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AN ASSESSMENT OF PRE-CONDITIONS FOR INTEGRATED PROGRAMME DEVELOPMENT IN THE WOODEN FURNITURE INDUSTRIAL SYSTEM IN NICARAGUA

XP/GLO/93/096

Technical report: Exploratory mission*

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Funds Mobilization Division

* This document has not been edited.

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1. Introduction

The programme concept "Integrated Development Programme for the Wooden Furniture Industrial System" was developed jointly by UNIDO's Integrated Programme Support Unit and the Agro-based Industries Branch. The concept was endorsed by the Programme and Project Review Committee on the 27th of May 1993.

The programme concept envisaged the development of an integrated package of technical assistance proposals, identified investment opportunities and policy analysis for the wooden furniture industry in selected countries. Such a programme would be based on a comprehensive analysis of the constraints affecting key linkages to wooden furniture manufacture and the manufacturing process itself. Analysis would thus cover issues ranging from the extraction and supply of wood, sawnwood, and other processed wood products, through to the supply of inputs from other subsectors of industry, the various stages of furniture manufacture and marketing of final products. The objective of an integrated programme would be to maximize the impact of assistance resources and achieve sustained development of the subsector. The programme concept also outlined the particular technical, ecological and social advantages to undertaking programme development in this industry.

Six countries were pre-selected as possessing good conditions for the development of such a programme. This selection was made using several criteria, including the availability of wood resources, government priorities, the investment climate and potential donor interest. Nicaragua was one of the six pre-selected countries. Under the project XP/GLO/93/096, short missions were then undertaken to the pre-selected countries. The missions aimed to make a fuller assessment of whether the conditions required for an integrated programme were present, to confirm government and private sector interest in and commitment to the development of the subsector, to make a summary of the key constraints affecting the subsector and to establish initial contacts. The mission to Nicaragua was carried out by the backstopping officer, from the Integrated Programme Support Unit and Mr.Juan Arteaga, a consultant in wood processing. The mission visited Nicaragua from the 12th to the 16th of December 1993.

The mission met with industry representative bodies, visited plants and discussed the need for an integrated programme with numerous individual furniture manufacturers, as well as with the Ministry of Industry, academic bodies, staff of FAO and other relevant institutions.

Representatives of all of the main public and private sector agents active in this industry were approached and the mission is confident that the information presented below accurately reflects the current status of the industry and the conditions for programme development.

The mission concluded that, despite a number of institutional difficulties, conditions conducive to the development and implementation of an integrated programme exist at present, and that important industrial, social and ecological advances could be made through such a programme.

2. Raw Materials

Nicaragua's total land area is a little over 12 million ha.. In 1990 the uses of this land were distributed as follows: Latifoliate forest (31%); pine forest (4%); bush (9%); fallow land (7%), and agriculture and livestock area (49%). Total forest area in 1990 was 4.3 million ha.. Nicaragua's forests are located mainly in the country's northern regions and along the Atlantic coast. There is very little forest in the Pacific region, where population density is greatest.

Nicaragua's forests are divided into three classifications: Productive forest (60% of the total); protected forest (15%) and forest under conservation (25%). Protected and conservation areas are spread over 71 sites. The 2.6 million ha. of productive forest is in turn divided into areas under latifoliates, conifers and forest plantations. Latifoliates comprise dense forest (956,000 ha.), medium forest (791,000 ha.) and open forest (380,000 ha.). Conifers include open conifers (146,000 ha.) and closed conifers (307,000 ha). Plantations cover a mere 20,000 ha..[1]

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[1] Servicio Nacional Forestal (SFN), Una Estrategia para el Desarrollo Forestal, unpublished mimeograph, Instituto de Recursos Naturales y de Medio Ambiente (IRENA), p.8.

In lowland areas of the Pacific region the most commonly occurring wood species are: guanacaste de oreja (Enterolobium cyclocarpum); genizaro (Samanea saman); guácimo de molenillo (Luechea candida); guanacaste blanco (Albizia caribaea); laurel (Cordia alliodora); pochote (Bombacopsis quinatum); ceiba (Ceiba pentandra); panamá (Sterculia apetala); arbutus (Calycophyllum candidissimum); quebracho (Lysiloma seemaanii); cortés (Tabebuia chrysantha); oak (Tabebuia rosea) and sardinillo (Tecoma stans). The most important latifoliates found in the Pacific region at altitudes between 500m and 1,800m are: guanacaste de oreja (Enterolobium cyclocarpum); ojoche (Brosimum alicastrum); cedar (Cedrela odorata); tempisque (Mastichodendron capri); guayabón (Terminalia lucida) and Central American rubber (Castillo elastica).

In Nicaragua's central region the most important latifoliate species are: cedar (Cedrela odorata); zapote mico (Couroupita nicaraguensis); javillo (Hura crepitans); jocote jobo (Spondias mombin); majagua (Heliocarpus appendiculatus); gavilán (Schizolobium parahybum); mora (Chlorophora tinctoria); zorillo (Alvaradoa amorphoides); jobo lagarto (Sciadodendron excelsum); copel (Clusia rosea); jagua (Genipa americana), and encino (Quercus spp.).

