POLICIES TOWARDS WOOD PRODUCTS EXPORTS IN NIGERIA

by

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ABSTRACT

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Rational use of Nigeria's forest resources is analyzed with the objective of identifying policies towards wood products exports which should enhance the contribution of the forestry and forest industries sector to the economy. From an examination of the role of international trade and expansion of exports in economic development, it is concluded that the experience of currently underdeveloped countries does not vindicate the 'classical' view of foreign trade as an "engine of growth". Nigerian economic growth is closely connected with developments in foreign trade. The full impact of trade on the economy has not been realized due to political and institutional obstacles. Forestry and forest industries can exert a potentially propulsive influence on economic development. Several factors determine the role of forestry in economic growth. The sector need not be a leading one in every economy. The importance of the sector should be judged on the basis of its relative efficiency in utilizing scarce resources to promote national welfare.

Several studies, particularly by the FAO, have ascribed a major role to wood products exports in accelerating economic growth in tropical developing countries. International trade in tropical hardwoods has expanded greatly in the last fifteen years. The developmental patterns reveal that the trade is heavily concentrated on logs directed to markets in industrially advanced countries. It is argued that such trade patterns largely benefit the importing countries. Tropical developing countries should regulate the

use of their forest resources for national development through domestic processing of wood before export.

The developmental trends of Nigeria's wood products export trade reveals a striking similarity to those of other tropical developing countries. Logs account for about 86% of the total annual export volume; 70% is in three wood species, and 90% is directed to Western Europe. Over the last decade, the annual volume and value of Nigerian wood products exports have declined continuously. The export decline is attributed to resource deficiency and unsettled policies, rather than deficiency of external demand. Appraisal of the role of forestry in the national economy showed that the sector is declining in relative importance. The sectoral contribution to the economy was assessed using such indicators as, share of GDP, contribution to domestic incomes, employment, foreign exchange earnings, investment and value-added, as well as linkage effects. The pattern of commercial exploitation of timber for export and uncontrolled shifting cultivation are the predominant factors reducing the impact of the sector on the economy.

To maximize benefits from use of the forest resource, Nigeria must adopt sound policies towards the wood products export trade. Urgent steps should be taken to increase domestic processing of wood, expand the range of timbers used and diversify markets. Three alternative policies are identified and analyzed on the basis of relevant national goals, evaluation criteria, constraints and process. The policy alternatives include, laissez-faire (or "do nothing"), incentives to private industry, and government regulation and control of exports.

A laissez-faire policy is rejected because markets for wood products are imperfect. Private industry, motivated solely by profits, cannot be relied

on to voluntarily implement the desired change in wood products export patterns. A combination of elements of the other two policy alternatives is justified. Incentives to private industry should include reduction or elimination of export taxes on processed wood products, lower fees and royalties on lesser-known timbers, provision of wood seasoning and treatment facilities at minimal cost, and assistance in negotiating shipping space and freight. Government should cooperate closely with private industry in research, product development and export promotion. The use of incentives must be justified to avoid misallocation of the economy's resources. A ban should be placed on exports of premium timbers, such as mahogany, iroko and guarea, in log form. Other timbers may be exported as logs on the condition that there is no domestic buyer. Establishment of statutory marketing of timber under a Timber Marketing Board is rejected. Indigenous enterprises would be the greatest losers under such a policy. Government should control wood products export marketing by establishing compulsory grading standards and a timber inspection service. The Nigerian Timber Association should be reorganized and partially financed by government.

Expansion of wood products exports is not a requirement for Nigeria. The need for consistency between forest and national development objectives is stressed. The basic policy considerations include the productive and protective functions of forests. A forecast of potential wood requirements indicates a possible increase from 60 million $m^3(r)$ in 1971 to 93 million $m^3(r)$ in 1985, and 130 million $m^3(r)$ by 2000. Early plans must be made to supply these requirements within the limits of economic feasibility. The problems of forestry and forest industries development include land use and land tenure, productivity and utilization of the forest resources, poor

equipment and wood processing methods, inadequate financing, lack of trained personnel and meagre research. These problems must be resolved if forestry is to contribute significantly to achievement of national goals. The need for integrated planning of the sector is emphasized. Recommendations are made for the attention of government and the wood-based industry. Most important among these, is the establishment of a National Forestry and Forest Industries Development Council, including government and industry representatives. The Council should be charged with responsibility for planning of the forestry and forest industries sector, and interpretation of policy.

Policy analysis is a complex exercise, especially under the environment prevailing in a developing country. Nonetheless, reliance on foreign trade needs to be de-emphasized. The use of forest resources should be dictated by national goals.

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"Actions affecting exports should be evaluated for as consistent an achievement of national, regional and local goals as possible. Disagreement over the success of existing programs designed to protect certain segments of industry results at least partially from confusion over what goals we are trying to achieve. An important first step in evaluating alternative programs, including export programs, should therefore be assessment of our goals with priorities assigned.
..... Our policies and the efforts of the forest industry should be directed at whatever goals are deemed most important. This should significantly reduce the need for short-term actions undertaken only after a problem has become serious".

Thomas E. Hamilton, 1971

DEDICATION

This thesis is dedicated to my wife, Josephine, for her unending sacrifices and to my late brother, Peter, who has made the supreme sacrifice.

INTRODUCTION

Nigeria is located in West Africa and lies entirely within the tropics. Its total land area of 923,733 Km^2 is slightly less than that of the Province of British Columbia and compares with that of Tanzania and Venezuela. According to the 1973 census, the country has a total population of nearly 80 million as against 56 million in 1963. This represents an annual rate of growth of over 5%. If the 1973 population estimate were accepted as accurate and reliable,[1] Nigeria would rank among the ten most populous countries of the world and, certainly, as the largest on the African continent.

The economy of Nigeria is broadly based. It produces a wide range of agricultural commodities and minerals for both domestic consumption and for export. The principal products include palm produce, cocoa, groundnuts (peanuts), cotton, rubber, tin, timber and petroleum, as well as a large number of food stuffs, such as yams, cassava, millet and guinea corn, destined entirely for domestic consumption. Agriculture is the predominant economic activity, accounting for about 50% of the Gross Domestic Product and employing over 70% of the total labour force in 1970 (IBRD, 1974). Unlike most developing countries, characterized as dual economies with a foreign-dominated

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1 Population censuses in Nigeria have always been the subject of controversy. See, for example, O. Aboyade, 1966. Foundations of an African economy. F. Praeger Publishers, New York. p.3. It is therefore not surprising that the 1973 census results were rejected following a change of government in July, 1975. The figure of 80 million is used here on the assumption that an accurate estimate, if possible, is likely to be within ±10% of the 1973 estimate, which does not materially alter this writer's view of a too high rate of population growth for Nigeria.

export sector (Baldwin, 1963), agricultural production in Nigeria is in the hands of millions of small scale (peasant) farmers each cultivating between one-half and five acres, with participation of foreign enterprise limited largely to distribution and marketing activities (Bauer, 1954; Helleiner, 1960). The industrial sector of the Nigerian economy is still very small but has shown rapid growth in recent years, its share of the Gross Domestic Product rising from 4% in 1967 to 9% by 1972 (Central Planning Office, 1973). The Gross Domestic Product has also shown significant growth, rising from about $4.0 billion in 1967 to about $7.5 billion (in current prices) by 1972 (Federal Office of Statistics, 1973; IBRD, 1974). However, the estimated per capita income in Nigeria in 1970 was only $80.[2] In terms of the level of economic development, Nigeria can therefore be said to rank among the least developed countries of the world.[3]

The problem of accelerating the rate of economic development in Nigeria has been dealt with in several studies (IBRD, 1954; 1974; Helleiner, 1966; Aboyade, 1966; Lewis, 1967; Berry and Liedholm, 1970). Efforts to improve the living standards of the people are being mobilized through the formulation of national development plans.[4] Recent assessments of the country's development prospects have reached generally favourable conclusions.

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2 U.N., 1972. Yearbook of national accounts statistics, 1972, United Nations, New York. Figure refers to per capita net national income.

3 Per capita income alone is not an adequate measure of a country's level of economic development and is used here only as a rough index. See, for example, Meier, G.M., 1970. Leading issues in economic development: A study in international poverty. (Second Edition). Oxford University Press, London. 758pp.

4 Three national development plans have been launched in Nigeria since 1962. The Third National Development Plan covers the period 1975 - 1980.

The conclusions were based largely on the current boom in Nigeria's petroleum exports which have considerably eased the country's foreign exchange constraints and vastly expanded government revenues as well as on the rapid growth of the industrial sector (Lewis, 1967; Pearson, 1970). Given the right quality of leadership and political stability, one may therefore expect that Nigeria should soon enter the phase of sustained modern economic growth.

For more than a century Nigeria's economic growth prospects have been closely linked to her fortunes in foreign trade (Aboyade, 1966). Palm produce exports constituted the main stimulus to economic growth in the second half of the 19th century, especially through the introduction of an exchange economy and the demonstration effects of luxury goods imports (McPhee, 1971; Ekundare, 1973). By the beginning of the 20th century cocoa, cotton, groundnuts, rubber and timber became important export commodities. Since 1960, petroleum has dominated Nigeria's export trade accounting for 85% of the total annual export value and 60% of government revenues in 1973 (Schatzl, 1973; Pearson and Scott, 1973).

Timber, or wood products, first entered Nigeria's export trade in 1897 (Dike, 1956). These were specialty woods such as mahogany, ebony and camwood, demanded overseas for decorative or ornamental uses (Pollard, 1955). The value of timber exports in 1911 was $156,000 but rose rapidly to reach $2.3 million in 1947. The peak of the timber export trade seems to have been reached in 1964, when a record total wood products volume of 704,100 m^3 valued at $26.6 million, was exported. Since 1964, the volume and value of Nigeria's wood products exports have declined steadily and, by 1973, were no higher than their level in 1914.

Statement of the Problem

Forests constitute a basic natural resource that can be mobilized for accelerated economic development in a developing country, such as Nigeria. Several studies, especially those undertaken by the Food and Agriculture Organization of the United Nations, have sought to show the potentially important contributions of forestry to economic development which should rank the sector highly in the national development programs of developing countries (Westoby, 1962; Osara, 1963; Nautiyal, 1967; Sartorius and Henle, 1968). Forests provide a large number of goods and services essential to domestic consumption and welfare. Forests can earn and/or save foreign exchange, provide a 'filip' to the general industrialization process through significant forward and backward linkages, create employment opportunities in and stabilize rural communities and,act as a 'propulsive' influence on the course of general economic development (Westoby, 1969.)

In many tropical developing countries, especially of West Africa and South-east Asia, forestry is making its most significant contribution to economic development through the export of wood products (FAO, 1964; Rola, 1974; Takeuchi, 1974). However, a very high proportion of the exports is in the form of roundwood (sawlogs and veneer logs) which goes either directly to industrially advanced countries of Europe, North America and Japan, or indirectly to the in-transit wood processor countries (Taiwan, South Korea, Singapore and Israel). These last mentioned countries reexport most of their imports of logs from tropical developing countries to the same destinations after processing into more advanced products. At the same time, the tropical developing countries import almost all their re-

quirements of processed wood products (especially pulp, paper and paperboard) from the industrial countries. These products account for a significant proportion of their annual trade deficits (FAO, 1964). The pattern of exports of wood products by developing countries, of which Nigeria is one, involves considerable economic losses, in terms of the foregone value-added manufacturing products, additional employment and skills development opportunities, and the linkage effects on the rest of the economy, from domestic wood processing. It raises the important question of the rational use of a vital natural resource; i.e., should the developing country drain her forest resources primarily to the benefit of other countries while it must expend her limited capital resources on heavy bills to pay for the same products returned to her in processed form? This is the central policy issue for forest development which demands urgent but careful consideration.

The broad problem addressed in the present study is the rational use of Nigeria's forest resources. The study presupposes the need to utilize the resource in a manner which ensures its maximum contribution to the country's economic development and welfare. It has been argued (Adeyoju, 1968) that forestry has contributed significantly to the Nigerian economy in the past not only in terms of the absolute of annual foreign exchange earnings from timber exports but also through the "wide range" of foreign currencies involved. However, it may be noted that wood products exports have never constituted a major foreign exchange earner for Nigeria, accounting, at most, for about 5% of the total annual export value. Although this argument is not in itself sufficient ground for neglecting wood products exports in Nigeria, there is a clear need for a re-examination of the trade,

especially in view of its prevailing pattern, in order to ensure that it produces the maximum possible net benefit to the national economy. The significance of the policy problem posed in the present study rests on the fact that the wood products export trade involves several parties - the government, private industry and the Nigerian wood consumer - whose aims and interests in the forest resource may frequently diverge. One aim of a policy analysis of the wood products export trade of Nigeria should be, in this writer's opinion, to promote harmony among the aims and interests of the parties involved in conformity with the goals of national economic policy.

