and analyse the results of the 16 case studies and to obtain specific contributions. The following were the main findings of the case studies:

(a) The majority of African countries were under-equipped in both agricultural machinery and in equipment required for rural activities; domestic demand had been slackening considerably;

(b) Production of agricultural machinery in Africa supplied about 10 per cent of the market in the region, thus illustrating the degree of dependence on foreign suppliers and their technologies;

(c) Industrial production was generally undertaken by small-scale enterprises and focused on hand tools and unsophisticated machines, animal-drawn equipment and, exceptionally, motorized equipment; many of the existing enterprises were facing difficulties and in some cases their future was in doubt;

(d) Artisan production played a very important role for the supply of equipment to rural areas.

23. The UNIDO secretariat stressed that there were, nevertheless, elements of hope for the future: first, the political framework afforded by the Lagos Plan of Action, which established goals for the mechanization of agriculture and the production of food and, second, the positive experiences in the design and manufacture of appropriate agricultural equipment in many African countries.

24. On the basis of these findings, the UNIDO secretariat had prepared action-oriented proposals directed towards the formulation of national mechanization strategies linking agriculture and industry and particularly towards meeting the needs of small farmers and food crop production. Three complementary routes of mechanization were proposed to improve the manufacture and application of agricultural machinery and equipment in African countries.

25. The participants were invited to comment on the findings of the case studies, on the validity of the elements of hope identified and on the choices of African countries with regard to patterns of mechanization.

Issue 2: Measures for promoting the agricultural machinery production capabilities in Africa.

26. The representative of the UNIDO secretariat referred to document ID/WG.375/3 and elaborated on the question "how to produce".

27. In the majority of African countries, there was an immediate need and demand for selected agricultural tools, implements and machinery. The big dilemma was whether priority should be given to the manufacture of specific agricultural machinery or to the manufacture of multi-purpose engineering and metallurgical products which also include agricultural machinery.

28. With regard to the level of production, there were three basic criteria that must be taken into account: type of production units; product groups; and level of technological complexity.

29. In order to promote the local production of agricultural tools, implements and machinery, the secretariat stressed the need for:

(a) An overall national programme of action on agricultural mechanization and the corresponding industrialization;

(b) The gradual incorporation of agricultural machinery within the capital goods industry and the widening of the range of end products of agricultural machinery to related sectors that are equally vital for the development of rural activities;

(c) Analyses of the advantages and disadvantages of establishing new versus upgrading existing engineering units;

(d) Strengthening existing institutional infrastructure or the establishment of new ones in selected areas.

30. The UNIDO secretariat considered that there was a need to establish an institutionalized link at the national level between ministries of industry, agriculture and planning, thereby providing a nucleus for an integrated programme of action on development and local manufacture of agricultural machinery within the framework of the capital goods industry.

Summary of discussions

31. Participants were in general agreement with the findings and conclusions of the diagnostic study carried out by UNIDO in collaboration with ECA and FAO on the present situation of the agricultural machinery industry in 16 African developing countries. They noted that each case study reflected the present situation in their countries. Many participants elaborated further on the nature of the problems with which they have been confronted.

32. Several participants stressed that a main constraint for most African countries was the small size and instability of their markets and the fact that often demand was not sufficiently backed by purchasing power. A suggestion was made that Governments should ensure specific purchases of equipment over a three- to five-year period. A participant suggested that transnational enterprises could be created at the sub-regional level and could thereby benefit from a larger market.

33. Participants also stressed that the lack of mechanization of agriculture in many countries was due to the fact that equipment was inappropriate to local conditions and needs. In this connection, it was felt that it was necessary for countries to develop their own machinery in accordance with local conditions - type of crops grown, climate etc. One participant pointed out that motorization of agriculture could be adapted to the use of new sources of energy.

34. Many participants stressed that it was important to meet the needs of the small farmers who were generally not equipped. Since small farmers constitute the majority of the population in most African countries, it was felt that special efforts should be made to provide them with the necessary infrastructure in terms of communication and transport, as well as with the necessary financial resources, information and training. In this connection, it was noted that there was considerable lack of technical personnel who were trained in technologies required for the agricultural machinery industry because academic professions are generally preferred; similarly, the lack of middle management was felt in most countries.

