



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

08853

Distr.
LIMITED
ID/WG. 282/73
9 October 1978
ENGLISH



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

INTERNATIONAL FORUM ON APPROPRIATE INDUSTRIAL TECHNOLOGY

New Delhi/Anand, India 20—30 November 1978

.....
WORKING GROUP No.10

**APPROPRIATE TECHNOLOGY
FOR THE MANUFACTURE OF
PULP AND PAPER PRODUCTS**

.....
PULP AND PAPER INDUSTRY IN BRAZIL
Background Paper

PULP AND PAPER INDUSTRY
IN BRAZIL

by

S. Klabin
UNIDO consultant

The description and classification of countries and territories in this document and the arrangement of the material do not imply the expression of any opinion whatsoever on the part of the secretariat of 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 regarding its economic system or degree of development.

The views and opinions expressed in this document are those of the author(s) and do not necessarily reflect the views of the secretariat of UNIDO.

Mention of firm names and commercial products does not imply the endorsement of the secretariat of UNIDO.

The document is reproduced in the form in which it was received and it has not been formally edited.

1. Pulp and Paper Industry Prospects in Developing Countries

It should be understood that the development history of pulp and paper manufacture in the advanced industrial countries cannot be repeated under present conditions. This development started in the early days of the industrial revolution, in such primitive conditions that would not be allowed today anywhere, especially as regards labour conditions, pollution control and economics of the production.

While a developing industry today has the advantage of bypassing many of the phases of development as well as problems experienced by the already industrialized countries, it has to face other complex challenges. Technical developments in industrialized countries are more and more capital intensive and less and less labour absorbent and the economic size of production units is continuously increasing. Such scenario scarcely fits the conditions of a country or a region without a corresponding industrial infrastructure. Unless drastic technical innovations take place, which is unlikely, there would be no place for, e.g., a small-size pulp mill able to be competitive in the world market. But there is room for smaller-scale mills designed for domestic or regional markets protected against competition from abroad. Larger and more complex units, competitive in the world market, may follow the development of industrial and personnel infrastructure.

2. Technical Options

Although the technical options are rather limited by local conditions and raw materials availability, there are essential differences within the available processes in industrial and human infrastructure needed for operation and maintenance and in many cases this is a decisive factor.

For wood-containing printing papers, softwood is conventionally used. Our Brazilian experience shows that the fast-growing hardwood can be used as well and with considerable savings in power. Shortage of softwood for mechanical pulp has induced some producers to adopt chemimechanical pulping of hardwood. It should be of interest to many developing countries that this process can be used for various types of wood-containing printing and writing papers. Chemimechanical pulping, as widely discussed in the EUCEPA Symposium in Madrid, 1975, involves modest investment in comparison with chemical pulping, creates only a moderate pollution load, is adequate for hardwood and produces a pulp suitable for printing and writing papers, including newsprint.

For packaging papers, the Kraft process is the most suitable for a number of raw materials. This process is however quite heavy in investment but in most cases it is the only means to enter the packaging paper field. The investment level can be reduced by compromising in the heat recovery using smelters instead of the conventional recovery boilers. Additional direct contact evaporators can be considered. Such arrangement allows for smaller scale, say 50 or 100 tons/day, units. There is a number of smelters in operation in Brazil, some of them to obtain marginal capacity increases with positive results.

In the field of papermaking, multigrade machines are often the best technical option. The efficiency of the equipment might perhaps be somewhat compromised but much more is gained by

possibilitating larger production units in a limited market. Later, when the market expands, such multigrade machines can, still profitably, be utilized for a single grade without further investments. As an example, we have integrated mills producing bleached and unbleached grades in a single machine without any noticeable loss of efficiency.

As a general rule in choosing technical options for new industries, it is advisable to stay with already well-proven processes and equipment and to adapt them to the local conditions.

3. Human Resources

For a newly-established industry, it is vital to get not only appropriate equipment but also appropriate personnel to operate this equipment. After World War II it was easy to find immigrants in Brazil who had background in the pulp and paper industry. However since then the education of the personnel became more and more important. Consequently, the well-established pulp and paper industries have set up the necessary technical schools in cooperation with government agencies. We think this is extremely important to get locally trained personnel to work within the new industries in any country.

A Research and Development center is advisable for each mill or group of mills, depending on size. Our experience shows that the success of the industry depends very much on its ability for adaptation to local conditions and solve its problems "from within". R&D also represents an important training tool for the education of personnel.

4. Industrial Infrastructure

In many cases the industrial infrastructure may cost more than the industry itself. We have such examples in Brazil and I suppose we are not unique in this respect. If an industry has to build the infrastructure the capital cost may invalidate the project. Therefore the industrial locations have to be carefully selected and, in some cases, a pool of industries has to share the development costs. In Brazil several industrial concentrations in new and remote areas have been developed. The results are still to be assessed.