Nicaragua's northern pine forest contains some five species of pine, namely: Pinus caribaea; Pinus oocarpa; Pinus tecunumanii; Pinus maximinoii, and Pinus pseudostrobus.

The humid forest of the Atlantic region contains large areas of Pinus caribaea, mahogany (Swietenia macrophylla), cedar (Cedrela odorata), maría (Callophyllum brasiliense), almond (Dipteryx panamensis), guava (Terminalia amazonia), javillo (Hura crepitans), olla de mono (Lecythis glauca), rosita (Ouratea costaricensis), guácimo (Guazuma ulmifolia), gavilán (Schizolobium parahybum), jagua (Genipa americana), zopilote (Vochysia ferruginea), banak (Virola spp.) and bamboo (Gradua amplexifolia).[2]

The Instituto de Recursos Naturales y del Ambiente (IRENA) estimates the total potential wood stock from productive forest to be 64,571,000 m^3, located mainly in the central and Atlantic coast regions of the country. However, a

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[2] Information on wood species provided by FAO, Managua.

large part of the productive forest requires restoration due to damage caused by inappropriate exploitation. The currently accessible wood stock from productive forest is calculated to be 44,570,000 m^3, of which a little under 10% is made up of conifers.[3]

The area of forest in 1950 was slightly under 8 million ha., and has since shrunk dramatically to the 4.3 million ha. recorded for 1990. While reliable statistics are hard to find, deforestation may reach approximately 150,000 ha. to 200,000 ha. each year. There are a number of causes of rapid loss of forest area. These include an expanding agricultural frontier - the most important single contributory factor -, a growing demand for firewood, obsolete industrial processing, inadequate policy and legislation (although this is now being addressed) and limited institutional resources. Expansion of the agricultural frontier is largely a consequence of cattle farmers seeking to increase the area available for cattle grazing, and the movement of poor migrants who, with few alternative sources of employment, seek to claim and work a plot of land (amongst many other measures, actions are required to make cattle ranching more intensive so as to reduce the pressure on the forests).

The total area of forest burnt in 1991 was between 150,000 ha. and 200,000 ha.. This implies a waste of some 2.8 million m^3 of wood which could potentially have been utilized by industry. The value of this imputed loss was some US$ 56 million (or 20% of the value of total exports) [4] There is also widespread use of firewood for household purposes, with IRENA calculating that over half the country's total energy consumption in 1991 involved wood as the fuel source. Most firewood is extracted from forest in the Pacific region.

There is still some confusion over the ownership of land, with land titles yet to be awarded in some instances and the legal status of land to be clearly established. According to the Programa de Accion Forestal del Tropico (PAFT) 6.3 million ha. of forest are state, communal or municipal property. The status of most of the small forest area remaining on the Pacific coast has still to be clarified.

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[3] SFN, op cit, p.8b.

[4] SFN, op cit, p.18.

A national seed bank is in operation. All reforestation projects must draw their seed requirements from this seed bank. Some export of seeds occurs, mainly of pine.

According to IRENA 33 projects of different sizes addressing forestry issues are currently under implementation. For example, the project GCP/NIC/019/NET focuses on the strategic need to generate employment on the Pacific coast - to be provided in this case through the working of Eucalyptus plantations -, so as to slow expansion of the arable frontier on the Atlantic coast. This project is implemented by IRENA and FAO and financed by the Netherlands. Projects supported by SWEDEFOREST and INTERFOREST involve reforestation, in collaboration with peasant communities, with plans to plant 2,000 ha. in 1994.

On the 15th of October 1993 the Government issued Decree No.45-93 which, inter alia, specifies: The functions of different institutions in protecting and developing the forest area and the forest industry; establishes a policy on forest concessions; makes congruent a broad body of pre-existing laws and regulations; details the arrangements for supervision of forest use and primary processing of wood, including the determination of permissible annual harvest volumes, and creates the Administración Forestal Estatal and the Comision Nacional Forestal. While the policy framework is strengthened with this decree, the capability to enforce policy appears to be weak on account of limited institutional resources.

Plantations

The area covered by plantations is small. In addition, much of the approximately 14,000 ha. reforested in the north-east of the country was damaged during conflict in the 1980s and by numerous fires. In the Pacific region around 6,000 ha. have been planted, largely comprising Eucalyptus camaldulensis intended for use as firewood. IRENA estimates that some 2.5 million ha. may be apt for use as forest plantation, mostly in the central and northern regions. Much of this area is presently used for cattle ranching.

The mission noted that rattan is widely used in wooden furniture.

3. Structure and Status of Woodworking Industries

As a whole, Nicaragua's wood products industry adds very little value to the wood resource. Perhaps around 90% of extracted wood not used for firewood is exported as logs or sawnwood with no further processing. Secondary processing is generally unsophisticated, wasteful and dispersed throughout numerous small-scale and a few medium-scale establishments. There has been only minimal investment in secondary wood processing of any sort during the last ten years. Most establishments operate at low levels of capacity utilization, with a large number of producers having left the industry in recent years. The general picture is one of an industry struggling on account of problems from raw material supply to contraction of the domestic market.