Purpose of the Study

The purpose of the study is to identify and analyze policies towards wood products exports in Nigeria which should enhance the contribution of the forestry and forest industries sector to national development and welfare. The underlying hypothesis of the study is that the past patterns of wood products exports have not contributed the maximum possible benefits to Nigerians from the use of their forest resources.

Scope and Method of Study

The study is an attempt to examine some general or theoretical principles of efficient resource use and to apply such principles to an analysis of wood products exports in a developing country. It aims at highlighting the major problems of forest resource use and development in Nigeria and suggests a set of policies which should govern the country's wood products exports in future. As such, the study is essentially a policy

analysis of the forestry and forest industries sector of the economy rather than a study of the commercial and technical problems germane to the conduct of the wood products export trade.

The method of study is both descriptive and analytical. It employs Worrell's (1970) framework of forest policy analysis, embracing goals, criteria, constraints and process, to appraise the identified alternative policy choices on wood products exports.

The study comprises of six chapters. Chapter One provides a review of the basis of international trade theory and the foreign trade experience of developing countries. The growth of the Nigerian economy since 1950 is examined and the impact of foreign trade evaluated. The role of forestry in economic development is discussed. Chapter Two is an appraisal of the growth and patterns of the Nigerian wood products export trade against the background of trends of the international trade in tropical hardwoods. Possible explanations of the observed patterns of the trade are advanced and the underlying factors discussed. An assessment of the role of forestry in the Nigerian economy is provided in Chapter Three. Chapter Four examines alternative policies towards wood products exports in Nigeria. Three alternative policies are identified and analyzed to arrive at a set of rules (or policies) to guide future wood products export activities in the country. Chapter Five is a synthesis of an optimal forest development policy for Nigeria. The aim of this chapter is to establish the basis and identify the problems of forestry and forest industries development in Nigeria. Possible solutions to some of the major problems of the sector are suggested. Chapter Six contains the summary and conclusions of the study as well as specific recommendations for the attention of the government, the forestry administrations and the

timber industry.

In conclusion, it is necessary to recognize the potential shortcomings of the study. Policy measures have been suggested in the study partly on the basis of what economic theory would suggest and partly on the basis of personal knowledge of the Nigerian forestry and forest industries sector. However, appropriate policy is not always dictated by economics nor can this writer claim complete knowledge of the forces at work in the Nigerian forestry sector. Secondly, the paucity of data has been a major source of difficulty and the heavy reliance on secondary sources has made it necessary to qualify some conclusions. It is hoped, however, that the study should prove useful not only in improving understanding of the total environment surrounding conduct of the Nigerian wood products export trade but also in facilitating the choice of appropriate policies in the future.

CHAPTER ONE

FOREIGN TRADE AND ECONOMIC GROWTH

1.1 Introduction

The relationship between foreign trade and the economic growth of a country has been a subject of interest to economists from early times. Formal statements of the beneficial effects of trade on a country's economic growth date back to the mercantilist era. Thus, wrote Thomas Mun in 1664:

> "... the ordinary means therefore to increase our wealth and treasure is by forraign trade, wherein we must ever observe this rule; to sell more to strangers yearly than we consume of theirs' in value".[1]

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[1] Quoted in Allen, W.R., 1965. International trade theory: Hume to Ohlin. Random House, New York. p.6.

Although the classical economists disagreed with the mercantilists on questions of approach they (the classical economists), nevertheless, assigned to foreign trade a dynamic role in economic development. Adam Smith (1784) described the role of trade as an "engine of growth" in the following terms:

> "By opening up a more extensive market for whatever part of the produce of their labor may exceed home consumption, it encourages them to improve their productive powers and to augment its annual produce to the utmost and thereby to increase the real revenue and wealth of the society".

Mill (1963) discounted Adam Smith's 'vent for surplus' theory of international trade, arguing that the real benefits consisted in the "indirect effects which must be counted as benefits of a high order". Mill's "indirect effects" approximate the "dynamic gains" from trade (Myint, 1954) in the form of "the technological progress and demonstration effects which are even more important to a country still at an early stage of industrial advancement and whose resources were previously undeveloped for want of energy and ambition in the people". Subsequent modifications and elaborations of the classical trade theory have largely concentrated on its bases rather than the benefits derived therefrom (Ricardo, 1891; Heckscher, 1919; Ohlin, 1933; Harrod and Hague, 1963; Haberler, 1959; Cairncross, 1960).

The basic conclusion reached by the traditional or classical trade theory is that to maximize its benefits from foreign trade, a country should specialize in product lines as dictated by its prevailing cost structure and resource endowments. In simple terms, each country's participation in foreign trade should reflect its comparative (cost) advantage. This, it was assumed, would ensure competitiveness of a country's products in world

markets, permit effective and fuller utilization of her resources and bring about longrun economic progress and welfare.

The importance of foreign trade for economic growth of presently underdeveloped countries has been heavily stressed in several studies (U.N. 1963; Prebisch, 1964; Hagras, 1965; Furtado, 1973; Maizels, 1968; Levin, 1960; Nurkse, 1961). In particular, they need foreign exchange to finance imports of capital and consumer goods required to prosecute industrialization programmes and for the servicing of external debts. As Maizels (1968) pointed out, the economic growth potential of an underdeveloped country is a function of its import capacity which, in turn, depends on its level of export earnings. As foreign aid disbursements decline, export earnings have assumed increasing importance as the primary determinant of development performance. Chenery and Strout (1966) have explicitly employed the criterion in measuring such performance and in ranking underdeveloped countries for foreign aid assistance. Hultman (1967) has, however, stressed that the benefits of foreign trade to an underdeveloped country are "much more than that in terms of foreign exchange earnings".

A widely debated hypothesis in the trade and development literature is that foreign trade, or exports, constitute an "engine of growth" for a country. The historical experience of such countries as the United Kingdom with cotton textiles and woollen manufactures; the U.S.A. with cotton and wheat; Canada with fur, cod fish, wheat and timber; Sweden with timber; Australia with wool exports and Japan with silk exports, are widely cited to support this hypothesis (North, 1961; Baldwin, 1956; Watkins, 1963; Lockwood, 1960; Cairncross, 1960). However, the view that, for presently underdeveloped countries, foreign trade may have operated more as a retarding in-

fluence than as an engine of growth has gained an increasing number of adherents in recent years (Singer, 1950; Myrdal, 1954; 1956; Nurkse, 1959; Prebisch, 1959; 1964; Baldwin, 1963; Levin, 1960; Myint, 1954). Although many of these countries have experienced a considerable expansion in their volume of trade, its growth-transmitting or "carry-over" effects on their economies have been slight. They have remained poor and undeveloped. Meier (1968) has summarized the nature of the problem as "the conflict between the gains from trade and the gains from growth".

Furtado (1973) has pointed to the fact that in the underdeveloped countries today, there is widespread frustration and general dissatisfaction with the prevailing pattern of international economic relations. Caves and Jones (1973) gave a list of their grievances as including unsatisfactory and worsening terms of trade and instability of export earnings. The 'alleged' worsening of trade is the result of a 'forced' pattern of specialization which confines the underdeveloped countries to the role of primary exporters (Levin, 1960), while the instability of exports is the direct result of the nature of their commodities. As a consequence, there is a growing "trade pessimism" which is forcing the underdeveloped countries to adopt the only alternative left to them; which is to direct their own development through "diversification of output for their home markets" (Nurkse, 1960).

The causes of underdevelopment and, in particular, the role of foreign trade remain unexplained. Although economists have been generally unsuccessful in providing a comprehensive list of the necessary and sufficient conditions for modern economic growth (Nautiyal, 1967), there seems to be a consensus that foreign trade can stimulate economic growth. The debate,

with respect to the latter, centres on the conditions under which it can do so. Kindleberger (1962) has discussed three models relating foreign trade to economic development with the former as a leading, lagging and balancing sector of the economy, respectively. In the first, foreign trade and exports constitute the prime-mover of development. In the second, foreign trade is passive and domestic investment plays the leading role. In the third, we have "the case of trade expansion which is not demand-led, but rather based on autonomous supply pushes in the export sector" (Watkins, 1963). Aboyade (1972) has observed that "there is always an external trade element to every development strategy that has been devised". More specifically, Emery (1968) put forward the policy prescription that "countries eager to increase their growth rates should adopt the type of policies that will stimulate their exports". The present chapter will, therefore, examine the bases of theories which link a country's economic growth to export growth (export-led models of growth), evaluate the Nigerian experience and indicate the potential role of forestry as a special case.

1.2 Export-led models of economic growth

The fundamental assumption of the export-led models of economic growth is that exports constitute the leading sector of the economy. The growth of exports leads to rising and sustained increases in a country's aggregate real income particularly by stimulating activity in other sectors. Two formulations of the export-led growth model are the vent-for-surplus theory (Myint, 1954; Caves, 1965) and the staple theory (Watkins, 1963; Chambers and Gordon, 1966) of economic growth. The two models (or theories)

of export-led growth are essentially the same, with the exception that the vent-for-surplus model applies equally to both primary products and manufactured exports. For present purposes, therefore, the two theories will be treated as congruent.

The nature of the relationship between exports and economic growth and the processes (or mechanisms) by which the growth-transmitting effects of export expansion are realized have been most thoroughly elaborated in the context of Canadian economic development where a formal statement of the staple theory first emerged (Watkins, 1963; Caves, 1975). A notable effort to apply the staple theory to an explanation of the economic growth of the United States in the 18th and 19th centuries is contained in the work of North (1956). The central postulate of the staple theory is that rising and sustained external demand for a country's staple export (usually a resource-based primary product) can trigger off a mechanism, through a series of secondary activities, whose cumulative effects lead to sustained economic growth "beyond the level which would prevail in the typical underdeveloped country" (Watkins, 1963). Caves and Jones (1973) have identified three avenues for the operation of the mechanism - namely, the effects of expansion of the staple export in improving domestic factor utilization; in expanding factor supplies; and in generating linkages (stimulting secondary industries) in the economy. The interactive influences of the mechanisms, which may operate simultaneously, tend to exhibit themselves in the form of what Watkins (1963) referred to as "a disaggregated multiplier-accelerator mechanism".

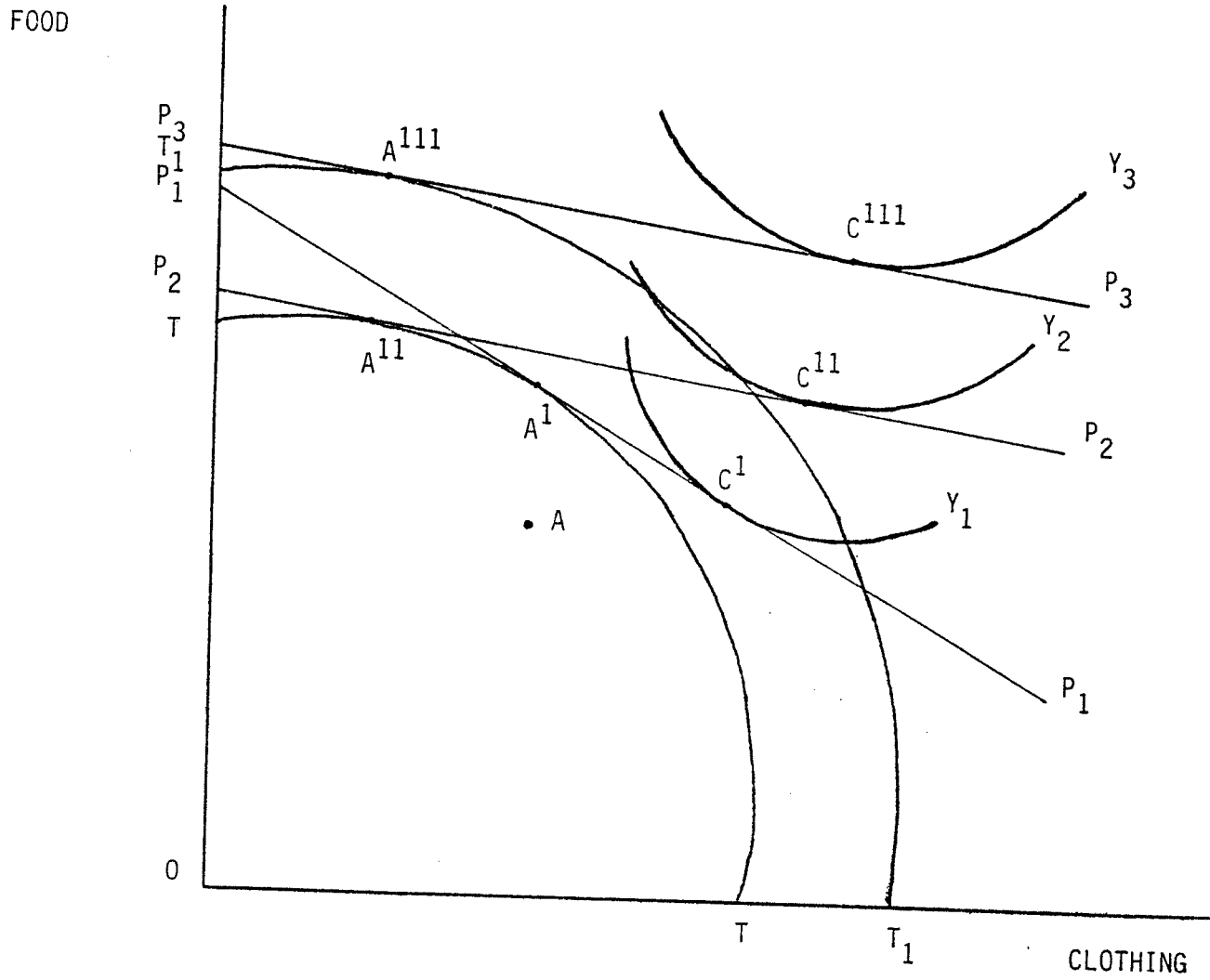
A cardinal assumption of the staple theory is that the country has an unusually favourable man to land ratio, such that land is a relatively

