



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

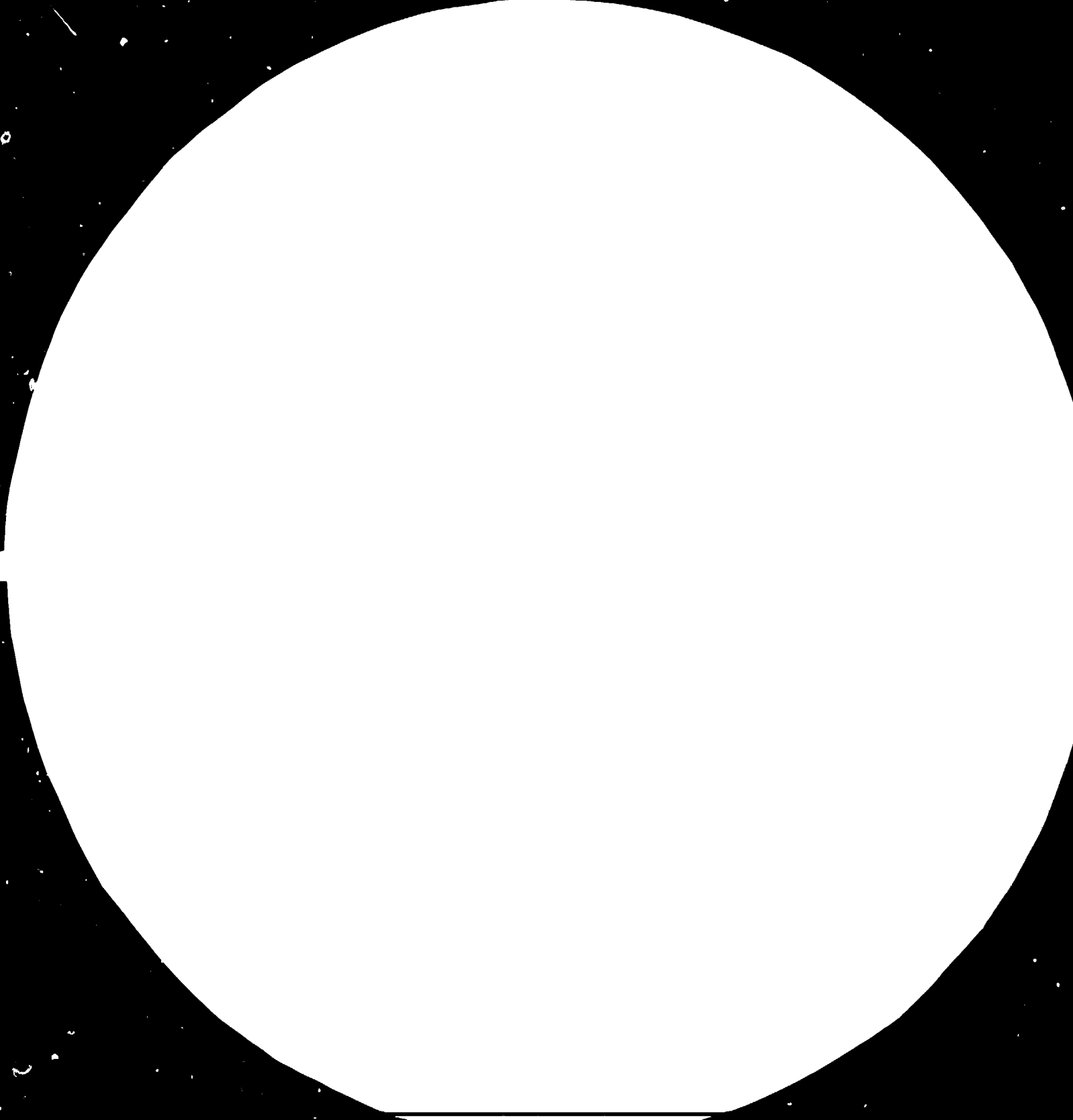
FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org





1.6

1.4



MICROSCOPY RESOLUTION TEST CHART

NATIONAL BUREAU OF STANDARDS-1963-A



12921-E



Distr.
LIMITED

ID/WG.400/5
21 September 1983
Original: ENGLISH

United Nations Industrial Development Organization

Second Consultation on the
Agricultural Machinery Industry
Vienna, Austria, 17-21 October 1983

Issue Paper No. II

INTEGRATED MANUFACTURE OF
AGRICULTURAL MACHINERY AND CAPITAL GOODS*

prepared by
the Secretariat of UNIDO

*/ This document has been reproduced without formal editing.