3.1 Procurement and Use of Raw Materials

Logging is undertaken by a number of domestic and foreign-owned firms on the Atlantic coast and in the central region, although details of the extent of this logging were not found. In 1992 there was a request for a logging concession by a Taiwanese firm which, the mission was informed, caused considerable commotion due to the scale of the concession. The concession was eventually withdrawn. The impression was had that formal logging is not tightly controlled, perhaps on account of inadequate organizational infrastructure. Uncontrolled chainsaw operators also extract wood, although it was not clear how many chainsaw operators there are. The mission heard anecdotal accounts of significant illicit logging. The methods of extraction and supply of raw material to industry have been characterized by general inattention to issues of sustainability, leaving large degraded areas of both pines and latifoliates.

The wood processing industry uses some 30 wood species in all, with preference given to around 9. The most widely used hardwood species are cedro real (Cedrela odorata), cedro macho (Carapa guianensis), laurel (Cordia alliodora) and coyote (Platymiscium), while the most commonly used coniferous species are Pinus caribea, Pinus oocarpa and Pinus pacifica (while of no statistical importance, three species of bamboo are commonly used in the construction of dwellings, in artisanal basketmaking, and as props on banana plantations). Production of roundwood in 1991 was 4,182,000 m^3. Coniferous roundwood production in 1991 was 708,000 m^3. Industrial roundwood production in the same year was 880,000 m^3, a figure almost unchanged since 1980.[5]

The "Reglamento Forestal" prohibits use of chainsaws, but is impossible to enforce. Yields of wood from roundwood are in the region of 30% for chainsaws, 45% for circular saws and 60% for bandsaws.

There are three main channels through which furniture producers procure raw material: from sawmills; from lumberyards, or from illegal loggers. While wood from the latter source is cheap, it is also cut with a chainsaw and is poorly dimensioned. The most expensive source is from lumberyards. Due to deforestation and unmanaged extraction of wood, distances from the site of extraction to the furniture producing firms are growing, adding to the cost of raw material.

3.2 The Location and Scale of Wood Processing Industries

There are a total of 90 sawmills nationwide. 60 of these operate circular saws and 30 use bandsaws. While found throughout the country, sawmills are clustered in the Pacific coast region, and are less frequent in the isolated areas of the Atlantic coast and the north-east. The mission was informed that sawmills on the Pacific coast are underutilized due to growing scarcity of raw material. Sawmills are found in both rural and urban areas. Sawnwood production in 1991 was 222,000 m^3. Coniferous sawnwood production in the same year is estimated at 94,000 m^3.[6]

There is one plant producing plywood. Installed capacity was said to be around 20,000 m^3. Plywood production in 1991 was 9,000 m^3. There is no production of pulpwood or wood particles and no production of fibreboard, paper or paperboard. Demand for wood for secondary processing is small by comparison with the volume of wood used in primary processing.

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[5] FAO Forest Products Yearbook, 1991, Food and Agriculture Organization of the United Nations, Rome.

[6] FAO, op cit, 1991.

The mission was informed that the only firm making particle board is NICALIT, which produces cement particle boards for the local market.

Statistical data collection for wood processing and other industries is very rudimentary. The registration cf small-scale enterprises is incomplete, and many operate informally (carpentry and artisanal).[7] However, estimates were heard of around 3,000 workshops making wood products nationwide. Many of these workshops have a single owner, or are family concerns. Each workshop usually employs 3 to 4 persons. The mission learned that there are around 300 wood processing establishments in Managua, of which only 60 are operating at present.

There are only a handful of medium to large-sized secondary wood processing establishments (see footnote 7). Of note amongst the larger firms is COMADECO (km 12 of carratera Leon). This is a state-owned company producing doors, construction items, mouldings and some furniture (the mission examined samples of school furniture). COMADECO has installed capacity to produce 1,000 doors per month and 40,000 feet of mouldings. The firm possesses two 20,000 BF kiln driers and its own bandsaw mill. Between 1985 and 1990 COMADECO was exporting spanish-style Mahogany doors, as well as flooring and mouldings to the U.S.A, Central America and Europe. With new investment the company may again be in a position to export.

There is also potential for the manufacture of a range of products derived from trees. Within the context of a larger programme for the furniture industry an assessment could be made of the commercial viability of producing these items, as well as assessing complementarities with the manufacture of other wood products. Such items include: Resin, extracted principally from pines; tannin extracted from various wood species such as (Lysiloma spp.), mangrove (Rhizophora mangle), nacascalo (Caesalpinia coriaria), chaperno negro (Lonchocarpus minimiflorus) and nancite (Byrsonima); vegetable oil, extracted, for example, from coconut (Cocos nucifera), a product widely used on the Atlantic coast; gum extracted from various species of Zapotaceae in northern

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[7] The law defines micro-enterprises as those having up to 5 employees and an investment less than US$ 5000. Small-scale industry comprises firms having 6-30 employees and large-scale industry includes firms larger than this.

regions of the country; document cases made from the fibres of native rubber trees (Castilla tunu), a product already made by indigenous communities; bags, ropes and carpet from the fibres of the agave plant, and edible latex from Brosimum cf. utile, which is consumed by the indigenous miskito population on the Atlantic coast.[a]

3.3 Furniture Production

There are probably fewer than 5 medium-sized furniture producers in Nicaragua, with the domestic market supplied largely by small-scale producers. Small-scale producers do not generally have a product line (and much of their output embodies little value added). Many small firms will produce doors, windows and other items as well as furniture. Small and medium scale firms supply household and office furniture of various sorts, usually on a request basis. Small firms use deficient equipment and the workforce rarely receives training, both of which give rise to low product quality and waste of raw materials. In a recent survey of 69 woodworking establishments, it was found that none of the workforce received training outside the enterprise.