35. Several participants noted that, given the increasingly high cost of local production, it was not possible to compete with equipment from the industrialized countries. It was felt that local industry should benefit from tariff protection at least during the initial phase of operation. Some participants considered that priority should be given to upgrading existing production facilities rather than establishing new facilities.

36. Design and adaptation was discussed at length because of its crucial importance. Most participants stressed the lack of suitable designs, which was a problem to be overcome in the future. Adaptation should take into account local conditions as imported equipment was not always designed and adapted to African needs and conditions.

37. Other participants noted, however, that if the right machinery were selected the need for adaptation would be considerably reduced. A few participants gave examples of how their co-operation with African countries had been conceived and provided through special collaboration arrangements. One participant stated that he was ready to support negotiations to provide know-how, training, equipment etc. It was necessary, however, to examine the extent to which transfer of technology had been effective since it was often confined to one enterprise and not diffused within the country. One participant noted the variety of technological needs of developing countries and the urgency to fully meet them. A few participants felt that the third route of mechanization contained in the UNIDO document on issue 1 was not realistic.

38. One participant emphasized the need for a dialogue at the international level since it was indispensable for the formulation of strategies for billateral industrial development and co-operation. He emphasized, furthermore, the importance of rural mechanization, a wider concept than agricultural machinery; of the adaptation of industrial supply to needs rather than to demand backed by purchasing power; and of the need to innovate and to define new products and equipment for developing countries. The representative of the EEC drew attention to the activities of the European Development Fund in Africa and explained that this Fund was financing several projects involving local production of agricultural equipment.

39. Other participants stressed the importance of co-operation at the subregional level in Africa. In this connection, it was pointed out that, given the small markets of many countries, co-ordinating the import of agricultural machinery at the regional level was desirable in order to avoid the multiplicity of types of agricultural machinery and to facilitate the solution of the problems relating to the availability of spare parts, repair, maintenance and other after-sales services.

40. A few participants noted that standardization was important at the subregional as well as at the national level and, therefore, regional and national committees should be established with the participation of relevant organizations. In this connection, one participant emphasized that products, components and capital goods necessary for the production of agricultural machinery should be standardized.

41. Participants also addressed themselves to the need for the creation of centres at the subregional level. One participant noted that such centres, at the national and subregional levels, were desirable to establish contacts and exchange information among countries of the region as well as between developed and developing countries. Several participants also mentioned the need to evaluate the production capacities existing at the subregional level in order to promote their co-ordination and integration, thereby encouraging production specialization. One participant felt that it might be beneficial to spread skills and experience to neighbouring countries through the establishment of partnerships for the assembly of components; this would constitute a first step towards an increased local content in manufacturing and the development of skills and technology. Another participant pointed out that, in addition to moving towards increased local content, there was a possibility for production units to become increasingly versatile.

42. Several participants also stressed that in discussing agricultural machinery, irrigation equipment and the problems of storage should not be overlooked since for many countries they were of great importance.

43. Further discussion on issues 1 and 2 took place in Working Group I (see paras. 47-67 below).

Issue 3: Tentative proposal for the formulation of an African development plan for agricultural machinery and equipment

44. The document presented by the UNIDO secretariat (ID/WG.365/7) contained a tentative proposal that was open for correction and improvement by the Consultation. It was drawn up on the basis of hypotheses and assumptions that had been confirmed during the discussions of issues 1 and 2. Owing to the absence of any information on the composition of regional subdivisions corresponding to the typology of agricultural mechanization problems in Africa, projects for programmes were formulated without any precise geographical reference. However, the design of such draft programmes in module form should enable interested countries to choose the activities corresponding to their specific problems. The whole set of programmes reflected the complexity and gravity of the problems to be solved and the guidelines of the Lagos Plan of Action. These proposals can be summarized as follows:

(a) A top urgent programme, the main thrust of which would be directed towards conserving the existing production apparatus that is threatened by the shrinking of the market, increasing productivity and making full use of installed production capacity;

(b) A medium-term programme consisting of two complementary categories of programmes:

(i) Integrated national programmes for agricultural machinery and multilateral and bilaterial co-operation;

(ii) Subregional programmes for the development of agricultural equipment.