abundant resource. Moreover, there is widespread open or disguised unemployment, a feature of many presently underdeveloped countries (Lewis, 1955). Such an economy is probably operating at an equilibrium of some sort with income at a very low level (Leibenstein, 1963). Under these pre-existing conditions, economic growth is initiated by an autonomous spurt in external demand for the country's staple. Opening up the economy to trade with the outside world brings new opportunities for the expansion of output through the employment of some of the previously idle resources of land and labour. Ultimately, the country may be able to capture significant dynamic gains from trade if export expansion leads to a permanent outward shift of the production possibilities frontier, as a result of the improvement in terms of trade.

An illustration of the effects of an improvement in the terms of trade on the production possibilities and real income of a country is given in FIG. 1. Take a hypothetical country "Z", which is a closed peasant economy comprised of only two sectors - a subsistence sector producing food solely for domestic consumption and a 'manufacturing' (handicrafts) sector producing simple tools and clothing. In such an economy, the level of production and pattern of distribution of the output are likely to reflect the prevailing distribution of the labour force among the different activities and traditional sharing arrangements. For a variety of reasons, for example, underemployment of labour and an undeveloped technology, this economy is currently producing at a level below its potentially feasible production possibility frontier (the point A in FIG. 1). The economy's output is, by definition, its consumption bundle.

Now, open this country up to world trade by any means whatsoever.

FIG. 1. EFFECTS OF AN IMPROVEMENT IN THE TERMS OF TRADE ON A COUNTRY'S PRODUCTION POSSIBILITIES AND REAL INCOME



Source: Caves, R and R.W. Jones, 1973. World trade and payments: An introduction. Little, Brown and Company, Boston. p. 546.

Given the world terms of trade (relative prices of the country's exports with respect to imports from the rest of the world), as depicted by P_1P_1 (FIG. 1), Z will now expand its output of the exportable commodity (food) presumably by employing more land and/or labour, so as to eventually reach its production possibility curve TT at A_1. Z's consumption bundle is represented by the point C^1 at real income level Y_1. Suppose now that as a result of external distrubance(s), a change in the world relative prices (terms of trade) between Z's food exports and her imports occurs in Z's favour, this will induce Z to reallocate its resources towards specialization in food production, and an exapansion of food exports in exchange for manufactured imports from the rest of the world. In practical terms, there is a movement (FIG. 1) from point A^1 to A^{11} on TT with the new terms of trade P_2P_2. The gains from trade for Z is represented by a rise in its real income from Y_1 to Y_2 with the new consumption bundle at C^{11}. The foregoing situation depicts the "static gains" from trade (Meier, 1968) where expanding exports in response to favourable terms of trade enables the country to increase aggregate real income and causes an improvement in welfare as the population is now able to enjoy a more varied bundle of commodities. It is not necessary for Z's production function to change for these gains to accrue. Nor can growth and development be assumed to be a sine quanon.

Suppose further, that at the new terms of trade, Z is enabled to expand its output sufficiently so as to shift the production possibilities frontier permanently from TT to T_1T_1 (FIG. 1), output can then be increased from A^{11} to A^{111} and a further increase in real income from Y_2 to Y_3 is achieved. Z's consumption bundle now consists of C^{111}. The enlarged pro-

duction possibility curve involves dynamic gains from trade, with an all round increase in the country's productive capacity, improvement in welfare with important consequences for growth and development. It could be described in terms of Meier's (1968) "gains from growth" or Myint's (1958) dynamic "productivity" theory of international trade. Fundamentally, dynamic gains from trade entail the transformation of a country's production function, involving not merely a once and for all change but a continuous change in resource allocation required to sustain an on-going development process.

Another strand of the development through trade mechanism is the possibility of export expansion inducing an expansion of a country's factor stock. From this standpoint, it can be assumed that a country's natural resources endowments (known and unknown) including land, are fixed and given. However, effective and efficient utilization of the resources in response to external demand may depend on critical inputs in the form of capital, skilled labour, technology and entrepreneurship. Expanding exports and the expectation of their continuing expansion could induce an inflow of such factors from external sources into the country concerned. Caves (1975) has illustrated how a massive inflow of foreign capital, labour and the associated technology, skills and entrepreneurship into Canada during the wheat boom of 1901 to 1911 enabled the country to sustain rising exports and real income without increasing to a significant degree, the adverse effects of inflation which would otherwise have occurred. Foreign capital inflow took the form of direct foreign investment and savings brought in by immigrant workers. These were invested in developing transport networks and creating other social overheads which, in turn, generated their own

secondary effects on the economy. In addition, improved domestic real incomes meant an increase in domestic savings, much of which was made available for productive investment. Finally, immigrants into Canada and other newly settled regions in the 19th century were generally skilled or semi-skilled, inclined to innovate and possessing considerable entrepreneural experience. Caves (1975) therefore concluded that "expanding trade and induced factor inflows thus played a major role in placing these regions among the fastest-growing countries in the 19th century".

Perhaps the most crucial aspect of theories of development through trade is the question, to what extent does expanding trade generate linkages within or "spread" effects on the rest of the economy? Put another way, is the expanding export sector able to carry with it the rest of the economy by expanding domestic investment and production for home consumption, inducing the creation of complementary industries and transportation facilities, instilling labour skills, encouraging local entrepreneurship and raising the rate of domestic saving? Or does the export sector remain an "island", coexisting with a large and backward peasant sector, exhibiting traits of dualism (Baldwin, 1963; 1966) and fostering growth without development (Clower, Dalton, Harwitz and Walters, 1966)? Quoting Fay (1934), Watkins (1963) provided one succinct answer:

> "... the emphasis is on the commodity itself: its significance for policy; the tying in of one activity with another; the way in which a basic commodity sets the general pace, creates new activities and is itself strengthened or dethroned by its own creation".

Thus, the character of the commodity is the singular most important determinant. However, the traits of the economy (i.e., its resource

base, institutions, values and traditions and the power relations in the society) and the influence of the international environment, are other factors which must be taken into account (Baldwin, 1963; Watkins, 1963; Caves, 1975; Hymer and Resnick, 1975)

1.2.1 Characteristics of the commodity

Characteristics of the staple product are defined in terms of the production function and the input requirements of the process. These will determine not merely levels of efficiency and real income but also the pattern of distribution of incomes resulting from the export activity. The basic consideration is the nature of the technology of the industry, the scope for factor substitutability and returns to scale. The characteristics of the staple export will also determine, at least partly, the degree of realization of the various linkage effects.

The linkage effects may be broadly classed into backward, forward and final demand linkages. Backward linkage takes the form of the simultaneous establishment of industries to supply inputs required by the export sector. Forward linkage entails establishment of industries to buy the output of the export sector for further remanufacture before domestic consumption and/or export. Final demand linkage is a measure of the inducement to invest in domestic industries producing consumer goods for factors in the export sector. The possibilities of backward linkage depends on input requirements of the complementary industries as well as availability and prices of factors. The forward linkage effects will be determined by the possibilities of processing and the incidence of restrictions on

manufactured imports in foreign markets. The final demand linkage will be a function of the size of the domestic market which, in turn, depends on the level of the aggregate income, its distribution between domestic and foreign factors and size of population. In this regard, both the patterns of income distribution and expenditures by recipients of export income become crucial determinants.

Where high proportion of export income goes to foreign capital and/or absentee shareholders, final demand linkage is weakened by income leakages abroad. Furthermore, a high proportion of incomes received by foreign labour in the export sector may be remitted abroad and/or spent on imported goods. These leakages are aggravated in the case where domestic recipients of export income tend to imitate their foreign counterparts' tastes and become what Levin (1960) called "luxury importers". Thus, the characteristics of the staple export may be such as to present limited scope for factor substitutability or, otherwise, permits substantial leakages of income abroad. Under such conditions potential linkage effects will be vitiated by low domestic demand and a consequent low inducement to invest in domestic industry.

1.2.2 Resource base

In the longrun, growth of the staple economy cannot be sustained by exports of a single staple even where necessary measures are taken to deal with problems of slack demand and/or cost-reducing innovations are adopted to eliminate problems on the supply side. "Sustained growth then, requires resource flexibility and innovation to permit shifts into new

export lines or into production for the domestic market" (Watkins, 1963). Resource flexibility or the "capacity to transform" (Kindleberger, 1962) of an economy is determined partly by its range of original natural resource endowments and partly by its technological capabilities. Resource flexibility may increase as success in staple production may generate secondary activities such as domestic investment in transportation facilities and other infra-structure, which lead to the discovery of new resources.

1.2.3 Inhibiting traditions

The expansion of staple exports could initially stimulate growth by attracting foreign factor inflows. In the longrun, however, domestic availability of required factor inputs becomes more crucial. This is particularly true of technology and entrepreneurship. The entrepreneur plays the vital role of a catalyst in organizing and combining factor inputs for the effective utilization of available resources. As Watkins (1963) has pointed out:

> "The key factor is entrepreneurship, the ability to perceive and exploit market opportunities. Entrepreneurial functions may be fulfilled by foreigners ... It may flow freely into the export and import trades but fail to exploit domestic opportunities. An adequate supply of domestic entrepreneurship is crucial".

The development of local entrepreneurship depends partly on the character of the staple and pattern of organization of production for export and partly on the values and institutions of the society. Absence of inhibiting traditions can facilitate development of local entrepreneurship

through a favourable attitude to risk and innovation, increased social mobility, more even distribution of income and equality of eocnomic opportunities for the population. Staple production may significantly improve incomes of the masses of the population, such as in peasant export crop production. In that case, the chances for the development of institutions and values conducive to the rise of a strong domestic entrepreneural class, which will challenge and eventually displace foreigners, may be greater.

1.2.4 International environment

One serious implication of the staple theory of economic growth is that the development prospects of an economy depends largely on the interactions with, and opportunities offered by, the rest of the world. The rest of the world exerts its impact not only by supplying a demand for the country's staple(s); initially, it may also provide the necessary complementary factor inputs for production of the staple and for starting other associated activities locally. However, the conditions of the contemporary international environment may be such that effectively it retards the country's achievement of modern economic growth. One example is where a given staple economy starts out as a colonial outpost or, what Frank (1966) called a "satellite". The staple economy can benefit from the "mother country" or "centre" through assured markets for its product(s), special trading arrangements and an easier supply of necessary input factors, technology and entrepreneurship.

