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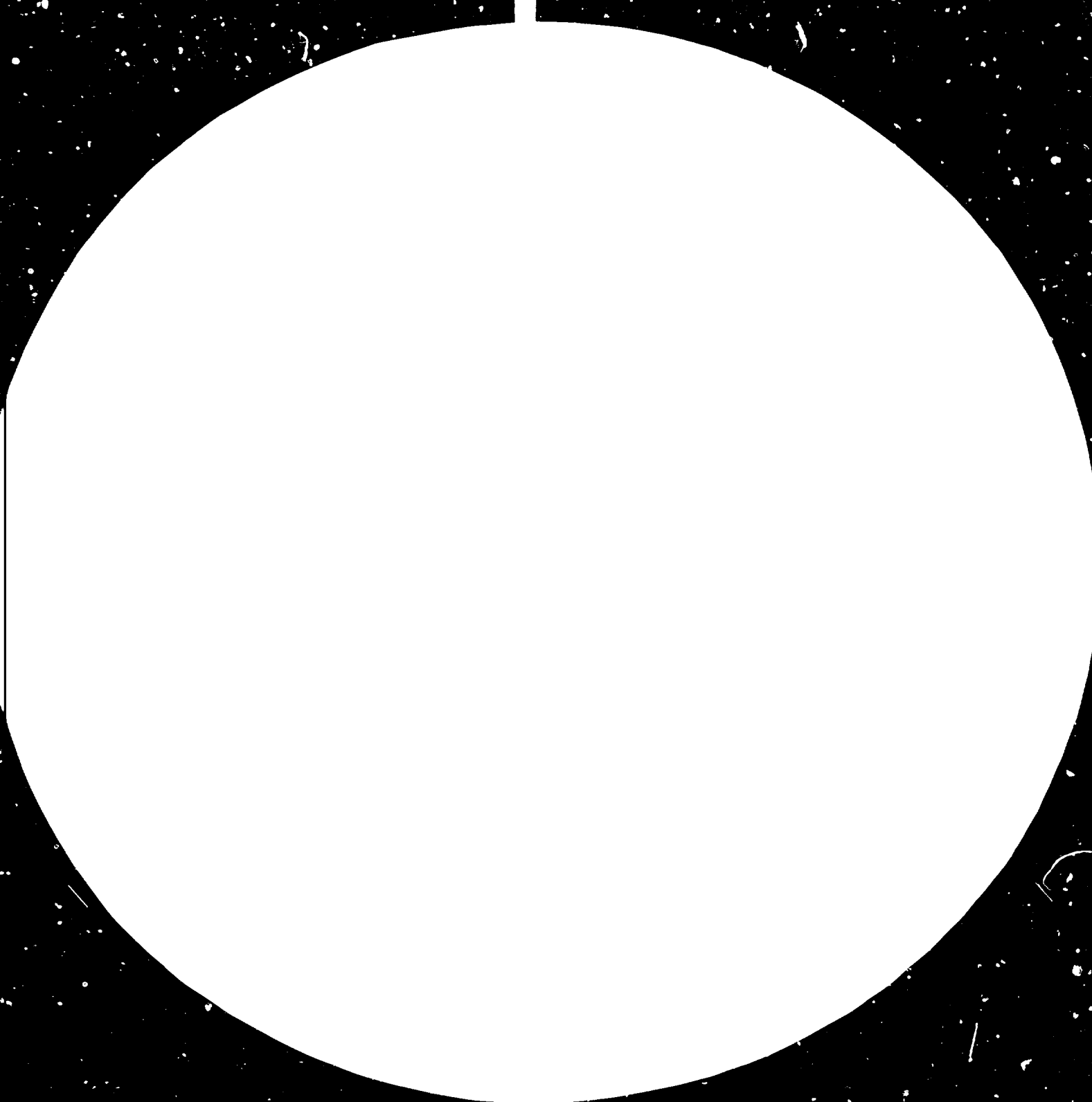
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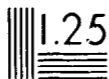
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Meeting on Exchange of Experiences and Co-operation  
among Developing Countries in the Development  
of the Agricultural Machinery Industry

Beijing, China, 20-27 October 1980

REPORT

000300

80-47005

PREFACE

The Second General Conference of the United Nations Industrial Development Organization (UNIDO), held at Lima, Peru, in March 1975, recommended that UNIDO should include among its activities a system of continuing consultations between developed and developing countries and among developing countries themselves with the object of raising the developing countries' share in world industrial output to at least 25 per cent of the total by the year 2000.<sup>1/</sup>

The Lima Declaration stressed, inter alia, the development of efficient agriculture-related industries in order to achieve a high degree of integration between agriculture and industry in the developing countries. Accordingly, the Industrial Development Board authorized, at its twelfth session in 1978,<sup>2/</sup> preparations to convene the First Consultation Meeting on the Agricultural Machinery Industry. This was the sixth industrial sector to be covered by Consultations and was preceded by iron and steel, fertilizers, leather and leather products, vegetable oils and fats, and petrochemicals.