45. The integrated national programmes would create a link between policies for agricultural mechanization and the manufacture of equipment. Governments of African countries could on request receive the joint support of UNIDO and FAO. Programmes would be aimed in particular not only at consolidating the existing production apparatus and providing useful tools for national decision-makers and information and guides for decision-making but also at establishing the institutional machinery necessary for the formulation and implementation of integrated agricultural mechanization policies and African technological development. Two activities would be linked: agricultural mechanization choices and strengthening African design and manufacturing capacity. The design and establishment of new industrial units would take into account the size of markets.

46. The subregional programmes would use the machinery recommended by ECA. In addition to the above activities, with which they would be linked, these programmes would include specific activities related to regional co-operation such as those adopted by the Ministers of Industry of the East African countries at the Lusaka meeting. The activities selected there were generally identical to those proposed by the UNIDO secretariat, particularly as regards the transfer of manufacturing technology, design and research; the development of equipment appropriate to African conditions; the exchange of information between countries; subcontracting agreements for the manufacture of parts and components; and the standardization of equipment and raw materials. The subregional programmes would rely on existing organizations. should be strengthened.

# III. REPORT OF WORKING GROUP I ON THE PRESENT SITUATION, PROSPECTS AND STRATEGICAL CHOICES FOR THE DEVELOPMENT OF AGRICULTURAL MACHINERY IN AFRICA, IN THE CONTEXT OF THE LAGOS PLAN OF ACTION AND ON MEASURES FOR PROMOTING THE AGRICULTURAL MACHINERY PRODUCTION CAPABILITIES IN AFRICA

## A. Diagnosis of the present situation

47. The Working Group reviewed issue 1, namely, the present situation, prospects and strategical choices for the development of agricultural machinery in Africa (ID/WG.365/1). It was generally agreed that the situation was alarming and was worsening daily in all of Africa. Underequipment and the discrepancy between potential and realized demand were identified as the main constraints for developing rural mechanization.

48. Most participants stated that another cause for the difficult situation for agricultural mechanization was that imported equipment in various instances was not designed to meet the very different soils and the working, climatic and cultural characteristics of African countries.

49. Several participants pointed to the need to improve existing capacities, particularly the availability of blacksmiths and craftsmen. Farmers should be offered robust, inexpensive and easy to maintain locally produced equipment. New production units should, however, not specialize in a limited number of items but should instead offer wherever possible lines of related products (multi-purpose units).

50. One participant stated that animal traction has been in use in agricultural operations and transport in rural areas for a long time in most countries of Africa and that draught animal power had a wide application for the majority of African farmers; however, another participant noted that there were limits to this application.

51. The need for closer subregional and regional co-operation, particularly in the selection, adaptation and realization of various designs, was stressed by many participants.

## B. Consideration of areas for possible action for promoting the agricultural machinery production capacities in Africa

52. In its consideration of issue 2 (ID/WG.365/3), the Working Group discussed the following questions.

### Development of political prerequisites

53. The Working Group discussed the necessary political prerequisites for the development of a domestic agricultural machinery industry. A few participants felt that without the political will on the part of Governments, no efforts initiated by technicians would be sufficient to strengthen the agricultural machinery industry. An interministerial approach, a co-ordinated effort by policy-making organs and a technical institutional infrastructure were

necessary to move away from the present critical situation. One participant stated that the development of agricultural mechanization was conceivable only in close technical and economic co-ordination with the development of agro-chemistry and agro-genetics. The tools and machinery to be used in Africa tomorrow would depend on the fertilizers, plant health products and varieties of seeds developed specifically for the continent.

