



TOGETHER
for a sustainable future

OCCASION

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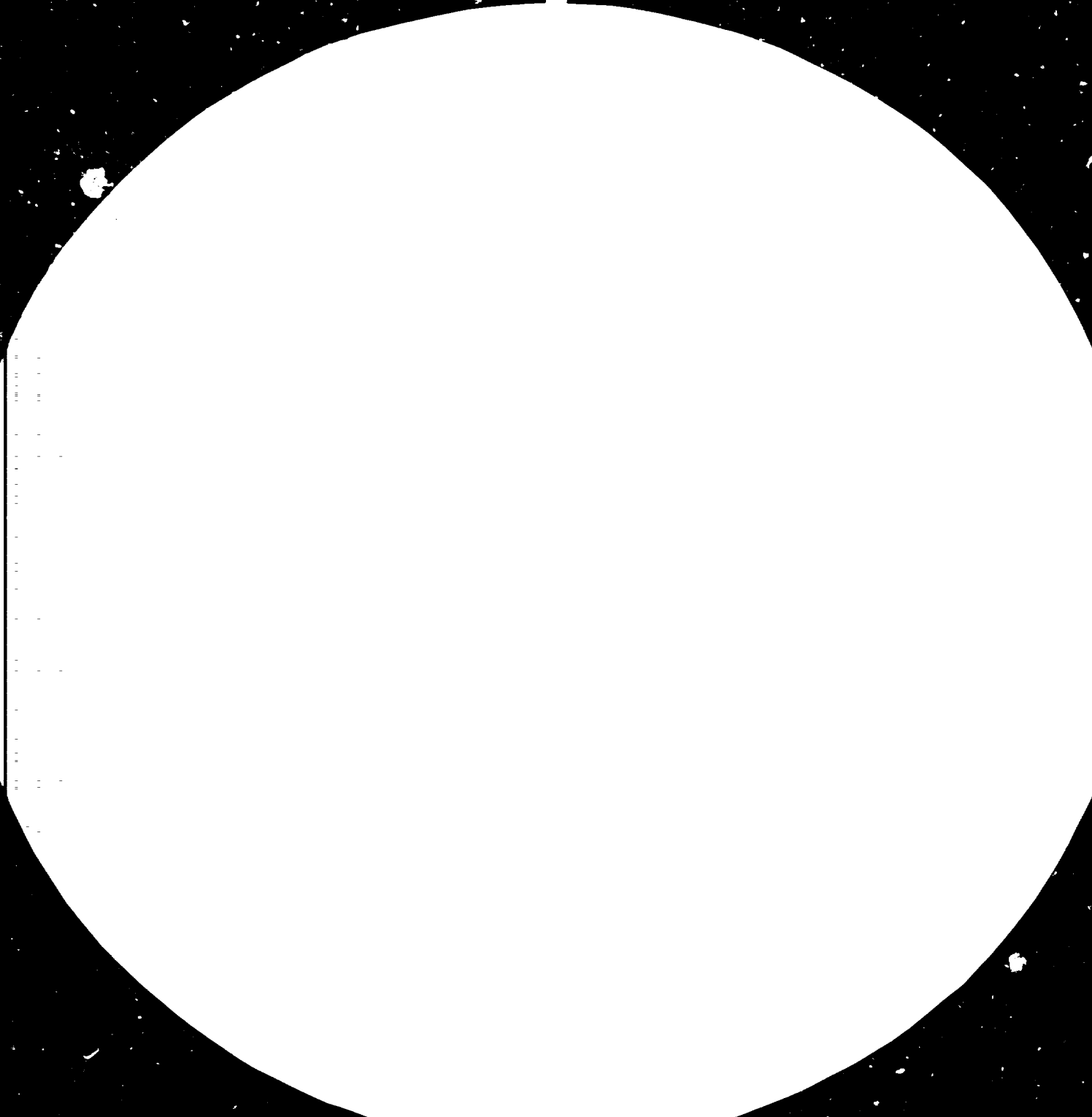
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2.8



3.2



3.6



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Resolution Test Chart

Resolution Test Chart

Preface

Since 1967, the United Nations Industrial Development Organization (UNIDO) has adhered to its mandate "to promote and accelerate the industrialization of the developing countries" by responding to requests for technical co-operation in all aspects of industry from the Governments of those countries.