The Meeting on Economic Co-operation was organized in accordance with the provisions of the Plan of Action of the United Nations Conference on Technical Co-operation Among Developing Countries.<sup>3/</sup> In that Plan, which was endorsed by the General Assembly at its thirty-third session in resolution 33/134, the organizations of the United Nations system were asked to support, on request, projects on the preparation and execution of technical co-operation among developing countries (TCDC).<sup>4/</sup> The Conference saw a need to

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

<sup>2/</sup> Official Records of the General Assembly, Thirty-third session, Supplement No. 16, para 168a.

<sup>3/</sup> Report of the United Nations Conference on Technical Co-operation Among Developing Countries (United Nations publication, Sales No. E.78.II.A.11), p.2.

<sup>4/</sup> Official Records of the General Assembly, Thirty-third session, Supplement No. 45.

to facilitate sustained and widening TCDC and recognized that bilateral arrangements constituted one of the fundamental aspects of such co-operation. In that respect, developing countries should undertake special efforts to intensify TCDC through long-term programmes and projects.

The First Consultation Meeting on the Agricultural Machinery Industry was held in Stresa from 15 to 19 October 1979.<sup>5/</sup> One of the recommendations of that Consultation was that UNIDO should, in response to an offer by the delegation of China, organize a meeting in that country on economic co-operation between developing countries in the development of the agricultural machinery industry.<sup>6/</sup> In accordance with the wish of the host Government, selected industrialized countries were also invited to participate.

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<sup>5/</sup> See Report of the Meeting (ID/239, ID/WG.307/9/Rev.1).

<sup>6/</sup> Ibid., p.5, para. 2(f).

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## INTRODUCTION

The first Meeting on Exchange of Experiences and Co-operation among Developing Countries in the Development of the Agricultural Machinery Industry was held at Beijing, China, from 20 to 27 October 1980. The Meeting was attended by 75 participants from 35 countries and one international organization (annex I).

## AGREED CONCLUSIONS AND RECOMMENDATIONS

1. The Meeting recommended six priority areas for co-operation among developing countries:

Product/production design and adaptation of equipment in Categories I, II and III 1/

(a) The first area should include agricultural equipment generally accepted, already manufactured and used with satisfaction by farmers in the developing countries. It should also include basic facilities and ancillary industries for achieving local production. Countries that are in a position to help are, among others, Argentina, Brazil, China, India, Turkey and Yugoslavia as well as Bulgaria and Hungary. These countries are using well-known technologies in their current production;

- 
- 1/ Category I.     Simple: Hand tools, animal-drawn basic implements and manually operated equipment.
- Category II.     Intermediate: Tractor-drawn basic implements, low horse-power, simple power equipment including engines, power tillers and irrigation equipment.
- Category III.    Standard: Standard general purpose tractors, power tillers, engines, pumps, harvest and post harvest equipment, etc.
- Category IV.     Advanced: Sophisticated, special purpose agricultural equipment such as combine harvesters, specialized crop cultivation and fruit harvesting equipment, high powered tractors and complex irrigation equipment.

This list of products is not exhaustive.



Training

(b) Fields in which training is needed by developing countries include:

Design work

Equipment used for manufacture of agricultural machinery

Agricultural machinery

Maintenance and repair

Service networks

Training in the above and related fields is of paramount importance at the design, manufacture and utilization stages. Countries that are in a position to offer facilities and services include, among others, Algeria, Argentina, Brazil, China, Colombia, India, Turkey and Yugoslavia as well as Bulgaria and Hungary;

Service network installations

(c) The third area should include services, workshops and units for handling manufacturing equipment and final products within manufacturing establishments and centres created for the purpose of maintenance and repair of products. The final objective of the network is to offer production facilities and utilization of available machine parts. Countries that need assistance in this field include, among others, Algeria, Egypt, Guyana, Niger, Togo, Tunisia and the United Republic of Tanzania. The countries, listed under points (a) and (b) with the exception of Algeria, are potential contributors;

Information service

(d) The type of information needed by present and potential manufacturers includes that on product specifications; manufacturing products; results of prototype production and testing; types of co-operation between developed and developing countries as well as among developing countries themselves etc. UNIDO was requested to give priority in its information service to the agricultural machinery industry. In addition, UNIDO was requested to compile surveys on the different experiences of the developing countries in their industrialization and mechanization efforts;

Research and development

(e) Co-operation in research and development activities among more advanced developing countries is highly recommended. Since most of these countries are already engaged in these activities, other countries which do not have such facilities will be permitted to share the results of research and development work in subjects of common interest on a cost-sharing or any other basis. Interested research and development institutions in industrialized countries are welcome to contribute to this effort. The result of this collective undertaking will benefit all countries.