Creation of a viable demand for agricultural machinery

54. The Working Group reviewed the various possibilities for transforming the needs into actual demand for a domestic agricultural machinery industry. Several participants discussed possible action at national and African levels; action at the national level should include incentives, credits, subsidies etc. and at the African level increased intra-African trade leading to larger subregional and regional markets. Certain incentives to individual farmers could be provided immediately without waiting for concerted policies that would follow. Other participants noted that an increase in the exchange of agricultural machinery and machinery technology between the African countries would create a more favourable environment. The need for concerted action, which would also include banks and financial institutions, was mentioned by one participant. Another participant quoted price guarantees for agricultural products and special credit facilities as examples of measures for mobilizing the latent demand.

Production of low-cost agricultural equipment; related government support measures

55. The Working Group agreed on the importance of developing equipment whose purchasing price was within the reach of the African peasantry. It was recognized by all that costs of the products of any new industry in the initial period would be by necessity higher than most of the equipment imported or otherwise available on the market. Therefore, various measures to support local equipment producers during the initial manufacturing period were discussed. A few participants felt that subsidies, tax holidays, purchase preference for indigenous products and financial incentives to producers and end-users were beneficial. As to trade barriers, one participant pointed out that protection could be beneficial to new industries only for a limited period of time but could have a negative impact if extended for longer periods. Another participant mentioned that the import of raw materials sometimes met higher trade barriers than the import of finished products.

Standardization as a means of reducing requirements for resources

56. The Working Group addressed itself mainly to the problem of standardization of makes and models that were related to the needs for qualified maintenance and repair personnel, spare parts and inventories.

57. Some participants felt that though proper standardization, selection and adaptation of imported and locally produced equipment, the need for maintenance could be reduced.

58. One participant stated that the problem of standardization was also evident at the artisanal level where two products of the same kind were not identical; the same problem existed when two neighbouring countries produced the same product.

59. Another participant said that each country should have at least one installation for the manufacture of certain spare parts to avoid delays in delivery from abroad and to cope with the lack of spare parts for discontinued models and makes.

Adaptation and selection of imported and domestically produced equipment

60. The Working Group placed great emphasis on the adaptation and selection of equipment. Participants pointed out that countries should select items with specific characteristics required by local conditions - soil, climate, topography, crops, human resources and culture.

61. One participant stated that among the different kinds of equipment, motors, however simple, must be adapted to the fuels now available and likely to be available in the future in each country as well as to petroleum fuels. Examples would be methanol of mineral or vegetable origin, ethanol, vegetable oils as substitutes for gas oil, fermentation gas etc.

62. Several participants stressed that equipment selected should be of simple and robust design, be easily maintained and not require highly trained personnel for operation and repairs.

63. One participant considered that each country should have at least one research and development institution to strengthen the local design and adaptation capabilities. Another participant noted that the establishment of such capacities, including engineering capabilities, is, however, a long-term task.

64. Furthermore, one participant emphasized the need for adequate information on production capacities and products manufactured in Africa in order to better plan and pursue the establishment of new industries at the national level.

Scope for co-operation in the agricultural machinery industry

65. The potential for different types of co-operation at various levels was reviewed by the Working Group. Several participants stated that the most direct and immediate possibilities for co-operation would be in the fields of research and testing, preparation of studies and meetings etc. More advanced forms of co-operation, including industrial co-operation, would however involve political considerations.

66. A specific suggestion was made concerning the production of spare parts for land cultivation equipment, animal and tractor-drawn equipment, as well as for other sectors of industrial activitiy. Such spare parts are normally produced by specialized subcontracting enterprises in the industrialized countries and can equally well be produced in the developing countries to satisfy their needs for such items.

67. One participant felt that there was an important scope for co-operation between developing countries and small and medium-sized enterprises in industrialized countries.

## IV. REPORT OF WORKING GROUP II ON THE TENTATIVE PROPOSAL FOR THE FORMULATION OF AN AFRICAN DEVELOPMENT PLAN FOR AGRICULTURAL MACHINERY AND EQUIPMENT

### A. General appraoches

68. The Working Group discussed the proposals contained in the document "Tentative proposal for the formulation of an African Development Plan for Agricultural Machinery and Equipment" (ID/WG.365/7).