This commitment to industrialization as a means of improving the living standards of nearly three quarters of the world's population, which was first outlined in November 1966 by the United Nations General Assembly in its resolution 2152 (XXI), has since been intensified. The Lima Declaration and Plan of Action on Industrial Development and Co-operation, which was adopted by the Second General Conference of UNIDO in 1975, called for an international effort to increase the developing countries' share of world industrial production to 25 per cent by the year 2000. This goal was further emphasized at the Third General Conference of UNIDO, held at New Delhi, India, in early 1980, with the adoption of the New Delhi Declaration and Plan of Action on Industrialization of Developing Countries and International Co-operation for their Industrial Development.

In the series of booklets *UNIDO for Industrialization*, of which this is one, an attempt is made to describe briefly the contribution of UNIDO, through its Division of Industrial Operations, to the industrialization of the developing world and to give examples of what has been done and will continue to be done to accelerate the process.

FINANCING UNIDO ACTIVITIES

The bulk of the costs of UNIDO administration and research, now approaching \$US 48 million annually, is met from the **regular budget** of the United Nations, as are some lesser expenditures reserved for certain advisory and training activities. Once UNIDO achieves the status of a specialized agency within the United Nations family, it will cease to be funded from central sources of the United Nations and will rely on its own budget based upon contributions from its member States.

Technical assistance programmes for projects in developing countries, however, are funded from varied sources, the most important of which are summarized below.

By far the largest share of the field activities of UNIDO, some 70 per cent of the total, is funded from the **United Nations Development Programme (UNDP)**. Thus, a high proportion of UNIDO field projects are subject to UNDP approval before implementation. Since the ultimate source of this money is the contributions of the member States themselves, both developed and developing, it can truly be said that UNIDO field activities are self-help programmes, initiated only at the request of Governments of developing countries and using funds to which many developing countries themselves contribute. These funds are allocated to particular countries from UNDP sources up to a predetermined amount known as the indicative planning figure (IPF). They cover the whole spectrum of United Nations assistance to those countries, industrialization being only one of many programmes needing financial support.

Country programmes normally have a five-year span; and the available funds, which vary from country to country and are weighted in favour of least developed countries, must be allocated to specific projects within a country during the five-year period.

Special Industrial Services (SIS) funds are confined to a narrow range of expert services provided for unexpected high-priority projects that are called for from time to time. The programme is restricted to short-term projects of limited cost, and during recent years \$US 3.5 million has been set aside annually to support it.

The **United Nations Industrial Development Fund (UNIDF)** was created to finance innovative projects, preferably projects having a multiplier effect. The Fund consists of contributions pledged by individual Governments, and in some cases the purpose of the contribution is specified. Pledges are made in convertible and non-convertible currencies.

Trust funds are provided by participating Governments for specific projects to be executed by UNIDO in accordance with agreements reached with the contributing countries. They are used, typically, for technical assistance, expert services and specialist training.

The small **regular programme of technical assistance** provides funds for types of technical assistance that either complement other programmes or do not lend themselves conveniently to alternative means of financing. In particular, this type of funding permits a certain degree of flexibility in spending, since the allocation of the funds available is entirely under the control of the principal policy-making organ of UNIDO, the Industrial Development Board. Programmes are designed to reflect the emphasis on special measures for the least developed countries, on technical co-operation among developing countries and on establishing and strengthening industrial training facilities in developing countries.

Wood processing and wood products

Many developing countries are endowed with large forest resources, some tropical, the products of which are often exported in the log or semi-processed state. The export earnings of these countries could be considerably increased if these products were processed further before export.

Woodworking and wood processing exists in all societies, whatever their level of development and whether they have forest resources or not. Most developing countries, however, need assistance in upgrading local skills from the craftsman level, mechanized or manual, to the level of industrial production.