Assistance for the effective use of agricultural machinery

(f) Assistance in this field is needed by a number of developing countries. Argentina offers assistance in the identification of specific needs for mechanization, supply of appropriate machinery, and the use and maintenance of equipment. It is suggested that, in order to implement the above recommendations, the developing countries may initiate bilateral and multilateral discussions and negotiations with the countries mentioned under (a) and (b). In this connection the developing countries may, as appropriate, use the services of UNIDO.

International centre for the promotion of the agricultural machinery industry in developing countries

2. The Meeting unanimously adopted the recommendation introduced by Algeria that an international centre for the promotion of the agricultural machinery industry in the developing countries be set up in Beijing. It was suggested that the following terms of reference, among others, might be considered:

(a) To collect, analyse and disseminate information on all aspects of agricultural machinery industry;

(b) To foster an exchange of experts, designs and prototypes of agricultural machinery;

(c) To establish interlinks with national, subregional, regional and interregional institutions and manufacturers;

(d) To enhance co-operation in the field of design development and adaptation;

(e) To study methodologies of promoting the manufacture of agricultural machinery at rural, small-scale, medium and large-scale industrial levels;

(f) To stimulate joint venture investment activities in production;

(g) To promote joint negotiation capabilities;

(h) To encourage joint programmes in all aspects of engineering, design, production technology, and repair and maintenance.

In order to implement these recommendations, discussions between China, UNDP and UNIDO should be initiated as soon as possible.

#### I. ORGANIZATION OF THE MEETING

3. The Meeting consisted of four days of substantive discussions and four days of practical demonstration visits to:

The China Academy of Agricultural Mechanization

An exhibition of small- and medium-scale agricultural machinery

The General Works for Internal Combustion Engines, Beijing

The Tong Xiang Agricultural Machinery Manufacturing and Repair Plant

The Zhang Xingzhuang Production Brigade

A large-scale tractor plant, Tianjin

#### Opening of the Meeting

4. The Meeting was opened on behalf of the Executive Director of UNIDO by the Head of the Negotiations Branch, UNIDO, who expressed gratitude for the hospitality extended by the Government of China. He introduced the first speaker, Yang Ligong, Minister of Agricultural Machinery. The following officials also attended the Meeting and were present on the podium:

Xiang Nan, Vice-Minister of Agricultural Machinery

Fan Mouhan, Deputy Director of Chinese Machinery Industrial Commission

Tang Youchang, Director of Foreign Affairs Bureau, Ministry of Agricultural Machinery and Vice-President of the Chinese Society of Agricultural Machinery

Chen Nailong, Deputy Director of the Scientific and Technological Commission, Ministry of Agricultural Machinery

Li Luye, Deputy Director of the Department of International Organizations

Wang Zichuan, Deputy Director of the Sixth Department, Ministry of Economic Relations with Foreign Countries

5. N. Shallon, Resident Representative of UNDP at Beijing also addressed the Meeting.

Election of officers

6. Chen Nailong (China) was elected Chairman. A. Hacini was elected Co-Chairman.

Adoption of the agenda

7. The following agenda was adopted:
1. Opening
  2. Election of officers
  3. Organization of the Meeting
  4. Consideration of the following topics:
    - (a) Status of the Agricultural Machinery Industry
    - (b) Co-operation proposals among developing countries and between developing and industrialized countries for the development of the agricultural machinery industry
  5. Recommendations and conclusions
  6. Adoption of the report

Adoption of the report

8. The report was unanimously adopted on Thursday, 23 October 1960.

Documentation

9. Documents issued for the Meeting are listed in annex II.

Closing of the Meeting

10. The Meeting was closed by Jiang Ligong, Minister of Agricultural Machinery, N. Shallon (UNDP) and the Head of the Negotiations Branch, UNIDO. Immediately thereafter all the participants were received by H.E. Bo Yibo, Vice-Premier of China.