Factor inflow to a staple economy for exploitation of an exportable natural resource, under a satellitic relationship may fail to generate long-term self-sustained economic growth. This is particularly the case where

colonial policy is to discourage development of local industries and entrepreneurship, limit investment outside the export sector, institute the wrong type or quality of education and, generally, starve the staple economy of infra-structure. Hymer and Resnick (1975) observed that the problem of uneven development has its roots in the existing political structure in underdeveloped countries and their relations with the "centre". According to these authors,

> "the observed uneven development represented uneven power and the resulting distribution of income and demand was a social phenomenon rather than a technical one".

The staple theory of economic growth was developed in historical perspective to explain the process of economic growth of countries (e.g., Canada), where export expansion was the primary stimulus to successful development. It may be considered as one brand of export-led models of economic growth. In general, it has the essential ingredients of the other models or theories (e.g., vent-for-surplus, comparative costs specialization, technological demonstration effects and consumption-effort demonstration effects) which have been advanced. Like the classical comparative cost theory of international trade, the validity of the staple theory of economic growth has been seriously questioned, particularly as it applies to presently underdeveloped countries (Watkins, 1963). Preconditions for the successful operation of the mechanisms involved are such that their fulfilment may be just fortuitous.

Nurkse (1960) examined the trade and development experience of currently underdeveloped countries. He concluded that, for these countries, the trade-transmitted growth mechanism had not been so successful as it was

for the New World in the 19th century. Failure of the mechanism was (according to Nurkse), due primarily to sluggish external demand caused by the nature of the commodities involved, development of substitutes, economy in the use of raw materials and import restrictions in importing countries, among others. Nurkse's conclusions have been questioned by Cairncross (1960). Favourable external demand is crucial for successful export-led economic growth. However, the results for a particular country may be frustrated by problems of resource skewness, a lack of organization and management talent and above all, the political environment.

In conclusion, the impact of foreign trade on a country's economic growth is unlikely to depend entirely on purely technical factors. A crucial determinant is the ability to pursue trade and allocation policies which ensure continuing response and adaptation to changing resource and market situations.

1.3 Nigeria's foreign trade development

The economic history of Nigeria is essentially one of foreign trade development (Ekundare, 1973). Before the 19th century, the slave trade dominated the commerce of West Africa. McPhee (1971) has observed that:

> "It was the slave trade which made the importance of West Africa in the 17th and 18th centuries and caused to be highly priced, forts which would otherwise have been esteemed heavy liabilities".

Dike (1956) has recorded Nigeria's involvement in the slave trade. On its impact on the local economy, Oluwasanmi (1966) stated that:

> "... the slave trade not only violently shattered the stable economic basis on which settled life had been

> securely founded for centuries past; it completely stopped the further growth and development of such life".

The end of the slave trade in mid-nineteenth century coincided with the establishment of British colonial rule over Nigeria. Exports of palm oil required for maintenance of British industrial machinery provided a substitute for slaves. Between 1860 and 1900 palm produce (including palm oil and kernels) accounted for no less than 90% of the total annual export value (Geary, 1965). After 1900, cocoa, groundnuts, cotton, timber, hides and skins and tin ore became important export commodities. By 1930, cocoa, introduced into Nigeria from Fernado Po (Dike, 1956), supplanted palm produce as the leading export commodity.

Favourable external demand stimulated a steady expansion of Nigeria's export commodities after 1900. Thus, the value of exports rose from $4.9 million in 1900 to $37.0 million in 1929. The annual growth rates of commodity exports were 7% and 5.5% for value and volume, respectively, whereas export production amounted to between 5% and 7% of the Gross Domestic Product (Helleiner, 1966).

The period 1929-1946 witnessed a break in the course of Nigeria's foreign trade and economic development. As a result of the Great Depression and the subsequent world war, world prices of most of Nigeria's export commodities slumped severely. For example, the total value of exports fell from $49.8 million in 1929 to $24.6 million, or by 50%, in 1931 (all values in current dollars). Between 1929 and 1934 recorded decreases in export prices were on average, 53% for cotton, 78% for rubber, 67% for cocoa, 73% for palm oil, and 58% for groundnuts. The decline of export earnings ranged between 39% for groundnuts and 90% for cotton (Helleiner, 1966). A major development during

this period (1929 - 1946) was the establishment of statutory export monopolies for major export commodities. Cocoa was the first to be subject to statutory control under the Cocoa Control of the Ministry of Food (in the United Kingdom). In 1942, statutory control was extended to include cocoa and vegetable oils and seeds in all the British colonies in West Africa under the West African Produce Control Board (Bauer, 1954). This Board was subsequently dissolved and its functions taken over by national Marketing Boards in the respective West African countries.

In the face of severely slumping world prices, the establishment of bulk purchasing arrangements through statutory monopolies was considered necessary to stabilize producer incomes and avert dislocation of the local economies with possible serious social and political consequences (Bauer, 1954; Ekundare, 1973). This was particularly true of cocoa, although rising external demand was the probable reason for bringing vegetable oils and seeds under control. However, it is significant that the Marketing Boards arrangement was retained in Nigeria (and in other West African countries) after the crisis of slack external demand was over. That they became more an instrument of fiscal policy than a means of stabilizing producer prices and incomes, and the consequences for growth and development, has evoked considerable controversy (Bauer, 1966; Hawkins, 1958; Ogunsheye, 1965; Helleiner, 1964; 1966).

The period immediately after World War II witnessed a revival of Nigeria's foreign trade as commodity exports expanded again to meet the backlog of demand in a Europe undergoing reconstruction and as a result of stockpiling against the Korean War. Data on Nigeria's foreign merchandise trade in the period 1950 to 1970 are presented in Table 1. The value of domestic

Table 1. Nigeria's Foreign Trade, 1950 - 1970
(Values = U.S. $ million)

YEAR	EXPORTS			IMPORTS	BALANCE
	Domestic Exports	Re-Exports	TOTAL		
1950	247.8	4.9	252.7	173.2	+ 79.5
1951	326.5	9.7	336.2	236.8	+ 99.4
1952	350.4	12.3	362.7	317.2	+ 45.7
1953	338.5	9.4	347.9	303.2	+ 44.7
1954	409.5	9.2	418.7	319.4	+ 99.3
1955	363.5	7.6	371.1	381.1	- 10.0
1956	370.3	6.5	376.8	427.8	- 51.0
1957	347.7	9.4	357.1	426.9	- 69.8
1958	371.8	7.7	379.5	465.6	- 86.1
1959	449.4	8.4	457.8	499.5	- 41.7
1960	463.7	11.5	475.2	604.5	- 129.3
1961	476.2	9.9	486.1	423.1	- 137.0
1962	459.2	12.7	471.9	569.3	- 97.4
1963	517.6	13.5	531.1	580.9	- 49.8
1964	589.3	11.7	601.0	711.9	- 110.9
1965	737.1	14.0	751.1	771.1	- 20.0
1966	780.4	15.1	795.4	719.6	+ 75.8
1967	666.7	10.4	677.1	625.9	+ 51.2
1968	578.2	12.8	591.0	539.2	+ 51.8
1969	881.0	9.9	890.9	696.3	+ 194.6
1970	1227.9	11.6	1239.5	1059.0	+ 180.5

SOURCE:
1. Helleiner, G.K., 1966. op.cit.
2. Federal Office of Statistics, Annual abstract of statistics, 1964 and 1971. Lagos.

exports rose from U.S. $248.0 million in 1950 to U.S. $464.0 million in 1960, or by 87%. It rose further to about U.S. $1.2 billion in 1970, or by 165%. The value of imports, on the other hand, increased from U.S. $173.2 million in 1950 to U.S. $605.0 million in 1960, or by 249%. The increase in the value of imports between 1960 and 1970 was 66%.

The ratio of the value of annual exports to GDP was, on average,

19.6% between 1950 and 1953; 16% between 1957 and 1960; 15.8% between 1963 and 1966, and 17.2% between 1967 and 1970. The corresponding figures for imports were 15.6%, 19.8%, 16.4% and 14.8%, respectively. The annual growth rate (compound) for exports during 1950 to 1970 was 8.3%; and for imports, 9.5%. The ratio of value of total merchandise trade of Nigeria to GDP over the period 1950 to 1970 averaged 34%. Data in Table 1. also indicate that, whereas Nigeria's exports generally fluctuated, imports rose steadily throughout, except during the civil war (1967 - 1970), when both exports and imports fell in 1967 and 1968.

Results of the growth patterns of exports and imports during 1950 to 1970, are indicated in Table 1. The balance of trade was continuously positive from 1950 to 1954, negative from 1955 to 1965 and positive again for the remainder of the period.

The very favourable external demand in Europe for Nigeria's commodity exports resulted in expansion of exports and large earnings between 1950 and 1954. Imports into the country also increased during this period but at a slower rate than exports. Consequently, Nigeria was able to build up a sizeable amount of external reserves. By 1953, the reserves amounted to U.S. $578 million (Helleiner, 1966). No country in Latin America had the same level of external reserves in that year, while South Africa's reserves were only two-thirds of Nigeria's (Diejomaoh, 1965). According to the IBRD (1954) "the assets were considerably greater than the investments of expatriate companies in Nigeria; actually, they exceed the total of these investments and the Nigerian public debt, so that Nigeria is for the moment (1953) a net creditor". By 1955, Nigeria's external reserves were sufficient to purchase nearly two years' imports. Assets of the Marketing Boards alone were worth

nearly 6½ months' imports (Helleiner, 1966).

After 1955, Nigeria experienced for a decade, a persistent adverse balance in her foreign merchandise trade due to the declining demand and poor prices for her export commodities in world markets (Table 1). Imports, on the other hand, continued to rise rapidly as a result of government's intensified development effort. Previously accumulated reserves were drawn down heavily to meet the rising import bill and government expenditure. The burden on the external reserves was particularly aggravated by the requirements of the national development program (First National Development Plan, 1962 - 68), and the disappointing inflow of foreign aid and capital. By 1967, Nigeria's external reserves were down to $224 million, or less than the equivalent of four months' imports.[2] The revival and expansion of the country's export earnings have been due, almost entirely, to the development of petroleum exports. Between 1960 and 1970 earnings from petroleum exports increased more than tenfold, to surpass the $1 billion mark annually. Expansion of petroleum export earnings has been due partly to increase in volume production and, partly to the exceptionally favourable world prices, though the latter has been the more important factor. Since 1966, not only has the adverse balance of trade trend been reversed but Nigeria's balance of payments position improved substantially for the first time since 1955.

1.3.1 Commodity composition of Nigeria's foreign trade

Different commodities have constituted the leading export from

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2 The equivalent of three months' imports is generally regarded as the safe minimum level of external reserves to maintain viability of a country's currency and credibility in international economic transactions.

Nigeria over the last century. In Table 2 is shown the composition of the country's commodity export for selected years. The values of the major commodity exports during 1958 to 1973 are shown in Appendix 1. Before 1900, palm produce was the leading export. By 1915 the major export commodities included cocoa, groundnuts, cotton, rubber, and timber, in addition to palm produce. After 1950 cocoa and groundnuts replaced palm produce as the leading exports. Since 1961, the dominance of petroleum exports is clearly established with the share of this commodity in total annual export value rising from 15.2% in 1964 to 83.4% in 1973. It should be stressed that the low and declining share of non-petroleum exports after 1961 does not imply a necessarily static or declining export volume. Indeed, for some commodities, significant increases in export volume have been achieved but their performance appears dwarfed either by the effects of unfavourable world prices or the vast expansion in petroleum exports. Moreover, some of the non-petroleum export commodities (especially palm oil, groundnuts and timber) have been increasingly diverted to home consumption as a result of the increase of population and economic growth.