69. Some participants considered that the time had come for a vigorous development of the agricultural machinery industry in Africa. The representative of OAU pointed out that agricultural mechanization policies should aim at ensuring continued self-sufficiency in food and that countries should relate the development of their national programmes for the manufacture of agricultural equipment to the Lagos Plan of Action and the programme for the Industrial Development Decade for Africa.

70. One participant thought that mechanization should be understood in a wide sense, including rural equipment and the mechanization of agro-industries. Some participants stated that the primary need was to increase the production capacity of existing manufacturing units before setting up new enterprises.

71. The representative of FAO recalled the priority given by his Organization to the determination of national agricultural mechanization policies and strategies and the necessity for industrial and agricultural development to take place in harmony with one another; he welcomed the collaboration that had been established with UNIDO and emphasized his general agreement with the proposals contained in ID/WG.365/7.

72. The representative of the Joint ECA/UNIDO Industry Division explained that, although many African countries had design and experimentation units for agricultural machinery and equipment, most of those countries had no production capacity for and no policy with regard to the manufacture of such equipment and that there was no link in the countries between existing industries and agricultural mechanization centres. It was, therefore, necessary to draw up national programmes.

73. The question of the structure and institutional machinery of subregional programmes was discussed. Many participants pronounced themselves in favour of the establishment of national programmes that could be used as a basis for the elaboration of complementary subregional programmes. Other participants felt, however, that priority should be given to the establishment of subregional structures and programmes.

74. With regard to national programmes, there was general agreement on the necessity of setting up national committees for agricultural machinery and rural equipment comprising representatives of agriculture, planning and financing institutions and other concerned parties. With regard to subregional programmes, the following concrete areas were proposed: co-ordination of existing manufacturing units, research and development efforts, training, exchange of information and inter-country visits.

75. One participant considered that a subregional committee should supervise and harmonize national plans, ensure that the proliferation of enterprises would be avoided and help existing enterprises.

76. A discussion took place on the delimitation of the subregions. It was agreed that the ECA geopolitical system of division into four subregions could serve as a framework but that it would be necessary to be flexible. Some participants thought that subregional division should take ecosystems and the specific problems of agricultural mechanization into account.

77. In response to invitation from the Chair, a representative of the ECA secretariat briefed the Meeting on the individual and joint activities of ECA, UNIDO and OAU in respect of the Industrial Development Decade for Africa. He explained the ECA subsectoral/subregional approach used to promote industrialization. He noted that five Multinational Programming and Operational Centres (MULPOCs), four of them corresponding to the four subregions, are the executing arms of ECA and that decisions are made by the MULPOC Council of Ministers which meets once a year to review and adopt the MULPOC programmes. He referred to the recent Lusaka MULPOC meeting which established a committee on engineering industries. This committee and similar committees that are likely to be established could take care of the subregional activities related to agricultural machinery and equipment.

78. The question of project financing was discussed. The representatives of the FAO and UNIDO secretariats indicated that their Organizations had no resources available out of the budgets for regular programmes for the 1982-1983 period but that, if countries requested assistance programmes, their financing could be negotiated within the framework of existing procedures. The representative of ECA mentioned sources of finance available to his Organization and its willingness to try to obtain additional resources.

79. During the discussion on issue 3, participants also considered other subjects. Thus a participant expressed the opinion that technology to produce the simple agricultural machines that Africa needed already existed and raised no particular problem. It was desirable to implement an import-substitution and import-restriction policy. A statement was also made to the effect that import control should apply only to machinery and equipment not designed for African countries.

80. Several participants noted that repair and maintenance, supply of spare parts and the large quantitites of imported heavy equipment that is not operational constituted a major problem in many countries. Several African countries stressed the responsibilities of the suppliers and the necessity of their commitment and involvement in the provision of spare parts and the training of repair and maintenance personnel.

81. Other participants noted that according to experience this problem could be reduced by decreasing the types of equipment imported, establishing suitable workshops for maintenance and selecting carefully the equipment imported. It was added that the purchase of initial spares and the availability of documentation of the spares required in the future would help to alleviate repair and maintenance problems.

82. The representative of FAO agreed on the crucial importance of this subject and stressed the necessity of securing a steady flow of spare parts. Reference was made to a meeting convened two years ago on this subject.