II. SUMMARY OF DISCUSSION

Status of the agricultural machinery industry

11. The Vice-Minister of Agricultural Machinery made a presentation entitled "China's Road to Farm Mechanization". He pointed out that the gradual attainment of farm mechanization, and the use of machinery to replace manual labour to help the peasants achieve common prosperity, would be a matter of vital importance to changing the outlook of a country where one quarter of the world's population was concentrated.

12. He noted that China was a socialist country with a collectivized agriculture. The rural population accounted for 80% of the country's total and intensive cultivation had been traditional. In addition, China was a vast country with a large population, limited farmland and weak economic foundation. Those constituted the basic features of China's agriculture and were the starting point for China's farm mechanization.

13. Referring to the principle of doing things in line with local conditions and order of priority, the Vice-Minister said that in providing agriculture with machinery, top priority was first given to the manufacture of the machines that would yield the most marked results in increasing production and income and that were most urgently needed by agricultural production.

14. China had limited farmland and was often hit by natural disasters. Paddy rice accounted for nearly half of the country's total grain production. For many years, construction of irrigation and drainage projects had been the first in order of priority in achieving

farm mechanization, as they were counted on in the fight against drought and floods to ensure high and stable yields. What came next was machinery for the processing of grain, cotton and oil-bearing seeds, machinery for use on the threshing grounds, machinery for crop protection and transport. So China's way of doing things was quite different from some other countries that usually gave priority to tilling machinery.

15. He also pointed out that farm mechanization should be combined with a diversified economy. He said that the two main problems China had encountered in farm mechanization were where to get funds and how to accommodate the manpower saved by mechanization. To solve those problems, assistance from the State was needed. In other words, the Government should work out correct decrees, policies and principles for their solution. On the other hand, it was all the more necessary to rely mainly on the collective strength of the people to diversify the rural economy and to develop commune- and brigade-run enterprises because financial resources were quite limited.

16. Vice Minister Xiang Nan also spoke about how to strive for the best economic results in developing the farm machinery industry regarding technical transformation, import of technology, quality improvement, economical use of energy, development of science, orientation of service as well as improvement of farm machinery management and the speed of development.

17. In conclusion, he pointed out that considering that China, as a developing country, had a lot in common with the other developing countries, especially in taking agriculture as the foundation and in developing agriculture with the support of industry, the Government of China held that there were broad prospects for co-operation on bilateral and multilateral bases in the following fields:

Exchange of experiences in the development of the farm machinery industry, and exchange of technical literature

Exchange of visits by specialists

Sales of hand-operated farm tools, animal-drawn implements and farm machinery

Dispatch of experts specialized in the above-mentioned products and technical training

Transfer of product drawings and manufacturing techniques

Building, for the other party, assembly shops, assembly or production lines for the making of one or several types of farm machinery

Design of farm machinery factories

Joint design of the farm machinery needed by one or both parties

18. The following major points were made and replied to regarding the above presentation:

(a) How was it possible for China to develop its agricultural machinery industry so rapidly and significantly? It was replied that it was mainly due to its policy of self-reliance. Such policy was currently continuing with emphasis on co-operation with friendly countries;

(b) How did China develop its agricultural machinery industry at the rural level and ensure the necessary supply and distribution of essential raw materials, machinery and equipment, including its standardization of products in the installed plants? That was mainly possible because of the development of small-scale industry and its policy to utilize the local raw materials produced without entering into competition with the urban and large industries;

(c) Was the standardization of products directed towards the international market or for domestic requirements? China had the following three standards: national, ministerial and sectoral. Attempts were being made to adopt international standardization;

(d) What percentage of agricultural machinery and equipment was imported to China and exported, and what policy was being adopted for the transfer of technology to other developing countries? China's imports and exports had so far not been very large, however, it followed a policy of extending its co-operation to other deve-

loping countries; concentration was on irrigation, drainage, crop protection and food processing equipment. China was willing to provide better conditions to trade with the developing countries;

(e) Had it been possible for China to achieve self-reliance through its own designs and technical know-how or had that been done through external assistance? The prototypes had been mainly designed in China while specific technologies for particular parts and components had been imported;

(f) Had China some experience to offer with regard to safeguarding the technology? It had a policy to develop neither too simple nor too sophisticated technologies. It discouraged high automation and mechanization and encouraged small machinery and equipment that increased the yields.

Proposals for co-operation among developing countries  
and between developing and industrialized countries for the  
development of the agricultural machinery industry

19. When presenting the situation in the field of agriculture, a number of participants from developing countries stressed their achievements in the mechanization of agriculture and in the development of the agricultural machinery industry as well as the current difficulties facing the sector.