What emerges from the data of Table 2 is that Nigeria's export trade is reasonably broadly-based but dominated by primary agricultural products and crude materials. The contrast between the exports and imports structure is revealed in Table 3. Food, minerals and other raw materials accounted for 98% of total export value in 1955, 92% in 1963 and 95% in 1970. In contrast, manufactures, machinery and transport equipment, accounted for 74%, 70% and 73% of imports in the respective years. The country's foreign trade was therefore characterized by exports of primary products and minerals, whereas her imports comprised mainly of manufactured and

Table 2. Commodity Composition of Nigerian Exports for Selected Years by Value

Commodity	YEARS						
	1913	1929	1948	1954	1964	1970	1973
	Percentage of Values						
Cocoa	2.5	13.1	20.8	26.8	19.1	15.2	5.9
Palm Kernels	42.5	24.2	17.4	15.6	10.0	2.5	0.8
Palm Oil	29.0	21.4	10.8	9.2	5.1	0.1	0.4
Groundnuts	2.8	14.0	18.9	20.4	16.3	5.0	2.0
Groundnut Oil	-	-	-	2.6	3.9	2.7	1.0
Groundnut Cake	-	-	-	-	2.2	1.3	0.8
Timber	1.7	1.7	3.1	3.0	4.2	0.9	0.6
Tin Ore and Metal	8.9	13.0	11.8	3.5	5.9	3.8	0.7
Cotton	2.5	3.0	1.1	2.0	2.9	1.5	0.2
Rubber	1.4	0.9	2.0	2.0	5.8	2.0	0.9
Hides and Skins	3.0	5.3	9.6	2.3	2.2	0.7	0.6
Others*	5.7	3.4	4.5	12.6	7.2	6.6	2.7
Total Non-petroleum	100.0	100.0	100.0	100.0	84.8	42.3	16.6
Petroleum	-	-	-	-	15.2	57.7	83.4
Total Exports	100.0	100.0	100.0	100.0	100.0	100.0	100.0

* Includes "Other Food and Drink. Other Raw materials and Manufactures"

SOURCE:
1. Federal Office of Statistics, Nigeria trade reports - 1913, 1929, 1948 and 1954. Lagos.
2. _____, Annual abstract of statistics, 1964 and 1971, Lagos.
3. _____, Review of external trade, Nigeria, 1973. Lagos.

capital goods. This pattern of trade is characteristic of most underdeveloped countries and is due partly to the low level of domestic manufacturing activity. On the other hand, economic growth has resulted in rising imports of manufactured consumer goods and capital goods needed to prosecute industrialization programmes. It is expected that imports of consumer goods should decline over time as domestic manufacturing activity expands. But

Table 3. Structure of Nigeria's Foreign Trade: Composition of Exports and Imports by S.I.T.C. Categories for Selected Years

SITC Code	Item	Percentages					
		EXPORTS			IMPORTS		
		1955	1963	1970	1955	1963	1970
0	Food	23.5	20.5	19.1	9.5	10.6	7.7
1	Beverages & Tobacco	..	..	..	3.7	1.4	0.5
2	Crude Materials (Inedible)	61.7	52.4	14.0	1.3	1.5	2.2
3 - 4	Minerals, Fuels Lubricants etc.	12.7	19.7	61.9	4.8	7.5	3.0
5	Chemicals	0.2	0.1	..	5.2	6.9	11.8
6	Manufactured Goods (Classified by Material)	0.9	5.7	4.5	44.1	35.7	30.0
7	Machinery and Transport Equipment	-	-	-	20.5	24.4	37.6
8	Misc. Manufactured Articles	..	..	..	9.0	10.3	5.2
9	Miscellanous Items	0.9	2.0	0.5	1.9	1.7	2.0
	Total	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: 1. Helleiner, G.K. 1966. op.cit. (for 1955).
2. Federal Office of Statistics, Annual abstract of statistics 1964, 1967 and 1971. Lagos (for 1963 and 1970).

NOTE: .. = Negligible (less than 0.1%): - = NIL.

the latter will depend on the trends of agricultural production, prices, and population growth, all of which determine the level of effective domestic demand.

1.3.2 Direction of trade

The direction of Nigeria's foreign trade has generally followed the pattern established under colonial rule. The United Kingdom, which exercised

colonial power over the country for one hundred years, is her most important trading partner. In Table 4. is shown the direction of trade for selected years. Although the U.K remains an important market for Nigeria's exports and source of imports, her share has been falling steadily. The E.E.C. countries and the U.S.A. have increased in importance particularly since the end of the second World War. Thus the U.K. accounted for 72% of Nigeria's commodity exports in 1954, 30% in 1968 and only 18.7% in 1973. Her shares of imports in the years were 45.9%, 31% and 27%, respectively. In contrast, the share of E.E.C. countries in Nigeria's exports rose from 13.6% in 1954 to 32.9% in 1973. Imports share increase was from 17.8% in 1954 to 32.6% in 1973. The share of the United States has stayed, on average, at 10% for imports but rose from 10% in 1954 to 24.2% in 1973 in respect of exports. Trade between Nigeria and the Communist Bloc countries, as well as with other African countries, has been generally insignificant.

The direction of Nigeria's foreign trade has been largely the result of political factors and special commercial arrangements reflecting the country's past colonial status. Exports were not always directed to the most profitable markets, nor were imports obtained from the cheapest sources. As Ugoh (1964) stated, economic factors were secondary in Nigeria's foreign trade development. Her economy was reserved (under colonial rule) as a captive market for manufactured exports from the imperial centre, while her exports were controlled under statutory arrangements both to ensure raw material supplies to the centre and/or deny it to the enemy in times of war or other emergency. Since political independence (1960), there has been a gradual diversification of export markets and sources of imports as local officials gained control of the foreign trade arrangements.

Table 4. Direction of Nigeria's Foreign Trade, 1950 - 1973

Countries	YEARS							
	Exports				Imports			
	1954	1961	1968	1973	1954	1961	1968	1973
	Percentage of Values							
United Kingdom	72.0	44.8	30.1	18.7	45.9	38.3	31.0	27.0
Ghana	..	0.7	0.2	0.7	..	0.3	0.6	n.d.
India	0.3	..	..	..	6.5	3.1	0.9	..
Other Commonwealth	..	0.7	3.2	11.9	n.d.	4.3	4.4	4.0
Total Commonwealth	72.3	46.2	33.5	31.3	52.4	46.0	36.9	31.0
W. Germany	3.1	7.8	8.7	3.6	9.3	7.4	11.0	14.8
France	1.6	5.7	5.6	12.6	1.5	2.6	3.7	7.0
Netherlands	6.6	12.9	13.1	13.2	3.8	4.8	4.0	4.0
Italy	2.3	4.8	6.3	2.7	3.2	3.5	7.2	4.1
Belgium-Luxembourg	..	3.0	2.9	1.0	n.d.	1.6	1.7	2.7
Total E.E.C. Countries *	13.6	34.2	36.5	32.9	17.8	19.9	27.6	32.6
U.S.A.	10.7	11.2	7.7	24.2	4.8	5.3	11.6	10.3
Japan	..	2.0	1.8	4.6	8.3	13.6	3.7	9.2
Canada	..	..	2.7	..	..	0.8	0.5	n.d.
Other Countries	3.4	6.3	17.8	7.0	16.6	14.4	19.7	16.7
Total Non-Commonwealth	27.7	53.8	66.5	68.7	47.6	54.0	63.1	69.9
Total All Countries	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Federal Office of Statistics, Annual abstract of statistics, 1964 and 1971. Lagos, Nigeria.

NOTE: n.d. = no details
.. = insignificant (less than 0.1%)
* Excludes United Kingdom, Ireland and Denmark.

A number of conclusions emerge from the foregoing analysis of Nigeria's foreign trade. First, exports and imports have been generally increasing both in volume and value, with imports growing at a slightly higher rate. Second, exports comprised, almost entirely, of primary agricultural commodities and

minerals, whereas manufactures dominated the imports. Third, both exports and imports showed a high degree of geographic concentration due primarily to political relationships and trade preferences. There has, however, been a tendency towards greater diversification of both export markets and sources of imports. Finally, the share of capital goods in imports has been rising steadily. How has the Nigerian economy performed under these trade conditions and what impact had foreign trade on the performance? These aspects will now be examined.

1.4 Performance of the Nigerian economy

Adequate and reliable statistics for evaluating performance of the Nigerian economy are not available (Aboyade, 1966; Helleiner, 1966). Although national accounts statistics data are available from 1950, they lack consistency both in the statistical bases and method of presentation (Stolper, 1966). Moreover, in a developing country, such as Nigeria, where a large proportion of national production is comprised of subsistence output, and is not exchanged through the market system, estimates of Gross Domestic Product are likely to be no more than crude guesses (Oluwasanmi, 1966). Caution should, therefore, be exercised in the interpretation and use of the published data as a basis for pronouncements on the performance of the economy.

1.4.1 Gross domestic product

In Table 5 is shown Nigeria's Gross Domestic Product (at current factor cost) in selected years. The value of GDP rose fivefold from U.S. $1.4 billion in 1950 to U.S. $6.6 billion in 1970/71. In absolute terms, Nigeria's

Table 5. Gross Domestic Product of Nigeria at Factor Cost (Current Values) 1950 - 1970

Economic Activity	1950	1958/59	1963/64	1967/68*	1970/71
	(U.S. $ million)				
1. Agriculture, forestry and fishing	1000.2	1764.0	2345.0	2194.6	3287.2
2. Petroleum	0.6	1.7	46.2	61.0	708.4
3. Other Mining	14.8	19.3	32.2	35.2	50.4
4. Manufacturing & Crafts	51.8	113.4	220.9	316.2	523.6
5. Electricity & Water Supply	1.7	7.6	21.6	20.2	30.8
6. Building & Construction	22.7	84.8	171.9	183.4	285.6
7. Distribution	n.a.	304.1	534.8	535.9	725.2
8. Transport & Communications	69.2	94.4	198.5	165.5	229.6
9. General Government	30.2	70.8	111.4	134.9	392.0
10. Education	n.a.	61.0	115.6	128.8	159.6
11. Health	n.a.	10.9	25.5	27.2	42.0
12. Other Services	242.8	45.6	87.0	106.7	134.4
Gross Domestic Product (Factor Cost)	1433.9	2577.7	3910.8	3909.6	6568.8
Gross National Product (Market Prices)	1560.2	2755.2	4129.2	4110.7	6664.0

SOURCE: 1. 1950: Helleiner, G.K. 1966. op.cit.

2. 1958/59 - 1970/71: IBRD, Nigeria: Options for longterm development. Report of World Bank Mission to Nigeria. Johns Hopkins Press, Baltimore. 1974. p.209.

* Excludes the three Eastern States.

GDP in 1970/71 was the third largest in Africa, next to that of South Africa and Algeria. In 1966, Nigeria's GDP of U.S. $4.0 billion was, approximately, twice that of Ghana (U.S. $2.1 billion), and five times that of the Ivory Coast (U.S. $0.8 billion). It was, however, only 11% of India's, 14% of Argentina's and 4.8% of the United Kingdom's (U.N., 1968). The increase in Nigeria's GDP between 1950/51 and 1970/71 represented an annual compound rate of growth of about 6.5%. If one assumes that the rate of population growth was, on average, 2.5% per annum, growth rate of GDP over the period, in real

terms, was in the order of 4.0% per annum.

The above estimate compares with the results of some recent studies which have appraised growth performance of the Nigerian economy (Lewis, 1967; Berry and Liedholm, 1970; IBRD, 1974). For example, on the basis of his estimates for the period 1957 - 1963, Lewis (1967) concluded that:

> "... measured against the U.N. demand for an annual GDP growth rate of 5% for underdeveloped countries during 1961 - 70, the 5.5% rate achieved by Nigeria can be considered not only satisfactory, but actually puts her near the top of the growth league".

Growth of GDP above, is not an adequate measure of the level of economic development. It is necessary to consider changes in per capita income, capital formation, industrial production and structural transformation, indicators of "intensive growth" (Caves, 1975) which is a more meaningful index of economic performance.

In Table 6 is shown the performance of the Nigerian economy in terms of the structural transformation and sectoral growth rates between 1958/59 and 1970/71. The share of agriculture in GDP declined sharply but, by 1970/71, still stood at the relatively high level of 50%. The share of mining rose sharply from less than 1% in 1958/59 to nearly 12% by 1970/71, due primarily to the expansion of petroleum production. A near doubling of manufacturing output is also recorded. With 8% of GDP in 1970/71, the sector is still extremely small in size. In terms of sectoral growth rates, mining was the fastest growing, followed by manufacturing. Agriculture was the slowest growing sector. The rate of growth of the agricultural sector actually declined steadily since 1958. Rates of growth of the other sectors do not reveal a particular trend over the period. From the changes in sectoral shares of GDP and their growth rates, can the Nigerian economy be said to

Table 6. Gross Domestic Product of Nigeria: Sectoral Shares and Growth Rates for Selected Years

Sector	Share in GDP				Average Annual Growth Rate (Real terms)		
	1958/59	1962/63	1966/67	1970/71	1958/59 to 1962/63	1962/63 to 1966/67	1966/67 to 1970/71[a]
	(Percentages)						
1. Agriculture	68.4	61.5	54.4	50.0	4.6	2.0	0.8
2. Mining*	0.8	2.1	5.0	11.6	27.0	44.0	26.5
3. Manufacturing	4.4	5.8	7.3	8.0	13.9	10.5	9.7
4. Power, transport and construction	7.3	9.6	9.8	8.3	12.1	5.5	3.8
5. Services	19.1	21.0	23.5	22.1	6.8	7.0	6.2
6. All Sectors	100.0	100.0	100.0	100.0	6.4	5.5	5.5

SOURCE: IBRD, 1974. op.cit. p.12
* Includes petroleum
a IBRD estimate

have performed satisfactorily? The answer provided by Lewis (1967) may be instructive:

> "There are not many underdeveloped countries whose agriculture is not only keeping pace with domestic demand for food but also increasing exportable output by 5% per annum as well; nor many where the growth rate of manufacturing (large and small together) exceeds 10.3% per annum. Indeed, taking these sectors together, Nigeria is doing as well as Japan, which is generally considered the fastest growing country in the world".