The following information was gleaned on the medium to large-scale furniture producers:

Empresa Lolo Morales: This firm has been operating for 12 years and is perhaps the largest furniture maker in the country. The company has some 70 employees, including 40 in production, 5 in administration, 10 in operations and 15 in distribution and sales.

Lissethe: This enterprise currently employs 50 staff, having reduced its workforce from 70 during the last year or so. The company manufactures attractive furniture, often using traditional designs incorporating bamboo, mahogany and rattan. 40% of the firm's output is exported, some of which is to the U.S. The company also supplies part of the upper middle segment of the Nicaraguan market. Lissethe is located close to the town of Masaya and has branches in Managua and Matagalpa (in northern Nicaragua).

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[a] Information provided by FAO, Managua.

COMADECO also produces a small volume of furniture. MADERAS (calle Vieja Leon) was reported to produce limited amounts of furniture, although the mission was unable to visit this plant. Another producer, FAMESA, is currently being privatized. The mission was also informed of the existence of the Empresa Luis Morales in Granada, but was unable to visit this firm.

According to information provided by the Camara Nacional de la Mediana y Pequeña Industria (CONAPI), a typical structure of costs in the production of wooden furniture for a relatively well-equipped small-scale establishment was, in February 1993, as follows: Wood (38.4% of the total); machinery and equipment (4.2%); labour (28.4%); other inputs (21.4%), and taxes and other costs (7.6%). CONAPI indicates that for the same period the average production cost of a rocking chair for a relatively well-equipped small-scale establishment was 239.77 córdobas.[9] The sales price of the same chair was 250 córdobas, giving a profit of only 10.23 córdobas. CONAPI estimated that less well-equipped small-scale firms were selling rocking chairs at 6.97 córdobas below production costs, as depreciation of equipment and other costs were often not properly accounted for in such establishments.

3.4 Paper Production

The mission was informed that one firm, MERCURIO, is engaged in paper recycling. A second factory was said to be under construction in the city of Granada.

3.5 Employment in Wood Processing Industries

No data were found on total employment in any area of the wood products industry. However, including the large number of small-scale and artisanal producers the figure must run to a number of thousand, possibly above 8,000, and is a major subsector of industry in employment terms.[10] It is evident

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[9] The exchange rate at the end of 1992 was 5 córdobas to the dollar. The end 1993 exchange rate was 6.34 córdobas to the dollar.

[10] The total industrial workforce is difficult to estimate. 1990 data indicate a figure of some 200,000, although this is likely to have fallen significantly as a consequence of severe macro-economic recession.

from street markets in Managua and elsewhere that wood processing is a livelihood for a very large number of people, and in some towns appears to be the predominant "industrial" activity. However, CONAPI representatives informed the mission that due to deep recession employment in small-scale firms producing wooden furniture fell by some 70% over the period 1986 to 1992. Levels of remuneration are also low. The mission was informed that a typical monthly wage in 1993 was between 350 to 550 córdobas (approximately US$ 50 to US$ 90), compared with 900 or more córdobas (approximately US$ 150) for a construction worker.

Figures provided by CONAPI also show a high level of employment creation per unit of investment in the wooden furniture industry (and other small-scale industries). According to these data the cost of establishing a small-scale woodworking enterprise in early 1993 was some 30,000 córdobas (approximately US$ 5,000). This would employ around 5 people. Based on government investment plans for 1993, CONAPI estimates that 40,000 córdobas (approximately US$ 6,670) are required on average to generate employment for one person in other subsectors. While the interpretation of such figures is problematic, they do suggest that development of this subsector may have particularly positive effects on employment generation, and subsequently, income distribution and poverty alleviation.

3.6 Size and Growth of the Domestic Market for Wood Products

The domestic market is small and stagnant due to acute macroeconomic recession (real GDP contracted by 12.5% in 1988 and continued to fall by an annual average of .5% to 1993). However, data on yearly sales of wood products, with which to illustrate market size, were not available. Despite the generalized contraction in domestic demand following macro-economic austerity measures this subsector has at least experienced some demand derived from activity in trade and construction. However, many producers are under pressure to reduce dependence on the stagnant domestic market and export, although most are poorly placed to do so.

The mission was informed that the government will shortly begin to construct 1000 houses a year, which is likely to increase demand for wood products. An upturn in the macroeconomy will also stimulate demand for processed wood products. In this connection, the Economist Intelligence Unit forecasts real GDP growth of 2% in 1994 and 3.5% in 1995.[11] Over the longer term, the fact that the population is young (half the population is under 16), with a high rate of household formation, could help sustain demand for wooden furniture. Currently, the most widely sold processed wood products are doors, living room furniture and beds.