20. It was recognized that despite the progress achieved so far there was still a great need for international economic co-operation mainly among developing countries in setting up facilities and services to upgrade the existing capacities in the field of agricultural machinery in order to intensify food production.

21. It was evident that the establishment of small production units for hand tools, animal-drawn and manually-operated equipment, and irrigation equipment represented priority areas for many developing countries. There was also a need in some developing countries for joint activities in prototype supply, design and development and local techniques for adaptation of post-harvesting equipment, power tillers, low horse-power simple riding tractors, equipment for wet land cultivation, and drainage and irrigation equipment.



22. The need for provision of raw materials, such as high carbon steel, as well as of basic facilities including foundries, forge shops and components from ancillary industries, was also stressed. It was observed that the institutional services called for the establishment of industrial estates, agro-service centres, technical information dissemination units, maintenance and repair, and service networks. Some participants welcomed joint ventures involving production of irrigation equipment, engines, small tractors and harvesting equipment.

23. Alternative sources of energy especially for engines and irrigation, food processing and post-harvesting equipment were mentioned as possible relief in using petroleum resources. The majority of the participants stressed the importance of training at all levels not only in the production of agricultural machinery but also in its effective utilization.

24. Training in the fields of design engineering, production technology and the related technical services was singled out as the priority area by the participants. It was also observed that maintenance and repair, after-sales service and production of replacement parts should not be neglected. Furthermore there was room for co-operation in those fields. It was recognized that there was no need, in most cases, for any basic research but for engineering design and adaptation of commercially available equipment. However, for the intermediate category of equipment, which was foreseen for local production, the technical capacities of more advanced developing countries could be mobilized. Existing research and development centres in those countries could play a vital role in assisting other countries through various co-operative endeavours. Exchange of information was sought not only at the pre-production stage but also at the manufacturing and adaptation stages in order to have all countries benefit from the experience of those who embarked upon specific manufacturing programmes. The need to strengthen the negotiating power of developing countries in the field of contracts, licencing and transfer of know-how was particularly emphasized. For some African countries an upgrading of their category I implements was needed.

25. Participants from more advanced developing and industrialized countries indicated their countries' willingness to assist the developing countries in a wide range of industrial activities such as:

Training in operation, maintenance and manufacture of farm machinery, for all categories of personnel;

Product and production design

Research and development

Basic facilities for categories II and III

Prototype supply

Turnkey installations

Institutional development

26. One participant stressed the importance of developing a national strategy before launching production programmes in the field of agricultural machinery and expressed his readiness to share the experience of his country.

27. Many participants from developing and industrialized countries indicated their readiness to go into joint ventures and complementary production for the manufacture of components and equipment.

28. Most participants expressed their willingness for more active international co-operation in the field of agricultural machinery. At the same time, they confirmed that, in view of the increasing food requirements, and taking into account the emergence of new partners in the field of the agricultural machinery industry, co-operation among developing countries had become imperative.

Annex I

LIST OF PARTICIPANTS

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Borgic Scepanovic, Senior Counsellor, Federal Committee for Energy and Industry, Beograd

Zambia

Phillimon Mwansa Kapesebele, General Manager, African Farming Equipment Ltd., Lusaka

Joseph Mutelo, Assistant Director of Agriculture, Department of Agriculture, Lusaka

United Nations Bodies

United Nations Development Programme

N. N. Shallon, Resident Representative, Beijing,



Annex II

LIST OF DOCUMENTS

Main discussion document

A time for new approaches to meet the need of the developing countries in agricultural mechanization from the viewpoint of the developing countries

ID/WG.330/8

Background document

Trends in the agricultural machinery industry and agricultural mechanization

ID/WG.330/30

Information documents

Provisional agenda

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Advance information for participants

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Country summaries and papers

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Expériences acquises dans la mise en place d'une Industrie des machines agricoles

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Argentina

La Argentina - Estado de su industria de maquinaria agricola

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Country summary

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Country paper

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Brazil

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China

- China's road of farm mechanization ID/WG.330/16
- Prospects for economic and technical co-operation between China and other countries in the field of farm machinery industry (Statement)
- Development of farm machinery industry in Changzhou City ID/WG.330/9
- Advanced deeds of first production brigade of Yuexi commune in developing farm mechanization ID/WG.330/10
- Li Ming brigade pursues agricultural mechanization (Distributed in Beijing) in light of reality

Colombia

- Resumen nacional ID/WG.330/33

Egypt

- Country summary ID/WG.330/5

France

- Necessity of, and practical possibilities for, co-operation in the agricultural machinery industry from the viewpoint of industrialized countries ID/WG.330/13

Guyana

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