1.4.2 Gross capital formation

Gross capital formation is an important indicator of an economy's growth over time and provides a rough guide to its productive capacity (Aboyade, 1966). In Table 7 are shown estimates of gross capital formation

Table 7. Gross Capital Formation in Nigeria

Year	Value * ($ million)	Share of GDP (%)
1950 - 53	126.6	7.6
1957 - 60	320.5	12.7
1963 - 66	594.0	14.0
1967 - 70	828.5	16.8

SOURCE: 1. Helleiner, G.K., 1966. op.cit.

2. Federal Office of Statistics, Annual abstract of statistics, 1967 and 1971. Lagos.

* Annual average for each period.

in Nigeria between 1950 and 1970. The clear indication is one of rapid growth, as shown by a rise in its share of GDP from 7.6% in 1950 - 53 to 17% by 1967 - 70. It is probable, however, that actual gross capital formation in Nigeria, during the period exceeded the estimates shown in Table 7. For example, Oluwasanmi (1966), observed that estimates of GDP in Nigeria are clearly underestimates because of "omission of peasant investment activities". Over the period 1950 - 70, gross capital formation in Nigeria increased sixfold. The average annual growth rate exceeded 10%. This rate of growth was about twice that of real GDP and exceeded that of commodity exports.

1.4.3 Industrial output

Another important indicator of an economy's growth over time is industrial output (Sutcliffe, 1971). Table 8 gives the index of industrial production in Nigeria between 1964 and 1972. Total industrial output increased fourfold in the period and manufacturing output more than doubled. Electricity production went up by 83%. These achievements are impressive by any

Table 8. Index of Industrial Production, Nigeria: 1964 - 1972 (1965 = 100)

Year	Total Industrial Output	Manufacturing Output	Mining	Electricity
Weight	108.0	512.6	435.8	51.6
1964	73.6	92.7	49.6	87.1
1965	100.0	100.0	100.0	100.0
1966	126.4	111.7	145.4	111.9
1967	112.5	114.2	112.4	97.1
1968	87.0	114.0	54.3	94.1
1969	161.5	150.2	181.5	104.9
1970	244.5	167.4	349.3	125.6
1971	321.4	180.5	506.4	158.7
1972	374.4	210.8	589.4	183.7

SOURCE: Central Planning Office, Economic and statistical review, 1972. Lagos, Nigeria 1973.

standards. It should be noted, however, that petroleum is included in industrial output. Expansion of manufacturing output reflects the vigorous industrialization and import substitution policies pursued by Nigeria since achieving political independence. A wide range of industries have been established,including textiles, beer, cement, aluminum sheets, footwear, paper conversion and food processing,to supply the domestic market. The apparently high rate of growth of industrial production can be attributed to the relatively small size of the sector,and the large domestic market which offers considerable scope for expansion for some time to come.

1.4.4 Per capita income

Finally, how has the economy performed in terms of per capita income levels and changes? The answer to this question is rendered difficult by the lack of reliable estimates of the population of Nigeria. Censuses taken

Table 9. Gross National Product Per Capita in Nigeria and Selected Countries

Year	Nigeria	Ghana	Brazil	Tanzania	Malaysia	U.K.	Canada
	(in U.S. $ at current market prices)						
1960	69	182	196	52	251	1276	1870
1963	76	211	254	64	257	1483	1928
1967	69	233	266	82	294	1848	2609
1968	77	221	286	85	303	1720	2810
1969	83	238	296	88	309	1825	3068
1970	103	236	341	93	369	1993	3214
1974	250	287	760	127	554	3120	5372

SOURCE:
1. U.N. Yearbook of national accounts statistics, 1971. United Nations, New York, 1972.
2. Agency for International Development, Gross national product estimates, 1974. Compiled from, Bureau of Economic Analysis, U.S. Department of Commerce, 1974. U.S. aid to foreign countries, 1974. Washington, D.C.

in Nigeria have always been hotly disputed as too high, and have differed from estimates by independent authorities by as much as 20%.[3]

Estimates of national product per capita in Nigeria and selected countries are shown in Table 9. Between 1960 and 1974, national product per capita in Nigeria increased by 262.3%, representing an annual compound rate of growth of 9.6%. Between 1970 and 1974, it more than doubled. Among the countries shown in Table 9, Nigeria's national product per capita in 1974 exceeded only that of Tanzania, was 87% of Ghana's and only 45% of Malaysia's. When compared to the advanced industrial countries (U.K. and Canada), the

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3 See, for example, Olusanya, P.O., 1966. Implications of population growth in Nigeria; Some lessons from the Mauritian experience. Nigerian Journal of Economics and Social Studies, 8; 311-329.

ratio ranged from about 5% (in relation to Canada) to 8% (in relation to the U.K.).

It is concluded from the foregoing that, the level of development of the Nigerian economy is still very low, even when compared to those of other developing countries of comparative size. The validity of this conclusion depends on the accuracy of both the population and GDP statistics. For example, the U.N. statistics of population of Nigeria have been consistently lower than the national census estimates, so that estimates of GDP per capita based on the latter would be still lower than those contained in Table 9. However, the possible decrease may be compensated, to some extent, by more accurate estimates of GDP to include subsistence food and crafts production.

In Table 10 are shown the estimates of average annual growth rates of total GDP and GDP per capita between 1951 and 1974. The rate of growth of GDP per capita was consistently lower than that of total GDP, with the exception of the 1970 - 74 period. The growth rate of total GDP increased steadily, whereas, that of GDP per capita tended to fluctuate. It should also be noted that between 1951 and 1956, when Nigeria experienced a major export boom, the growth rate of GDP per capita was actually negative. On the whole, the growth rate of GDP per capita since 1958 compares favourably with that achieved by even the industrialized countries. The very high rates of growth of both total and per capita GDP since 1967 is largely attributable to the influence of petroleum production.

The relatively low level of per capita national product in Nigeria is the result of the combined effects of growth of output and population, with the latter probably the major factor (Olusanya, 1966). In any event,

Table 10. Average Annual Growth Rate of Total and Per Capita GDP in Nigeria

Year	Total GDP	Per Capita GDP
	(Percent Per Annum)	
1951 - 56	4.1	- 0.3
1958 - 60	4.4	2.5
1960 - 66	4.5	2.0
1967 - 70*	18.4	15.5
1970 - 74	22.1	24.8

SOURCE: U.N., Yearbook of national accounts statistics, 1957, 1968 and 1973. (Vols. 111).

A.I.D., 1974. op.cit.

* Excludes the three Eastern States.

it is clear that Nigeria is still to reach the threshold of what Leibenstein (1963) called "the minimum critical effort" required for sustained, modern economic growth. This calls for a combination of measures to control the currently high population growth rate and to attain a sufficiently high increase in income through structural transformation of the economy. The present analysis postulates a close relationship between the latter and development in foreign trade.

1.5 Impact of foreign trade on the Nigerian economy

Caves (1960) has pointed to the dangers of attributing a country's economic growth to a single factor. This may be due to the factor's overwhelming influence at some point in the country's economic history. On the other hand, there may be a failure to recognize other simultaneously operating factors. It is sufficient to note here that no satisfactory and comprehensive theory of economic growth is as yet available (Nautiyal, 1967).

The emphasis given, in this study, to foreign trade in the Nigerian context derives from the widely advanced thesis that, for the underdeveloped economy, foreign trade is the crucial element in the development process. The impact of foreign trade on Nigerian economic growth may be analyzed using Caves and Jones's (1973) simple framework, embracing the impact of trade on factor utilization, factor supply and the inducement of indirect or linkage effects.

1.5.1 Factor utilization

Before the middle of the 19th century, what is now Nigeria, was essentially a peasant economy in which production was organized along traditional lines of division of labour. Output consisted, almost entirely, of foodstuffs and simple handicrafts directed to subsistence needs. The distribution of this output was based on customary rights of the members of the society. Under these conditions, it is likely that the share of some individuals in output often exceeded their marginal products. A large proportion of the labour force was under-employed or unemployed. In addition, given the relatively low population density, land was in abundant supply. The economic conditions prevailing before the onset of foreign economic contacts were thus characterized by abundant land and under-employment of labour.

When the demand for palm oil in industrializing Europe opened up the country to legitimate trade, Nigerian peasant producers took the opportunity to earn additional incomes for the acquisition of luxury imports such as guns, beads, textiles, tobacco and knives. They responded by sacrificing leisure to increase the labour supply needed to expand export crop production.

Labour was the major input in palm oil production, since palms grew wild in West Africa and only an increase of effort in collection was needed to increase output (McPhee, 1971; Ekundare, 1973). When, at the turn of the century, cocoa, groundnuts (peanuts), rubber and cotton became major export commodities, the increase in factor input involved, not only labour, but land as well. This was particularly the case in respect of cocoa and groundnut production. In Western Nigeria, the centre of cocoa production, acreage under cocoa rose from 200,000 acres in 1929 to 1 million acres in 1954 (Galletti, Baldwin and Dina, 1956). Between 1911 and 1937, about 1 million acres were put under groundnut production in Northern Nigeria.

A summary of the impact of this early phase of the legitimate trade of Nigeria is provided by Helleiner (1966) in the following terms:

> "The story of Nigerian export growth during this early period (and, for that matter, until the middle of the 1950's) was in most areas that of the increasing of land and labor inputs operating with fixed proportions or constant returns to scale. Productivity per man was thereby increased; ..... Output increased because the terms at which leisure could be traded for material goods altered; ..... The Nigerian peasant producer responded by increasing his labor (and land) inputs so as to raise his output".

Ugoh (1964) has argued that this improvement in the terms of trade had, on balance, beneficial effects on Nigerian economic development. Since export production was in the hands of Nigerians, it is likely that domestic incomes increased significantly and consumer welfare improved as he now had command of a larger and more varied bundle of consumption goods. Statistics of domestic incomes in Nigeria are not available, though incomes are known to have fluctuated in sympathy with conditions of export demand (Helleiner, 1966). Moreover, export production had its social consequences in terms of the disruption of traditional activities and customary ways of life (Ekundare,

1973). Finally, it is noted that in spite of the probable increase in productivity and incomes, the basic structure of the economy, resting on subsistence production, remained unchanged. In other words, the situation was more what Meier (1968) called a "once-for-all rather than a continuing increase in productivity", representing a movement along the production possibilities curve as opposed to an outward shift of the whole curve (Caves and Jones, 1973).

1.5.2 Factor supply

Evidence on increasing external factor supplies in response to export expansion in Nigeria is rather scanty. Before 1950, the major form of external factor supply to the export sector took the form of European traders who acted as intermediaries in collecting produce from peasant producers to be prepared for export. By facilitating the evacuation of export produce (for which peasant producers lacked the necessary storage facilities) the activities of the foreign companies probably had a positive effect in stimulating export production. It has been alleged, however, that the European companies, who operated market-sharing arrangements, and maintained high profit margins, collected a high proportion of the income from export earnings at the expense of the indigenous population. This view has been criticized by Bauer (1954) in unequivocal terms:

> "The wealth of the traders has not been taken or extorted from the Africans but has been created by their trading activities. It was not previously in existence and available for appropriation by either Africans or by expatriates; this wealth emerged in the course of, and as a result of trading operations and the economic development following in their train. Wealth has been brought into being by the application of effort and skill and by the accumulation and

> use of capital. These activities have played a major role in the economic development and growth of West Africa and they have been of great economic benefit to the African population".

In the post-war period, the foreign private companies have been replaced by statutory monopolies (Marketing Boards) in the marketing of export produce in Nigeria. In turn, the activities of the Marketing Boards have been criticized as a form of "compulsory" taxation and as having depressing effects on producer incomes (Hawkins, 1958; Bauer, 1954; 1955; Ogunsheye, 1965).