3.7 Distribution of Wood Products

Much of the distribution of wood products is informal, with sales made directly from workshops or from local street markets. It is usual for small-scale workshops to produce on request for nearby customers. The small number of producers who export (generally the larger firms) may use their own transport for sales to neighbouring Costa Rica. Local trucking services can be employed for the same purpose. Sometimes firms may not export directly, but distribute via intermediaries, as is the case with COMADECO. The mission heard the view that there is a need to organize export marketing collectively so as to reduce the costs to each manufacturer.

3.8 Trade in Wood Products

From official statistics, the performance of exports of key wood products has not been encouraging in recent years. Table 1. provides information on the volume of trade in wood products in 1980 and 1991. Export volumes are seen to have fallen for all product categories between 1980 and 1991.

In value terms exports of roundwood in 1991 amounted to US$ 396,000, down from US$ 1,511,000 in 1980. Sawnwood exports in 1991 had a value of US$ 1,590,000, of which US$ 1,167,000 comprised coniferous sawnwood. 1991 exports of plywood amounted to US$ 648,000, down from US$ 2,220,000 in 1980. Imports of paper and paperboard in 1991 totalled US$ 6,508,000.[12] These figures compare to total merchandise exports in 1991 of US$ 268 million.

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[11] Economist Intelligence Unit, Country Report, 2nd quarter 1994, p.9.

[12] FAO, op cit, 1991.

Table.1 The Volume of Trade in Wood Products in 1980 and 1991

Product		Imports	Exports
Industrial Roundwood			
(000 m^3)	1980	11	5
	1991	n.a.	3
Sawnwood			
(000 m^3)	1980	0	5
	1991	0	4
Coniferous Sawnwood			
(000 m^3)	1980	0	5
	1991	0	2
Plywood			
(000 m^3)	1980	0	5
	1991	0	1
Paper and Paperboard			
(000 mt)	1980	13	0
	1991	12	0

Source: FAO Forest Products Yearbook, 1991. Food and Agriculture Organization of the United Nations, Rome.

Data on trade in other wood products were not available. It is likely that there is significant illicit trade in roundwood, especially of valuable hardwood species. There has been some export of doors and construction material to Costa Rica and other countries, and a number of the larger furniture producers also export, with some produce sold in the U.S.A.

Doors are the item produced in Nicaragua for which demand is greatest in Central America. There is considerable construction underway in El Salvador, a country with little forest resources of its own, which could become a source of export demand for Nicaraguan products.[13]

[13] In this connection, it can be noted that the Governments of Costa Rica and Mexico recently signed an extensive trade liberalization agreement. Negotiations on an agreement of economic

Trade liberalization has meant that imports are relatively unhindered. CONAPI estimates levels of effective protection for producers of furniture as follows: 1990 (93%); 1992 (38%), and 1993 (20%).

Figures provided by CONAPI also illustrated the low import intensity of wooden furniture production in small-scale firms. According to these data the production of a rocking chair, for example, requires imported inputs with a value of only 1% of the cost of production (although it is likely that import requirements of larger firms producing more sophisticated goods is greater). By contrast, imported input requirements comprise some 48% of production costs in the construction industry.

3.9 Product Quality

The mission did not have the opportunity to assess the quality of sawnwood, although technical conditions at sawmills were said to be rudimentary. Lumber is sold in unstandardized form, and grading is not a regular practice.

Most sawnwood is not dried, or undergoes crude open-air drying. Kiln drying is extremely uncommon. Much of the further processing of sawnwood - to windows, doors and even furniture - takes place without proper drying. There is considerable potential for the use of solar driers in Nicaragua (an acute shortage of working capital is one reason why many small-scale producers cannot afford to maintain a stock of wood to be dried).

Amongst furniture producers there is considerable variation in product quality. The frequent technical shortcomings of production in small-scale enterprises negatively affects product quality. For example, lack of knowledge of joint-making techniques means that much furniture contains many nails and screws, impairing the appearance. Casual inspection of items made by the largest firms - those engaged in exports - also indicated a need for improvements in finishing and design.

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complementarity between Mexico and Central America were initiated in February 1994.

4. Industrial Inputs

4.1 Woodworking Machinery

Most firms use simple electric-powered machinery, mainly circular saws and lathes. Much machinery is built by the users themselves, from low-powered electric motors. Even in larger firms the mission saw machinery that had been made by the firm itself. Some of the larger enterprises also employ machinery of North American and European origin, some of which is purchased second-hand. COMADECO uses furniture-making machinery from Germany, Checkoslovakia and Italy, as well as other sources. Machinery is generally outdated, with some being 30 years old. Maintenance is wholly inadequate in many cases.

The mission was informed that two local engineering firms produce simple machinery, although the firms are not specialized in this area.

4.2 Other Industrial Inputs

Data on total annual consumption of other important industrial inputs were not found. It is probable that a large share of other inputs is imported. There are a number of distributors of multinational companies established in Nicaragua which supply chemical inputs to the woodworking subsector. Sandpaper is imported from the U.S.A and Spain. At least one local firm, Mavalle, supplies textiles.