83. A proposal was made regarding the exchange of information at the subregional level in order to improve the efficiency of import policies. It was also recommended that subregional mechanization centres should be established; they should develop machines not available for suppliers outside Africa.

84. It was proposed that visits by representatives of national agricultural machinery industries should be organized within the subregions. A specific suggestion was made that agricultural machinery fairs should be organized and that ways should be sought to finance the travel of representatives from African countries that had no such industry. That suggestion was supported by representatives of African countries. It was also suggested that a forum should be organized regarding agricultural machinery and tools of types I and II, as referred to in issue 2.

85. A participant suggested the establishment of a working group at the subregional level to develop production capacity for animal-drawn equipment.

86. Finally, one participant proposed that the development of intra-African trade should be a priority objective.

## B. Consideration of the plan of action

87. Several participants commended the quality of the preparatory work done by UNIDO and expressed general agreement with the contents of the proposal made.

88. The Working Group proceeded to consider each of the programmes. The proposed amendments are given below.

89. Concerning the programmes in general, it was recommended that they should be initiated simultaneously. Many participants underlined the crucial importance of information. The time periods allowed for needed to be made more flexible, particularly with regard to CAP 1, for which more time should be allowed.

One participant proposed that CAP 1 should be supplemented as follows:

After the third paragraph under (i), page 17, add:

> "While formulating purchase policies of agricultural equipment, adequate considerations should be given to buy from African countries to maximum or considerable extent as possible at a given point of time in order to (a) improve intra-African trade and co-operation as also (b) utilize experience of fellow African countries and (c) reduce maintenance problems where applicable."

After the first paragraph under (ii), page 18, add:

> "While planning establishment of new manufacturing units considerations should be given to diversify the product-mix in designing of the factory to be a general engineering plant with

emphasis, of course, on selected agricultural equipment which may constitute a substantial percentage of output (maybe in the terms of 40-50 per cent), while remaining capacity should be so designed that the plant can produce other equipment in lean periods for production of agricultural equipment."

"While planning new plants consideration should be given to utilize experience of other African countries which are already operating similar plants and such countries should be given a chance to participate in design of the plant hand-in-hand with national or regional design institutes set up by African Governments. This, however, should not exclude in-flow of advanced expertise from other developing and developed countries."

After paragraph 2, page 18, under B information above "From diagnosis ..." add:

"While collecting of information is very relevant, recognizing possible difficulties and delays in collection of such information from most of the African countries, care should be taken to see that collection of information should not act as a factor to delay implementation of a project. Collection of information, being important, may continue parallel. This will assist projects to come up quickly and in some cases to make them viable."

91. Programmes 1 and 2 were adopted.

92. Concerning CAP 3, the representative of FAO asked that the aspects of agricultural mechanization and the importance of the users should be taken into account more explicitly. It was proposed and agreed that programmes 4a and 4b should be incorporated in programme CAP 3. It was recommended that a selection should be made among the activities envisaged. On the other hand, a larger place should be given in these activities to training, extension work, maintenance and after-sales services, particularly with regard to the supply of spare parts.

93. Concerning training, one participant considered that priority should be given to training at the national level, and particularly in management skills.

94. Concerning the changes needed in programmes CAP 3, CAP 4a and CAP 4b, one participant proposed the following amendment:

"The Subregional Programmes should be organized under two parallel but separate bodies namely:

"A. Sub-regional Agricultural Mechanization Centre charged with the responsibility of:

(a) Data collection and information dissemination among members of the subregion. Organize trade fairs and co-operation among the members. Make inventory of agricultural mechanization resources of the subregion;

(b) Testing, adaptation, and certification of imported machinery;

(c) Design and develop prototype agricultural machinery for agricultural operations and activities where none are available particularly in the areas of root and tuber crops, tree and plantation crops, processing of foods which are specific to the subregion;

(d) Make an inventory of the large number of designs already available in the specific regions with a view to determining those ready for immediate commercialization and those requiring further development;

(e) Undertake training of mechanics, technicians and operators especially for the more complex agricultural machineries being used generally in the subregion.