In this sector UNIDO works closely with the Food and Agriculture Organization of the United Nations (FAO), with FAO responsible for forestry and primary conversion of logs and UNIDO responsible for utilization of agricultural residues and non-forest, ligno-cellulosic materials and secondary wood-processing industries (from sawn timber and wood-based panels to the finished product).

In wood processing, the assistance of UNIDO is concerned with planning and establishing the following:

- Integrated complexes, comprising primary processing with one or more of the secondary industries mentioned in this booklet
- Plants manufacturing panels (fibreboard, particle board) from agricultural residues (bamboo, bagasse, date palm, coconut palm, esparto grass, flax shives, jute sticks etc.)
- Industries using wood for:
 - Housing and construction (prefabricated houses and their components; engineered timber products and structures)
 - Furniture of all types
 - Wooden packaging products
 - Small consumer items (matches, pencils, toys etc.)

Apart from its activities concerned with specific products, UNIDO assists Governments in carrying out surveys and drawing up development plans for the whole wood-processing sector. It also assists in establishing specialized research institutes or improving existing ones.

STUDIES FOR NEW INDUSTRIES

UNIDO carries out project-identification or full techno-economic feasibility studies, either to increase the value added of exports of countries endowed with forests or to establish secondary wood-processing industries to limit imports and to create jobs.

Emphasis is placed on integration to ensure the rational use of resources through utilization of waste and of species not normally marketed. With respect to the creation of jobs, attention is given to selecting appropriate technologies, with local costs, qualifications of labour and lack of capital borne in mind.

By means of such studies, UNIDO was able to assist the Government of Samoa in establishing a match industry, and it helped Cyprus to create an integrated wood-processing complex.

TECHNICAL AND ECONOMIC APPRAISAL OF PROJECTS

Countries at an early stage of development often do not have the specialists to appraise investment proposals UNIDO can provide such an appraisal, enabling the developing countries to make sound decisions, based on impartial advice, and avoid costly mistakes.

For example, UNIDO provided an analysis of a proposed integrated complex in Costa Rica for the production of sawn wood and waferboard. After the UNIDO appraisal, the Government of Costa Rica decided not to proceed with the investment.

NEW PRODUCTS AND TECHNOLOGIES

UNIDO has responded to requests for assistance in modifying existing technologies to produce new products or in developing new technologies. Examples of this type of assistance are given below.



A prefabricated modular wooden bridge with 15-metre span



Manufacture of a 3-metre bridge element

A firm of consulting engineers carried out tests to develop ligno-cellulosic panels (fibreboard or particle board) from esparto grass in the Maghreb countries.

A system of low-cost prefabricated wooden bridges, requiring minimal investment, was developed in Kenya and subsequently introduced into several other countries. The bridges, which use a basic 3-metre module, are capable of spanning 30 metres and of bearing a live load of 40 tons; a wide range of timber species can be used in their construction. The bridges, suitable for use in conjunction with unsurfaced roads, are particularly useful in rural conditions because they are cheap and easy to manufacture and erect. Components are standard, and construction can be based on pre-calculated tables.

Low-cost housing, both urban and rural, is a priority sector in many developing countries. For countries having forest resources, UNIDO can develop designs for low-cost wood housing and wooden components for use together with other building materials. Designing must go hand in hand with a study of local building regulations, some of which may need to be revised to benefit from new technology if it is the policy to increase the use of timber in construction. In the Lao People's Democratic Republic, a prefabrication system using simple equipment has been used in a very wide variety of buildings. A feature of this system is that a wide range of species of timber can be used, provided that they have similar characteristics.

The potential offered by the many millions of over-mature coconut stems as a raw material for building and a variety of manufactured products is enormous. UNIDO is assisting Sri Lanka to use coconut stems for glued laminated beams and other structures.



School in the Lao People's Democratic Republic using a low-cost modular prefabricated building system

Rubberwood, when correctly processed, can be used for furniture components.