5. Institutional Context

There are a number of institutions active in areas relevant to the wooden furniture and other wood processing industries. CONAPI, already mentioned, is a non-profit privately run body seeking to advance the position of artisanal, small and medium-scale business. CONAPI possesses representative offices throughout the country and is engaged in training and credit programmes, providing technical assistance to members, disseminating information on industrial design, assisting in marketing, preparing project proposals and offering legal advice. The Union Nicaraguense de Pequeña y Mediana Empresa (UNIPYME) is another industry representative body. Around 10 wood products manufacturers are associated to UNIPYME at present.

Two universities provide training in forestry, with the following courses being taught: agronomy (with a concentration on forestry); forestry engineering, and ecology and biology. There also exists the Instituto Técnico Forestal (INTECFOR) from which some 14 technicians graduate annually, and there is a school of carpentry. However, most of the workforce which receives any training learns through apprenticeships of one form or another.

IRENA, mentioned above, is the main institution undertaking activities to protect and develop the country's natural resources and environment and could be an important counterpart and focal point in any programme. IRENA has a yearly budget of some US$ 6 million, of which around 65% is required to operate the institution, with the remainder allocated to various projects. IRENA houses a well equipped wood technology laboratory founded in 1983 with support from Sweden, being the first institute of its kind in Nicaragua. The objectives of the laboratory are to: Increase the number of wood species used by industry through dissemination of information on the physical and mechanical properties of different species; to give advice on the appropriate uses of different species, and to provide technical advice to the forest products industry. The laboratory comprises various sub-units undertaking investigations into: Sample collection (with a current collection of samples of some 770 national and foreign wood species); sawing and carpentry; wood anatomy and identification; wood drying, preservation and durability, and physical and mechanical properties of wood.

Amongst other activities, IRENA's wood technology laboratory produces small numbers of relatively high-quality furniture and other wood items from non-traditional wood species (to Nicaragua). The objective of this activity is to promote the use of such non-traditional species, and to illustrate the designs used and the combination of wood with other materials (glass, fabrics, tiles etc). To this end IRENA has established a permanent exhibition room. Laboratory staff expressed the hope that, with some investment, the available facilities could also take on the role of a quality control centre for the wood products industry. IRENA also gives courses and publishes technical information.

There are a number of national NGO's active in forestry, including the Fundación de Conservación y Desarrollo (FUNCODE), the Movimiento Ambientalista de Nicaragua, the Colegio de Biólogos y Ecólogos de Nicaragua (COBEN) and the Asociación de Forestales de Nicaragua (AFONIC).

Seven private banks and three state banks have also been established during the last three years, indicating the existence of some pent up investment demand.

Government policy in relation to forestry and the wood products industry has a number of aims. These include the fostering of an efficient forest industry, protecting the country's biodiversity, slowing the advance of the agricultural frontier, increasing the area under forest and the production of industrial wood (e.g. through legislation governing ownership of land and associated forest, and the creation of financial instruments to incentivate projects in forestry and agro-forestry), and adding value to exports. The latest five year plan includes the objectives of: Increasing industrial wood processing capacity; creating 12,000 jobs (7,000 in reforestation and 5,000 in the wood products industry); increasing the number of species used by industry; expanding wood based exports; increasing the efficiency of firewood kitchens by 5%; initiating the generation of electricity using biomass, and training 1,000 forest workers. Achievement of these objectives will be a demanding task given the magnitude of the existing problems.

6. Problems and Constraints

The wooden furniture industry experiences a wide range of technical, financial and market difficulties. Indeed, it is fair to say that there are few steps in the whole wooden furniture system - from the supply of raw material to marketing of final products -, that are not problematic for most of the industry's producers, and assistance is required in all phases of wood transformation. According to CONAPI, from 1986 to 1992 six of every ten small-scale woodworking firms closed, with sales of some key products falling by 80% and employment declining by around 70% over the same period. There is significant capacity underutilization. These problems are compounded by the fact that Nicaragua is an exceptionally poor country, with very limited resources and weak industrial infrastructure.

The entire woodworking system is beset by the problem of raw material supply. As described in section 2, Nicaragua's forest area is diminishing rapidly with, apparently, little control over commercial logging and other causes of forest loss. The mission heard that many producers are beginning to have problems with the cost of raw materials (usually extracted by small-scale firms at great distance from where the wood is to be processed).

However, the main source of deforestation is the expansion of the agricultural frontier, with little value being given to the wood that is cleared. In 1991, more than three times as much wood suitable for industrial use was burnt than was actually produced for industry. Attenuating pressure on the forest requires, inter alia, that a range of socio-economic issues be addressed. These stem largely from poverty, and include scarce alternative employment opportunities and lack of the means and knowledge with which to exploit the forest in a viable manner. In this connection, an integrated programme to support the wooden furniture industry could explore means of coordinating with the various projects on agro-forestry and community-based forest use supported by FAO and various bilateral donors. A national forest inventory also needs to be completed. While work is ongoing to strengthen relevant legislation, greater institutional capacities are required. The fact that so little exported wood undergoes significant processing represents a further loss to the country.