"B. Sub-regional Centres for the commercial manufacture of agricultural machinery, equipment and implements selected for the subregion as well as those emanating from Sub-regional Centre of Agricultural Mechanization.

"The details contained under chapter 3 and chapter 4 of the UNIDO proposal should be brought in under A and B anove as appropriate. Both the activities of A and B should go on simultaneously."

95. It was considered that thought should be given to how the programmes could be started up. In this connection, a participant proposed that the subregional programmes commence with the organization of national committees with the encouragement of FAO and UNIDO who would play a co-ordinating role; the establishment of a steering committee for the subregion with responsibility for drawing up the programme would be established.

96. The desire was expressed that the respective roles and tasks of the various international organizations should be defined in the light of the different programmes.

97. One participant submitted the following amendment:

"One should, as one of the resolutions here, assign the responsibility of calling the first meeting of the various Subregional Programme Committees to UNIDO. UNIDO should arrange to do this in consultation with ECA and the other relevant arm of OAU. The first meeting of the subregional programme committees should then be regarded as quasi-continuation of the present Consultation. In sending out invitations to member countries of a given subregion, UNIDO should please remember to ask the countries to send representatives from relevant ministries, agriculture, industry, as well as other relevant national institutions."

## C. International industrial co-operation

98. Some participants stressed the importance of the dialogue established at the international level. It was suggested by one participant that the conversations initiated at the present Consultation with suppliers from the developed countries should cover two complementary aspects: first, the

attempt to find an answer to the immense problems faced by African countries as a result of immobilization and the poor conditions under which imported motorized equipment was maintained and, second, efforts to devise new paths to industrialization better suited to African conditions.

99. Another participant stressed the responsibilities of suppliers and enumerated the key areas that should be expressly taken into account in the conclusion of agreements on importation and local manufacture - in particular, the supply of spare parts and manpower training.

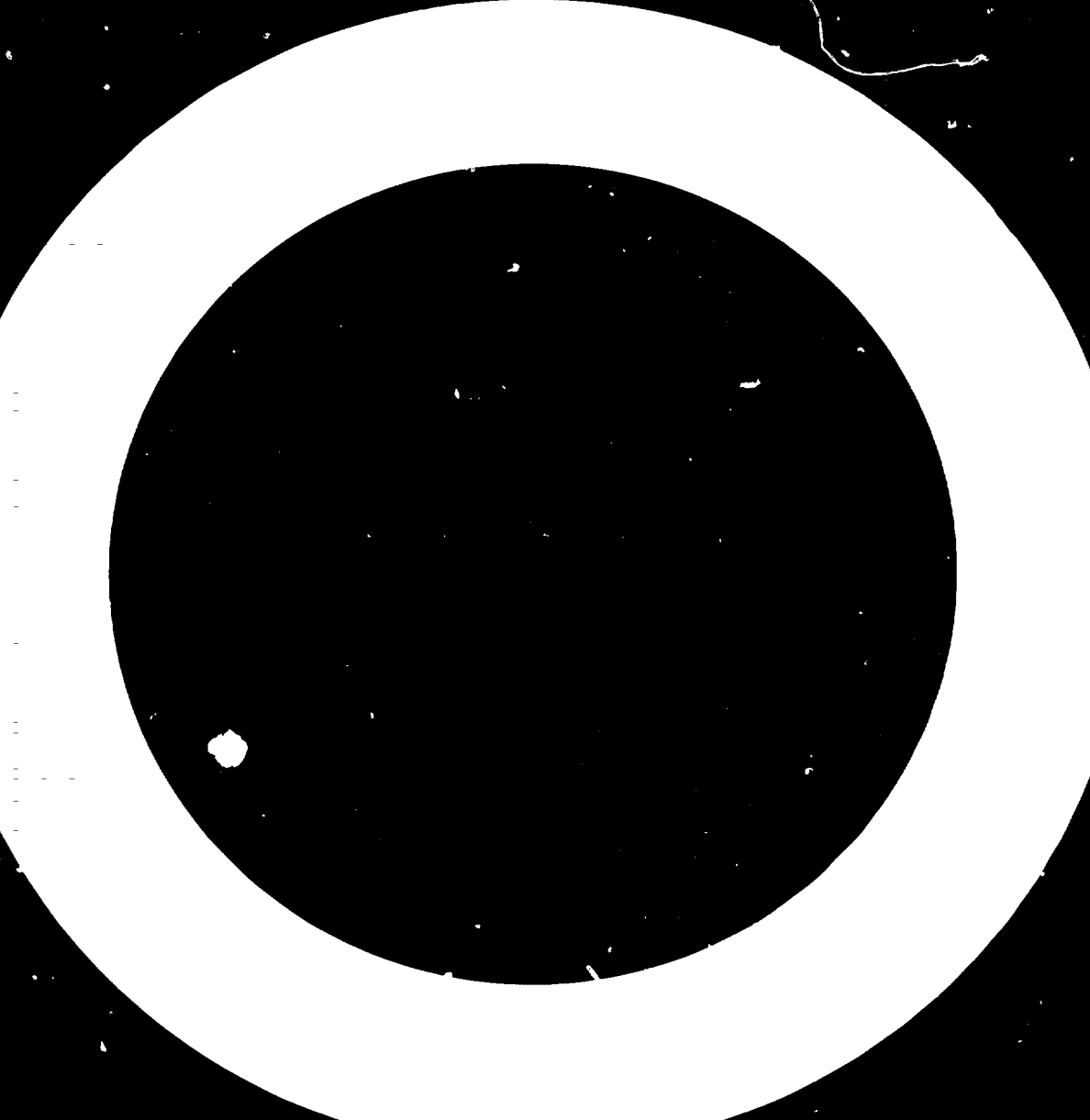
100. Several participants expressed a strong desire to receive precise proposals for co-operation in response to their requests for assistance.