Design of furniture has been a subject of UNIDO assistance for many years. In several countries – the Lao People's Democratic Republic, Mauritius, Papua New Guinea, Singapore and Yugoslavia – UNIDO has pro-



Examples of furniture designed by a UNIDO expert for Mauritius

vided technological assistance to enable producers to improve the aesthetic quality of their products, to introduce designs that lend themselves to series production, and to produce items that can be shipped in knocked-down (ready to assemble) form to reduce freight costs.

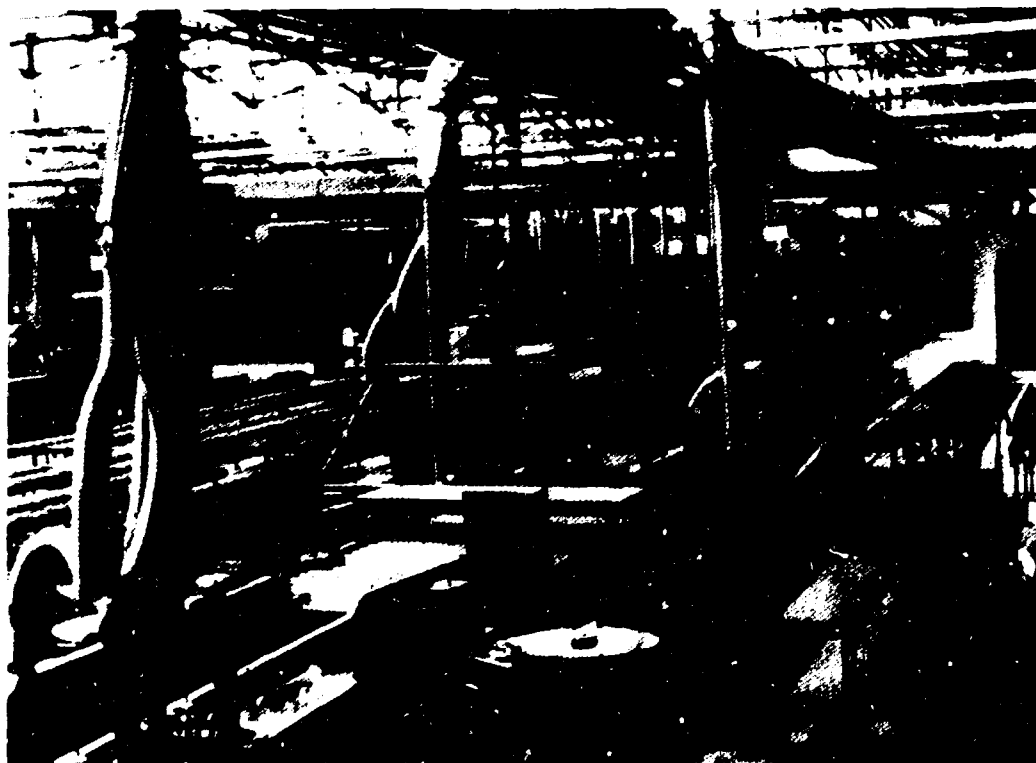
EVALUATION OF BIDS

On occasion UNIDO services have been sought to provide disinterested evaluation of bids for complete plants and to advise whether the equipment and technology proposed are suited to local conditions.

Such assistance affords good protection to the would-be investor, especially where large sums of scarce foreign currency are involved, and results in considerable savings.

PLANT INSTALLATION

Problems of starting up plants in developing countries are far more complex than in developed countries because of inadequate infrastructure and a shortage of skilled manpower. In such cases UNIDO can provide experts to supervise plant installation and start of production as it did for a major furniture factory in Algeria and a smaller plant in the Lao People's Democratic Republic.



Production line in a large furniture plant in Algeria

ASSISTANCE TO EXISTING INDUSTRY

The bulk of UNIDO assistance to the wood-processing industries in developing countries has been given to existing industries to help them to improve their operations. This stress on helping existing industries is an obvious one: it ensures better utilization of one of the scarcest of all resources in developing countries – capital already invested.

Product development

UNIDO assists in developing products to match the demand of the export markets and in modifying the design of existing products to facilitate large-scale industrial production or to meet the particular requirements of buyers. UNIDO has provided considerable assistance to the Yugoslav furniture industry in designing for export markets. It has also assisted in developing improved rattan and cane products in Indonesia and Sri Lanka.