There is a generalized scarcity of trained manpower. Of the 2,000 or so forest workers most possess no technical training (it should be mentioned however that during the 1980's SWEDFOREST trained some 100 forest workers in Sweden, mainly in the use of industrial machinery and chainsaws). According to the PAFT some 10,000 forest workers are required by the year 2000. PAFT also estimates that 30 technicians a year are required up to the year 2000 (around 14 graduate annually at present). There is no sawdoctoring service, with saws being sharpened in a haphazard way by untrained employees. Furthermore, very few owners or employees of small firms have had any formal training in business administration. An example of the repercussions of this situation was given in section 3.3, with many small firms apparently unaware of the losses being made on some products, in part because of faulty accounting practices.

There is a great scarcity of persons skilled in industrial design and technical drawing and there is no design school in the country. As regards design aesthetics, many producers make attractive traditional furniture, such as cane rocking chairs. Many designs were said to be thirty years old, and there is a lack of product differentiation.

The operating conditions of most furniture producers are very inadequate. A survey of 69 woodworking enterprises carried out in September 1993 under the auspices of Germany's GTZ found that 61 of the surveyed establishments did not possess the minimum technical and physical requisites for a woodworking firm. This was evident in the lack of space, insufficient separation between machines and areas for the surface treatment of wood, uneven floors, and poor conditions of industrial safety and hygiene. The layout of machinery was often not in accord with the sequence of production. Woodworking equipment was outdated, and the sharpening of blades was done without expert guidance. Product quality was impaired by the absence of technical and aesthetic wood grading. Precision in measurements, joints and assemblies was low, and most forms of surface treatment were rudimentary. These conditions make access to the external market impossible for many producers. The same survey pointed to the need for technical assistance in des , production processes generally, business administration, marketing, and the selection of machinery and equipment.[14] Producers of cane furniture often require assistance in basic carpentry.

There are serious problems caused by inattention to proper wood drying. The mission learned that perhaps only 5% of woodworking enterprises possess kilns. There is great scope for the use of inexpensive solar drying technology. Many producers require assistance in all aspects of finishing.

The use of some chemical inputs is problematic. Wood was said to be

[14] Study cited in the presentation of Mr.Lolo Morales "Estrategia para el Mejoramiento de la Productividad y Competitividad en la Industria de Productos de la Madera", given at the invitation of the ILO and the Government of the Netherlands, Managua 4th November 1993.

treated against pests and fungi with pentaphenol, which is not accepted on the European market, and for which effective substitutes are available. A widely used glue, Synthetic 850, which is acceptable to the Central American market, is not appropriate for many overseas markets as it crystallizes at low temperatures.

There is no industry-wide system of quality control. As noted in section 5, officials of IRENA's wood technology laboratory expressed hopes of taking on quality control functions at some stage in the future. Appropriate modifications to the laboratory are required before doing so.

There is a general lack of knowledge of export markets and of how to go about marketing. The mission did not see evidence of a single sales catalogue. It was reported that during the 1980s many businesspeople lost experience in exporting. This problem is particularly grave given the severe recession in the domestic market. Many producers also felt apprehensive about the repercussions of the NAFTA agreement, believing that they would be effectively excluded from the North American market as a consequence of unrestricted access for Mexican furniture. Some producers suggested the establishment of a business advisory bureau, with the dissemination of market information a prime function.[15]

A further difficulty is the lack of reliable statistical information about the subsector. Appropriate databases could be of assistance in the formulation of government policy.

A frequent concern of furniture producers related to Government policy on small-scale industry. Some producers held that there was a lack of provision for small-scale industry in the Government budget. The mission was informed that in 1992 81.4 million córdobas were budgeted by the Government for the needs of small-scale industries, to be channelled through the Banco Popular, but that only some 30% of this amount was used by small-scale industries due to stringent access requirements (levels of loan security of

[15] UNIPYME considered that an information centre is also required to disseminate information on all facets of wood working technology and machinery.

up to 150% of the loan, short loan periods and high rates of interest). The Banco Popular now competes with private banks on commercial terms. Many producers spoke of the need for an investment guarantee fund to facilitate access to loans for the purchase of machinery, land and industrial construction.

Macroeconomic adjustment and the need to improve government finances has contributed to an increased tax burden on many firms, a source of much complaint among interviewees. Taxes applied to industry include a 15% sales tax, a 2% municipal tax, a profit tax, and a tax on net worth. Charges for public utilities have also increased significantly. One of the largest producers indicated an intention to relocate out of Nicaragua if the current policy climate and market difficulties were to continue. The mission was also informed that as of 31st December 1992 small-scale and artisanal enterprises ceased to benefit from certain fiscal exemptions. These included exoneration from payment of taxes on income, the net worth of the establishment, and the import of machinery, as well as a 60% exoneration from payment of taxes on the import of tools, raw material and packaging. The financial standing of many small-firms is precarious, and even subscriptions to overseas industry journals are prohibitively expensive for some small-scale producers. However, an investment process needs to be set in motion to renew industrial plant, to increase quality and lower unit costs. The mission was told repeatedly that the Government view, implicit in some of the adopted liberalization measures, is that lower trade tariffs and reduced support of other sorts will leave small-scale industry with little choice but to become more competitive. However, many enterprises are at present without the financial means to become more productive.