V.83-61826

1. This paper concerns the issue of linking the manufacture of agricultural machinery with the related manufacture of capital goods within the framework of national agricultural and industrial development policies and programmes.

Agricultural machinery

2. Agricultural machinery comprises several categories of products covering a wide spectrum from hand tools and manually operated equipment to power-operated and specialized machinery (see annex). Accordingly, it can be found at every level of production from rural blacksmiths to large factories. Most developing countries need a range of tools, machinery and equipment, depending upon the crop farmed, size of holdings, farm income, agricultural technology etc. Therefore, Governments need to identify: products that are required and that may be domestically produced; product specifications (design, raw materials etc.); production techniques and facilities; technical skill resources; investment; and current and future demand. On the basis of such information, Government can determine production priorities. Depending on the level of production, every developing country has the potential to manufacture some agricultural machinery; however, it should be noted that current programmes for such manufacture are weak.

Multi-product production units

3. In order to make such production economically sound, it is essential to consider agricultural machinery as an integral part of engineering and capital goods manufacturing programmes, to diversify products and to introduce batch-level manufacturing. Combined production could be established in multi-product units. Multi-product units have several important advantages: they facilitate the learning of a higher degree of diversified production skills; enable the fullest use of available industrial infrastructure consisting of basic facilities such as foundries, forges, heat treatment and electroplating; and encourage the development of a well-balanced technological infrastructure in terms of design, engineering services and training. For many countries, multi-product production units are the only way to develop their infrastructure, not only to produce agricultural machinery, but also to accelerate the development of the engineering and capital goods sectors.

Government action

4. To develop multi-product production units, Governments would have to introduce institutional mechanisms and plans into both agricultural and industrial sectors, which would mean policy action and legislation. They would also have to support an integrated programme to strengthen engineering product design, common engineering services and institutional activities with an emphasis on training. Policies would have to be reoriented towards the promotion of such integration from a manufacturing point of view in both the private and public sectors.

Co-operation between developing countries

5. Co-operation between developing countries, particularly those already producing agricultural machinery, should aim at strengthening capabilities in the areas of: equipment; design; research and development; and information; and at establishing policies for the agricultural machinery, and capital goods sectors within the framework of a programme agreed upon by the countries concerned, notably at the subregional level.

Co-operation between developing and developed countries

6. Co-operation between developing and developed countries including Governments, institutions (financial, engineering, research and development and design) and manufacturers, which until now has been based on the purchase and sale of equipment, should take into account the desirability of multi-product production techniques, development of manufacturing technology and product design in the area of agricultural machinery within the framework of the capital goods sectors. It should also support the national policies of developing countries.

7. For the purposes of this paper, the definition of capital goods includes allied engineering products, components and spare parts.

POINTS FOR DISCUSSION

1. What is the validity, in terms of the prerequisites, techniques and institutional support, of the multi-product production approach?
2. To what extent are the following key elements in the multi-product production approach:
 - (a) The design or adaptation of products;
 - (b) The corresponding plant-level production processes and lay out;
 - (c) Production planning and organization?
3. What are the practical modalities to be included in international industrial arrangements which would be conducive to the realization of the multi-product production approach?
4. Could a group be established, under the auspices of UNIDO, composed of interested partners including Governments, producers and recipients, to work out the details of this multi-product production approach, and to suggest the best ways to implement it?

Annex

AGRICULTURAL MACHINERY PRODUCED IN DEVELOPING COUNTRIES

The term "agricultural machinery" is defined in three broad-based categories, as follows:

<u>Category</u>	<u>Definition</u>
I. (simple)	<p><u>Hand tools</u>: hoe, machete, spade, weeder, knife, sickle, axe, pick-axe, shovel etc.</p> <p><u>Manually operated equipment</u>: pedal thresher, hand sprayer, corn sheller, cassava puller and chopper, hand pump, chaff cutter, storage bins etc.</p> <p><u>Animal-drawn implements</u>: plough, cultivator, leveller, ridger, seeder and fertilizer drill, pump, sugar-cane crusher, reaper, cart etc.</p>
II. (inter-mediate)	<p><u>Tractor-drawn basic implements</u>: plough, cultivator, harrow, leveller, seed drill, reaper, trailer etc.</p> <p><u>Simple, low-cost low-power equipment</u>: power thresher, pump, chaff cutter, corn sheller, peanut decorticator, vice mill, hammer mill, power tiller, low-power engine etc.</p>
III. (standard)	<p><u>Power-operated equipment</u>: tractor, pump, harvest and post-harvest equipment (may be manufactured in a few developing countries).</p>