If exports did not have significant positive effects on individual incomes and private savings in Nigeria because of the marketing organization, the impact on public capital formation and revenues was less in doubt. Firstly, customs revenues (export taxes and import duties) have always constituted the most important source of government capital formation. This fact is clearly shown in Table 11 for selected years between 1900 and 1970. Over this period contribution of customs revenue to total government revenue was never lower than 36% and actually reached 75% in 1955/56. An examination of Table 11 (Col. 6), also reveals that the trend of net public capital formation tended to follow closely the developments in export markets, with years of export booms showing a surplus of revenue over expenditure and years of depressed markets showing a deficit. In spite of rapidly rising expenditure in the years after 1965, export taxes and royalties, especially from petroleum have maintained the steady rise of government revenues and surpluses. Petroleum export taxes and royalties alone are expected to provide up to two-thirds of total government revenue in the seventies (Schatzl, 1973).

Secondly, the expansion of exports enabled the government to build

Table 11. Nigerian Central Government Finance, 1900 - 1970

Years	Gross Revenue ($ million)	Customs Revenue ($ million)	Customs Revenue as % of Gross Revenue[a]	Gross Expenditure ($ million)	Overall Surplus (+) or Deficit (-) ($ million)
1	2	3	4	5	6
1900	1.79	1.68	93.9	2.05	- .26
1911	7.19	4.30	58.9	7.13	+ .06
1925 - 26	23.15	10.11	43.7	18.43	+ 4.72
1929 - 30	16.93	9.42	55.6	17.61	- 0.68
1935 - 36	16.79	8.15	48.5	16.12	+ 0.67
1941 - 42	22.33	8.64	38.7	19.67	+ 2.66
1949 - 50	86.14	48.15	55.9	79.11	+ 7.03
1951 - 52	140.92	89.89	63.8	122.28	+ 18.64
1952 - 53	142.54	95.05	66.7	123.49	+ 19.05
1953 - 54	165.92	117.89	71.0	154.00	+ 11.92
1955 - 56	167.86	125.31	74.7	154.08	+ 13.78
1957 - 58	201.76	144.75	71.7	214.76	- 13.00
1959 - 60	251.51	176.56	70.2	320.82	- 69.31
1960 - 61	323.12	210.69	65.2	379.46	- 56.34
1961 - 62	336.87	214.78	63.8	371.85	- 34.98
1962 - 63	336.09	223.63	66.5	360.75	- 24.66
1963 - 64	349.54	245.17	70.1	368.88	- 19.34
1965 - 66	510.50	336.27	65.9	411.60	+ 98.90
1966 - 67	513.32	331.08	64.5	433.38	+ 79.94
1967 - 68*	438.02	271.72	62.0	368.65	+ 69.37
1968 - 69*	472.09	303.64	64.3	477.85	- 5.76
1969 - 70*	653.86	416.57	63.7	1005.46	- 351.60

SOURCE:
1. 1900 - 1963/64, Adapted from Helleiner, G.K., 1966. op.cit. pp.557-58.
2. 1965/66 - 1969/70. Federal office of Statistics, Annual abstract of statistics, 1971. Lagos, Nigeria.

a Excludes royalties and profit taxes paid by mineral producing companies.

* Excludes the Eastern States.

up foreign exchange reserves required for imports of capital and consumer goods. The periods from 1951 to 1954, and since 1966, saw the rapid build up of such reserves. However, Diejomaoh (1965) has stressed the fact that the substantial reserves built up in the earlier period were held in low-yielding securities in London and not put to use in development projects in Nigeria. Although the reserves were subsequently drawn down heavily to finance development after 1960 as current export earnings dipped, their earlier use would have had a greater impact on the economy. As will be seen, the immobilization of Nigeria's foreign exchange reserves before 1960 was simply one aspect of colonial development policy for the country.

Thirdly, the activities of the Marketing Boards leading to a substantial build up of funds which were later turned over to government for development purposes, was really no more than a variant of the mechanism for transferring the surplus from the agricultural sector to industrial development. This fiscal role of the Marketing Boards and its effects on Nigerian economic development have been discussed by Helleiner (1966), who reached the basic conclusion that it was beneficial and probably necessary.

The impact of export expansion on factor supplies in Nigeria was less in form of direct foreign investment and/or labour inflow and more indirectly through increasing public revenues and capital formation. Whether government revenues from export taxes, royalties, and marketing boards surpluses would have been better utilized through private savings and investment is a debatable issue. It is sufficient to note that such revenues enabled the government both to finance vital transportation networks and infra-structure and to assume a leading role in promoting national economic development by direct encouragement of industrialization.

1.5.3 Linkages and spread effects

Two features of the Nigerian export sector stand out in considering the linkage and spread effects. First, all the leading export commodities were either agricultural primary commodities or minerals. Second, unlike in many other developing countries, export production was in the hands of Nigerians. The fact that after nearly 100 years of exporting, the basic structure of the economy,(dominance of subsistence agriculture), remains unchanged is sufficient evidence that linkages and spread effects from the export sector have been minimal. This hypothesis may be examined with reference to the above two features.

In general, it is accepted, by economists, that agricultural primary products tend to have weak linkages with the rest of the economy. Hirschman (1958) described this characteristic in the following terms:

> "Agriculture in general and subsistence agriculture in particular, are of course characterized by the scarcity of linkage effects. By definition, all primary production should exclude any substantial degree of backward linkage although the introduction of modern methods does bring with it considerable outside purchases of seeds, fertilizers, insecticides and other current inputs, not to speak of machines and vehicles. We may say that the more primitive the agricultural and mining activities, the more truly primary they are.
>
> Forward linkage effects are also weak in agriculture and mining. A large proportion of agricultural output is destined directly for consumption or export; another important part is subjected to some processing in industries that can be characterized as satellite in as much as the value-added by them to the agricultural output (milling of wheat, rice and coffee etc.) is small relative to the value of the product itself. Only a comparatively small fraction of total agricultural output of underdeveloped countries receives elaborate processing, which usually takes place abroad".

Thus, the issue is, to what extent were modern production methods introduced or could have been introduced in the export sector in Nigeria? The first part of this question may be answered by reference to the observations of many writers that production methods of the major export commodities of Nigeria (except petroleum) have remained backward and primitive. According to Helleiner (1966), "beyond offering the peasant farmers a vent for their potential surplus production, the foreigner did next to nothing to alter the technological backwardness of the country". But could the trade contact have done this by itself? True, efforts were made to induce peasants to adopt higher yielding crop varieties, better seeds, fertilizers and other yield-improving inputs. Financial incentives and supervision assistance were also provided by government, especially to cocoa producers. As Udo (1967) has noted, however, the results achieved by these innovations were not comparable with those from commercial plantations in other countries.

The technological backwardness of the Nigerian export sector was due partly to the scale of the producing units and availability of inputs and partly, to the attitudes of peasant producers. Production of export crops was carried on by peasant families (with occasional reliance on hired labour). The maximum size of holdings that families could effectively cultivate hardly exceeded 3 to 6 acres. Units of such size were generally uneconomic for the intensive application of modern yield-improving techniques. Possibilities for increasing the size of holdings were limited by problems of land tenure (Adegboye, 1967). In a few cases, large-size holdings (exceeding 500 acres) were cultivated by individual farmers producing cocoa (Berry, 1970). The productivity of such farmers was, however, kept down by lack of access to inputs, especially in the form of credit. They were unable to provide col-

laterals required by lending institutions. Distribution of government financial assistance was not always based on economic efficiency. Secondly, peasant farmers tended to have a high risk aversion to investment in long gestation ventures such as cocoa and palm production, in view of the current income (from other activities)foregone and the expectation of future fluctuations of export income. They,therefore,tended to divide their time and resources between export production and subsistence activities to ensure stable incomes in the years of poor export markets.

To the extent that export crop production was never completely commercialized in Nigeria, the opportunities for adopting modern techniques with substantial linkage effects were constrained. As Watkins (1963) has observed:

> "The limitations of the staple theory emerge most clearly when we consider the case where export production is superimposed on a pre-existing subsistence economy. For the staple economy, the export sector can be an engine of growth; for the subsistence economy, the consensus appears to be that, the export sector will have either limited or adverse effects on the economy. The linkage effects are likely to be slight regardless of the character of the export good, because of the internal structure of the underdeveloped country, including the existence of non-competing groups in the domestic and foreign sectors".

The final demand linkage of the Nigerian export sector was also likely to be very small. This was due, not merely, to leakages arising from income transfers abroad by foreign factors which, as has been seen, was not dominant (except in the case of petroleum). A substantial proportion of incomes accruing to domestic factors appears to have been spent partly on investment in expanding export crop production and, more importantly, in the construction of new buildings, in marriages and, other social

ceremonies. For example, Adeyoju (1969) has observed the high positive correlation between export booms and building activity in Western Nigeria. In some cases, export incomes to domestic factors were simply hoarded. Most of Nigeria's export commodities, with the exception of palm produce, were not consumed domestically in significant quantities. A large part of the demand generated by export income was, therefore, directed to imports of luxury goods.

From the foregoing, it is clear that, due to the technical, organizational and institutional facts of export crop production in Nigeria, there was a general failure of the "multiplier - accelerator mechanism" of export-led economic growth, as described by Watkins (1963). Political factors also acted to constrain the full impact of foreign trade on Nigerian economic development. Colonial policy aimed primarily to develop or secure the country's resources for the benefit of the mother country (Ekundare, 1973). To this end, the policy on exports was to direct these predominantly to the mother country as raw materials for her industry. At the same time British colonial policy discouraged domestic industrialization (Eicher, 1970) and, by means of discriminatory tariffs against imports from other sources, Nigeria was reserved as a market for her manufactured exports. As Leubuscher (1953) has observed:

> "... an analysis of Nigerian conditions leads to one conclusion: that multilateral trade, as free as possible from discrimination and artificial impediments, is the organization of world trade that best serves Nigeria's interests".

Since achievement of political independence (in 1960), Nigeria's political leaders have embarked upon changing the prevailing situation by diversify-

ing export markets and sources of imports, as well as promoting a vigorous program of import-substitution domestic manufacturing, albeit behind a high wall of tariff barriers.

The failure of the Nigerian economy to achieve modern economic growth, in spite of a substantial foreign trade sector, has been demonstrated in Section 1.5. It will be accepted that the analyses presented supported the hypothesis that foreign trade has not succeeded as an engine of growth in the Nigerian case. The basic reasons are to be found both in the nature and conditions of production, as well as the political fact of colonial rule. The analysis assumed external demand to be given, even though this was sometimes an important factor (via fluctuations in export earnings). The policy implications involve many aspects. Some economists, especially in underdeveloped countries, see the solution in terms of import-substitution industrialization (Aboyade, 1971). This approach has its problems with regard to the efficiency of resource allocation, consumer welfare and the supply of input factors (Meier, 1968). Others have suggested increased effort, diversification of exports and upgrading products with a view to export of manufactures along profitable lines (de Vries, 1967). There is not necessarily a schism between the two approaches given appropriate international trade relations and necessary adjustments in the operation of comparative cost advantage doctrine. The crux of the matter is to what product lines should a country devote the use of its available resources in order to sustain economic development and promote the welfare of its inhabitants. Based on this premise, the role of forestry and wood products exports in a country's economic development is appraised in the next section.

1.6 The role of forestry in economic development

Focus on the role of forestry in economic development is relatively recent in origin. It has gained impetus from the writings and studies conducted under the auspices of the Food and Agriculture Organization (FAO) of the United Nations. The FAO study "European Timber Trends and Prospects", (FAO, 1953) represented the initial major effort in this direction. It was subsequently followed by other similar studies conducted in cooperation with the regional Economic Commissions, for Latin America (FAO, 1961), Asia and the Far East (FAO, 1963) and Africa (FAO, 1967). The FAO study "Wood: World Trends and Prospects" (1966), provides an assessment of the forest economy on a world-wide basis, while a look at its future potentialities is contained in the "Provisional Indicative World Plan For Agricultural Development" (1969).

Besides the FAO, or in cooperation with it, a number of other international organizations have undertaken the systematic examination of the possibilities of forestry sector in economic development, especially in the underdeveloped regions of the world. These organizations include the United Nations Conference on Trade and Development (UNCTAD, 1964), United Nations Industrial Development Organization (UNIDO, 1966), International Union of Forestry Research Organizations (IUFRO, 1968), International Labour Organization (ILO, 1965) and International Bank for Reconstruction and Development (IBRD, 1964), among others. Besides specific country studies of the forestry sector and investment possibilities, these organizations have contributed significantly to "making the case for forestry" through conferences, specialized publications and/or direct assistance (financial and technical) to

various developing countries.