At the policy level it is important that legal and institutional issues over property rights, particularly concerning land, be clarified as early as possible. However, it is likely that uncertainty over this issue will persist for some time.

7. Conclusions

The conclusion drawn from the findings of this mission are that: (i) Considerable potential exists for development of the wood products industry in Nicaragua; (ii) such development would be greatly assisted by an integrated programme, and (iii) there exists Government and industry commitment, as well as a number of potential counterparts (in IRENA, the Ministerio de Economia y Desarrollo, CONAPI and others), necessary to facilitate the design and implementation of an integrated development programme.

There are a range of problems to be addressed in this industry, the resolution of which would have important positive effects on exports and employment, as well as on the environment. Important environmental gains from an integrated programme could arise from rationalized wood extraction, less wasteful use of raw material and the generation of greater financial resources within the industry for investment in managed forest development. Indeed, IRENA considers inefficient use of wood by industry to be a major problem, and has proposed the creation of an industrial fund to begin rectifying this.

The types of problems facing the industry include technical, policy and investment promotion considerations, which could be addressed in a comprehensive and mutually reinforcing way through an integrated programme. In implementing an integrated programme some institutional difficulties would be present in Nicaragua that would not be so marked in other countries. The State has been overhauled in recent years, and institutional capacities are still evolving. There was also some conflict in 1993 in parts of the rural area (although these tensions now appear to be subsiding). In particular, the question of land ownership has to be resolved. Nevertheless, the institutional framework will strengthen over time - and requires support to do so -, and a great deal can be done in this subsector with minimal risk.

Despite Nicaragua's low level of general development some facilities are surprisingly advanced. IRENA for example has laboratories not possessed by some more developed Latin American countries and has undertaken extensive testing of the physical and mechanical properties of some 55 wood species. In addition, as this is a small industry and Nicaragua is a relatively small country, a well designed programme could have a significant impact at a national level. Furthermore, compared to some other countries, the need for assistance is so pressing in most areas of the industry that the marginal effects of a well co-ordinated programme could be relatively high.

There would be a number of benefits from working in this subsector particularly relevant to Nicaragua's economic situation. The first is that the employment generating potential of this industry could yield important social benefits. Formal unemployment is currently in the region of 60% of the labour force and some 70% of the population is living in poverty (UNDP estimate). With the end of the conflict of the 1980s, the demobilization of tens of thousands of former combatants and the return of some 350,000 former refugees and displaced persons, employment generation is an imperative. The employment intensity of investment in this subsector is noted in section 3.5.

Another important factor in favour of programme development is the potential for foreign exchange earnings.[16] Exports of processed wood products are small at present and previous foreign market shares have been lost. The impression was had that with a combination of assistance to production, quality control and marketing the level of exports could be increased. A number of firms do already produce attractive furniture some of which is bought in the north American market. Furthermore, as described in section 3.8, the import content of furniture production, especially amongst the smaller firms, is extremely low. The potential for exporting wood components (finished and semi-finished dimension stock, turnings, drawer sides etc.) must also be considered promising. It was the opinion of a UNIPYME representative that given an appropriate policy context the wood processing industry could well become the major earner of hard currency and provider of employment from amongst all subsectors of Nicaragua's industry.

Furthermore, despite the currently depressed state of the economy, there appears to be some latent investment demand, with the establishment of seven private banks and a stock exchange. Identification and promotion of investment

[16] The need to generate foreign exchange is dramatically illustrated by the facts that the present value of imports is around three times that of exports, while the country has one of the highest levels of *per capita* foreign debt in the world.

opportunities in the wooden furniture industry could help realize some of this investment demand.

The suggestion to develop an integrated programme was welcomed by the private sector and strong support was also expressed at government level. Indeed, the vice minister for industry (Ministerio de Economia y Desarrollo) informed the mission that development of the wood products subsector was a priority among current objectives.

As described at the beginning of this report, the integrated programme will be a package of technical assistance projects, investment proposals and policy related activities. Achieving balanced development of the overall <u>system</u> comprising forestry, sawmilling, secondary wood processing and furniture making, as well as the supply of industrial inputs, would be the goal of the programme. Attention would likewise be given to the policy context within which all of the above operate.

Developing an integrated programme would require approximately two to three months of analytical and preparatory work by a small multi-disciplinary team. Proposals stemming from this work would be considered with all parties concerned at a programme workshop. Finalization of the programme would occur when agreement had been reached on both the proposals and implementation modalities with all major actors in this subsector.

Co-operation would be sought from FAO in the design of programme elements related to FAO's mandate, especially in the management of forest resources. ITC would also be called upon to provide information/assistance in trade and market related issues.

Annex 1.

List of Persons Contacted

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Antonio Chavez Jimenez	Camara Nacional de la Mediana y Pequeña Industria
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Victor Gabuardi	Guabardi Muebles y Regalos
Marta Villareal	NITLAPAN
Yves George Jacques	NITLAPAN
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