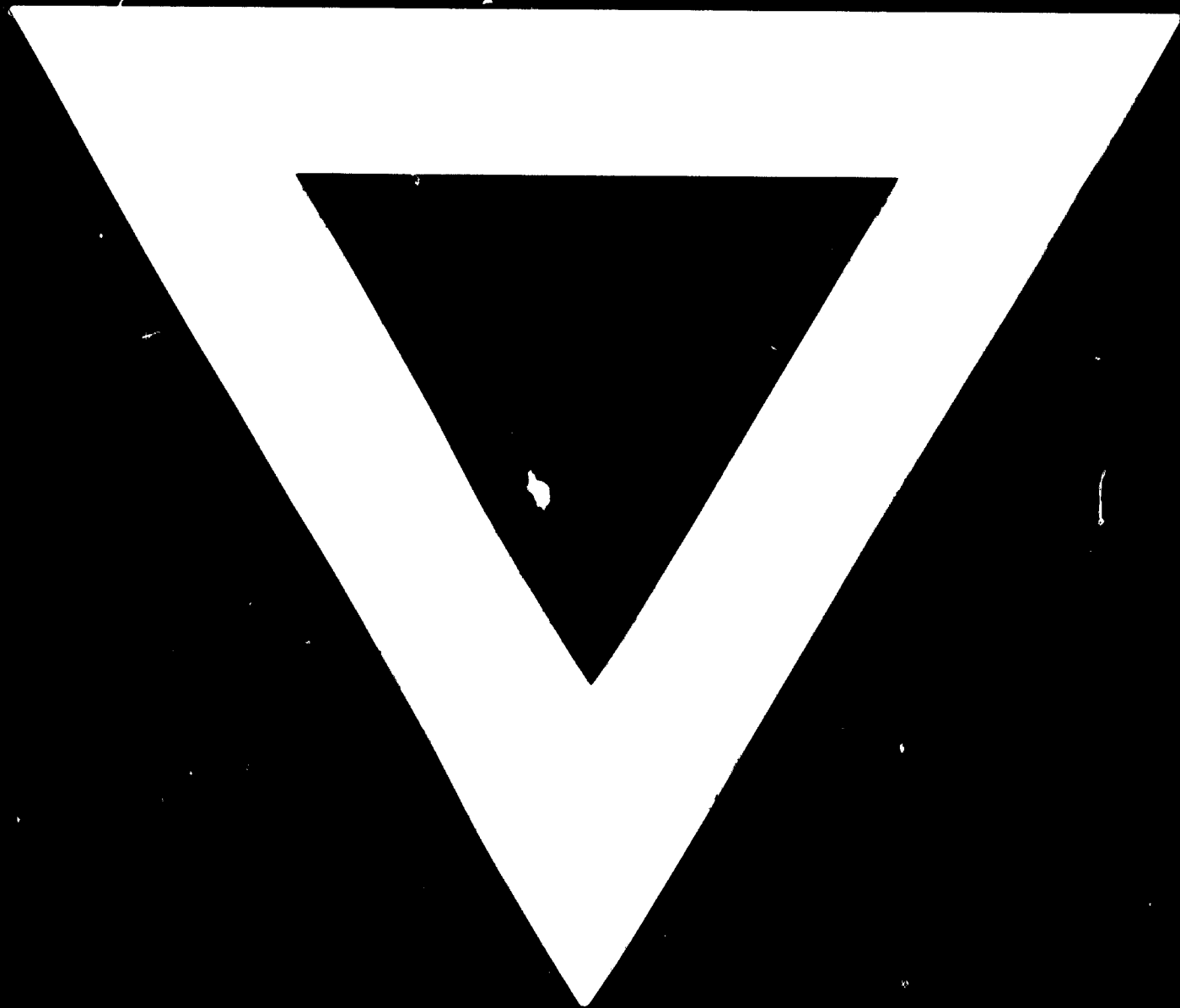
5. Industrialization Policies

The international competition in the pulp and paper market has created in many cases quality criteria which do not serve the best interests of either the producer or the consumer. Brazil is no exception, facing a competitive domestic and international market. We feel that such burden to production and investment should be avoided, mainly in developing countries which protect their industries against imports. Sound common sense should establish the quality specifications according to the end use of the products and not according to qualities required abroad in a highly competitive market, from which the country is protected by political decisions.

It is imperative that a clear policy be adopted to provide even small units with adequate environmental control as later improvements will be costly and painful, leading often to early obsolescence. Additional capital cost for pollution control is partly compensated by the benefits of avoiding wastage of valuable raw materials.

Finally, it is our experience that for developing domestic pulp and paper industries a strong government support is needed, mainly in sharing the cost of infrastructure and afforestation and setting, at least temporarily, a policy of import restrictions.

B - 89



80.02.07