Production planning and control, rationalization and cost accounting

A major problem in developing countries is the difficulty in moving from small-scale craft production to industrial operations. UNIDO helps local entrepreneurs to make the transition by introducing modern management systems compatible with serial production, irrespective of the level of plant mechanization and size of the factory.

UNIDO assistance to small undertakings, in particular in expanding into series production, often involves simplification of designs and rationalization of the product range in addition to introduction of suitable cost-accounting systems. Such measures can lead to the avoidance of costing errors, the reduction of inventories, the scheduling of purchases of raw materials and their control, and thus to the profitability of a venture.

Quality control

For serial production interchangeable components are essential. Interchangeability of components cannot be obtained without an appropriate system of quality control. The quality of components is often affected by the poor state of the machines on which they are produced. UNIDO helps establish quality control on the factory floor and in the creation of facilities for testing prototypes to meet the standards of export markets.

UNIDO has helped the Yugoslav furniture industry to introduce modern quality control methods. A two-week course on quality control in furniture production was designed to cater for the specific needs of Portugal's industry.

Maintenance

The importance of using properly maintained woodworking machines and tools is often underestimated in developing countries, where the use of unskilled labour lacking both the craftsman's respect for tools and experience with woodworking machinery can lead to a decline in the quality of the product and the volume of production. Such a decline can be avoided through preventive maintenance, for proper tool maintenance ensures precision and surface quality of the components and hence of the end-products.

UNIDO helps in establishing tool and machine maintenance systems and in improving established methods by providing expert advice and training.

UNIDO helped Sri Lanka establish a central maintenance system in a large integrated wood-processing complex and has provided training in the maintenance of woodworking machines and tools to many developing countries. In the Lao People's Democratic Republic, UNIDO has helped to create a centre providing maintenance services to small woodworking plants that cannot afford equipment that will be used only intermittently. In Indonesia, a centre was established to train workers to maintain and sharpen band-saw and circular-saw blades.

Introduction of new technology

By providing developing countries with experts from countries with greater experience in the wood-processing industry, new ideas, new products and up-to-date production methods and equipment can be introduced.

TRAINING

UNIDO provides job training in all areas of the secondary wood-processing industry and offers fellowships for specialist training abroad. It organizes study tours of appropriate industrial plants in developed and developing countries to familiarize the participants with new technologies, equipment and production methods.

This *ad hoc* training is supplemented by seminars, courses and workshops. In recent years UNIDO has convened annually a seminar on the furniture and joinery industries at Lahti, Finland. UNIDO sponsored a series of courses on the criteria for selecting woodworking machinery in Italy (in 1976, 1978 and 1980) and in the Federal Republic of Germany (in 1979 and 1981).

UNIDO also arranges short, intensive courses on selected topics for trainees within a developing country. Two such courses dealing with wood drying and quality control of furniture were held in Portugal. A three-week seminar on furniture and joinery was held in Singapore.

INSTITUTIONAL INFRASTRUCTURE

UNIDO helped set up a wood department in the Paraguayan National Institute of Technology and Standards; it assisted an institute for wood research in Yugoslavia in establishing testing facilities for furniture and joinery products.

TECHNICAL MANUALS

Manuals designed to meet the special needs of the secondary wood-processing industry in developing countries have been issued on the following subjects:

- Furniture and joinery production
- Low-cost automation
- Jigs for the furniture industry
- Upholstery production
- Technical criteria for selecting woodworking machines

Not yet issued are manuals on:

- Rattan furniture
- Production management
- Value analysis

CONSULTATION AT INDUSTRIAL FAIRS

UNIDO provides consultants at industrial fairs for woodworking machinery to give impartial technical advice to potential buyers from developing countries. This was a feature of the INTERBIMALL fairs at Milan, Italy, and at the LIGNA fairs at Hannover, Federal Republic of Germany.

For further information on UNIDO activities in wood processing and wood products, contact:

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Agricultural machinery and implements (PI/82)
Building materials and construction industries (PI/76)
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