101. Offers of collaboration and long-term technical co-operation in the development of the agricultural machinery industry in Africa were forthcoming from participants from developed countries with market economies and centrally-planned economies.

102. The representatives of the European Committee of Associations of Manufacturers of Agricultural Machinery offered co-operation. Another participant proposed the dissemination of an inventory of agricultural equipment and offered to provide information to other African countries.

103. One participant proposed a new type of industrial co-operation that could contribute towards removing the following major obstacles to industrial development; inadequacy of the infrastructure, difficulties in adapting equipment to local conditions, socio-cultural problems, market size and the viability of demand.

104. Participants from West African countries mentioned their plan to combine efforts in a subregional programme and addressed an appeal to the developed countries for co-operation in the following areas: training and maintenance with a view to the efficient utilization by the peasantry of existing agricultural equipment, the spreading of new mechanization techniques, the training of artisanal iron-smiths, and the strengthening and co-ordinating of the existing production capacities of the countries concerned. A participant from a developed country expressed agreement in principle and readiness to join in the examination of that request, expressing the hope that UNIDO and FAO would associate themselves with the scheme.



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## Annex II

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### Discussion documents

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| Issue 1 - Present situation, prospects and strategical choices for the development of agricultural machinery in Africa in the context of the Lagos Plan of Action | ID/WG.365/1 |
| Issue 2 - Measures for promoting the agricultural machinery capabilities in Africa | ID/WG.365/3 |
| Issue 3 - Tentative proposal for the formulation of an African Development Plan for Agricultural Machinery and Equipment (1982-1990) | ID/WG.365/7 |

### Supporting documents

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| Diagnosis of the present situation and trends of production and utilization of agricultural machinery in Africa | UNIDO/IS.288 |
| Agricultural mechanization and the demand for agricultural machinery and equipment in African countries up to the year 2000 | ID/WG.365/2 |
| Agricultural mechanization in development: guidelines for strategy formulation | FAO Bulletin 45 |
| Profiles for upgrading the production capabilities in the agricultural machinery industry in Africa | ID/WG.365/6 |

### Information documents

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| UNIDO activities in Africa in the field of agricultural machinery industry (1969-1981) and potential (1982-1986) | ID/WG.365/4 |
| Irrigation equipment related to the food production situation in Africa | ID/WG.365/5 |

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