Simultaneously, forest economists have turned their attention from the microeconomic problems of forestry to the macro aspects, involving the interrelationships between forestry and the general economy (Zivnuska, 1966(a); Gregory, 1972). Section 1.6 summarizes the role of forestry in economic development, indicates the determinants of that role and examines the mechanisms by which the influence of the sector is transmitted through the rest of the economy.

From early times, forests have been closely associated with man's existence and welfare; as a source of food and shelter; as a refuge against the enemy; for farmland and urban development; and as a source of several other goods and services considered in many places as essential for survival (Sartorius and Henle, 1968). Over the centuries, forests have sometimes been seen as an obstacle to progress (Zivnuska, 1959). Man's increasing awareness of the value of forests is exemplified by the development of forest management in 18th century Europe (Brasnett, 1953). Diminishing resources and the threat of a timber famine, hastened the organization of forests for permanent production of the essential goods and services. Thus began the concept of sustained yield management which dominated forestry thinking for more than a century (Haley, 1966). The historical development of the concept of sustained yield management of forests has been discussed by Haley (1966), Thompson (1966), Davis (1966), Waggener (1966), Osmaston (1968) and Zivnuska (1974). The conditions, of uncertainty of wood supplies, absence of substitutes, poor transportation and communication facilities, and frequent warfare between communities, which characterized the environment of early sustained yield management, do not equally hold in most countries today. Yet,

King (1958) has noted that most developing countries still adopt the concept as sacrosant, and the core of their forest policies.

Westoby (1962) has provided a detailed analysis of the role of forestry in economic development. According to this author, forestry and forest industries represent considerable opportunities for accelerating economic growth of those countries well-endowed with forest resources. He argued that in the underdeveloped country, the forest sector can exert a "propulsive" influence on the general industrialization process and, therefore, should be highly ranked in national development programs. There is a recognition of the need for government intervention in economic affairs in the underdeveloped country and this can have significant consequences for forestry development. The evaluation of the costs and benefits of forestry investment projects should be consistent with the general aims of national development plans. The criteria employed for evaluation of public investment decisions may often diverge from those relevant for private investment decisions. In Westoby's (1962) view:

> "while the solution will depend on the structural conditions and the physical endowments (i.e., the data), of the economy concerned, the main element of choice is political, since the definition of the general ends of the plan is mostly the result of a political decision".

Westoby's (1962; 1969) thesis concerning the potentially "propulsive" role of forestry in the general economy seems to rest on three main propositions relating to the physical and spatial characteristics of forests, the range of, and nature of demand for, forest products, and the indirect or linkage effects of the sector.

1.6.1 Characteristics of forestry and forest industries

The classical economists recognized three main factors of production, namely, land, labour and capital. Capital is man-made or produced means of production. It can be bought outright and its ownership freely transferred through ordinary market transactions (Buttrick, 1948). Labour represents the human element in the production process. Unlike capital, however, only the services of labour can be purchased. Land, on the other hand, is defined as the "original and indestructable powers of the soil" including both the surface and subsurface resources bestowed as a gift of nature (Ricardo, 1848). Land may thus be interpreted in terms of natural resources or natural endowments (Leslie, 1971). Modern economists now recognize the impracticability of distinguishing finely between capital and land on one hand or between capital and labour on the other (Barlowe,1964). Previously inproductive land may be made productive through man-made improvements which must be treated as capital. Also, increased productivity through labour skills can only be achieved through capital investment in education and training. Thus the term "human capital" has come to be treated by some economists as a separate and distinct factor of production (Higgins, 1959).

Within the classical differentiation of production factors, forests may be treated as part of land and as natural resources. Leslie (1971), however, observed that this definition of forests "is not entirely satisfactory, since a significant proportion of the world's forests are man-made and thus are capital". Nautiyal (1967) further emphasized that:

"Time, capital and labour are needed to recreate the forest

> resource. Forests and indeed all natural resources are thus much like man-made capital, and should be included under capital in the trichotomy. It does not matter greatly that the time required to recreate forests is far longer than that required to recreate other kinds of capital".

From the viewpoint of using forests as means to promote economic development, the fundamental characteristic is its renewable nature. Worrell (1959) elaborated this point in the following terms:

> "For forestry can be permanent. Its basis is a renewable resource - the forest growing on the land. Forests can be managed as a continuous crop, with harvests of the various products and services coming annually or periodically. And the productive capacity of forests can be maintained indefinitely..... This means that the paper and lumber and other forest industries need not exhaust their source of raw material as the metal industries eventually will. The whole structure of forest-product industries can be a permanent part of our economy".

The renewable nature of forests gives the resource significant potentials for economic development. It carries the implicit assumption, however, that society will need forest products in perpetuity or that other non-forest products will not be required sufficiently badly so as to replace forest products and diminish their importance. This point has been argued by Haley (1966) in his critique of the sustained yield concept. In addition, although forest growth can sustain itself as a natural process, maintenance of an increasing output of its products in appropriate qualities may involve substantial expenditure of capital and labour input which may weigh heavily in society's evaluation of the benefits.

The evaluation of forestry's significance for society's economic improvement also brings out the other special features of forestry which have

been clearly listed by Duerr (1949, 1960). First, is the extreme length of the production period forestry involves compared to that in most other forms of economic activity. This is especially the case in timber production forestry where rotations range between 5 and 200 years. However, the introduction of quick-growing species, such as Gmelina for such uses as poles or pulpwood in many parts of the tropics, has considerably shortened the rotation to between 5 and 10 years.

Second, the producing plant and the product are virtually inseparable in forestry. As Duerr (1960) put it:

> "One characteristic, then of forest capital is that the timber product is also the timber-growing machine, but ultimately the machine is the product. This is more than just an interesting academic point. It is a basic feature of forestry, the consequences of which pervade forest management".

Zivnuska (1949b) has pointed to the serious management problems which arise due to the above two features of forestry; that is how to match wood supplies with changing demand so as to avoid a glut or excess capacity in times of shrinking demand, and an acute shortage in times of rapidly rising demand. The inseparability of the plant and product also creates problems of conserving the forest capital in order to maintain future productivity. However, the versatile nature of the forest capital and product gives considerable scope for flexibility since the inventory can be run down easily during rising demand. When demand is low, the cost of holding the inventory is not too high, since trees can be left standing for fairly long periods without serious deterioration.

A third feature of forestry is that, unlike agricultural products, forest products do not go to final consumers but are, instead, mainly inter-

mediate goods used by other producers to produce final consumer goods. The demand for forest products is, therefore, a derived demand (Worrell, 1959). The behaviour of derived demand elasticity is not only more complex but has been less studied than that of final consumer goods. Finally, a large proportion of the benefits from forestry have values which are not determined by the normal market system. The extra-market values of forests include recreation, soil erosion control, amelioration of climate and amenity. The importance of non-market determined values of forests will depend on the physiographic and climatic conditions of a country, as well as on its stage of economic development. Worrell (1970) has suggested that as a country approached high levels of economic development the non-market determined values may gain in prominence and become major competitors for forest land. In a developing country, such as Nigeria, the importance of forestry is judged, largely, by its capability to produce wood products (Enabor, 1971).

The characteristics of forestry and forest industries have significant implications for national development policy and planning. According to Leslie (1971), "social benefits and social costs become important considerations in the relationship between human activities and the use of forest resources". With reference to developing countries, the characteristics of the forestry sector may be cited as justification for "government intervention" (Westoby, 1962), in order to harmonize forest development and national development goals (Nautiyal and Smith, 1968).

1.6.2 Range and trend of demand for forest products

Forest products may be classified under three broad categories - wood and wood-based products; wildlife and non-arboreus plants, and non-

market valued services (Buttrick, 1948). In a developing country, such as Nigeria, wood is an essential commodity required for both domestic and industrial uses. Wildlife has considerable importance not only as a source of meat and protein,but also for the role of wildlife in maintaining the ecological balance. Hunting as a way of life also has great social value to Nigerians (Ajayi, 1972). Finally, from time immemorial, herbs and medicinal plants obtained from forests have provided Nigerians with the means to combat endemic diseases and to maintain general health care. As indicated earlier on, however, the extra-market values of forests are still of relatively lesser importance in Nigeria, except in the northern savanna region of the country where creation of shelterbelts to combat desiccation of the soil and ameliorate the climate are major forestry activities (Adeyoju, 1975). For the purposes of this thesis, attention will be confined to wood and wood-based products.

Buttrick (1948) has given a list of the wood and wood-based products of forest. Duerr (1966b) classified wood products according to the various stages of use, or extent of their processing as characterized by the degree to which the tree stem is broken down or sub-divided in the process of making it ready for the final use. The following stages were differentiated by Duerr (1966b):

a) Roundwood - including log cabins, corduroy roads and poles.
b) Chunks - including firewood, the hewn crosstie, and other round timber.
c) Thick slices (or lumber).
d) Thin slices (or veneer and plywood).
e) Particles, featuring paper, paperboard and composition board.

f) Molecules, featuring the nascent silvichemical industry.

Essentially, these products exhibit increasing states of fabrication which lead to greater uniformity in quality of output and, at the same time, lends it to greater variability and adaptation to end-uses. The increasing degree of processing of the product also permits greater utilization of the raw material and encourages development of secondary or by-products based on the waste released by earlier processes.

Duerr (1966b) argued that a positive correlation exists between the level of economic development of a country and the proportion of wood products consumed in processed forms. In his words:

> "It follows then, that society's economic growth forces it into successively higher stages of wood use. The products appropriate to the earlier stages become inferior goods, and take diminishing percentages of the total raw-material".

Thus, the proportion of wood products consumed per head in a country in processed form is a rough indication of its level of economic development. Conversely, economic growth of a country necessarily induces significant changes in composition of its wood products consumption.

Westoby (1962) produced a flow chart (see Appendix 2) showing the various uses and interrelationships between wood products in an economy. He showed that in the context of economic development, it is not only the increasing range and degree of manufacturing of wood products consumed that should be considered; equally important is the horizontal relationship between products of the forest industries. Thus, lumber will replace roundwood in most uses as economic growth gets under way, only to be replaced later by wood-based panel products. At high levels of economic growth, re-

constituted wood products begin to encroach into and supplant structural wood products in many traditional markets. This intra-competition between wood products may even be more important than competition from non-wood substitutes in planning forestry and forest industries development (Westoby, 1962).

An incisive illustration of the dynamic nature of the demand for wood products is further provided by Westoby's (1962) analysis (see Table 12). First, he compared the levels of consumption of the various wood products in developed countries with that for the less developed countries. Although the less developed countries in the comparison year (1958) contained 53% of the world's population, the absolute amount of wood products consumption in the developed countries exceeded their's by a ratio of 8:1 for sawnwood, 13:1 for wood-based panels and 11:1 for paper and board. The disparity becomes more striking when the comparison is put on a per capita basis. Thus, sawnwood consumption in the developed countries per capita was 17 times greater, wood-based panels, 28 times and paper and board 23 times greater than in the less developed countries. Not only was consumption of wood products concentrated in the advanced countries (Europe and North America) but the trend of production showed its concentration in the same region. Subsequent studies (FAO, 1966; 1970; Cliff, 1974; Westoby, 1965; O'Leary, 1968) suggest that this trend is likely to continue into the foreseeable future. According to O'Leary (1968):

> "For a boy born today in the United States, his life-time usage of paper will be well over 17 tons even if the steady increase in per capita consumption stopped where it is today. ..... In India and Asia where life expectancies are only about two-thirds as great and per capita consumption only a few pounds per year, the life-time consumption for a child born today is about 100 pounds".

Table 12. Apparent Consumption of Wood Products (1957-59 Average)

	Unit	A Developed Countries	B Underdeveloped Countries	Ratio A:B
Population (1958)	Million	923	1956	0.47
Apparent Consumption Total Sawnwood (including sleepers)	million m^3 (sawn)	286.7	35.0	8
Wood-based Panel Products	million m^3 (r. equiv)	38.3	3.0	13
Paper and Board	million metric tons	58.1	5.3	11
Apparent Consumption per 1000 capita Sawnwood	m^3 (sawn)	310.0	18.0	17
Wood-based Panel Products	m^3 (round)	41.7	1.5	28
Paper and Board	metric tons	63.0	2.7	23

SOURCE: Westoby, J.C. 1962. "Forest industries in the attack on economic underdevelopment". Unasylva, 16(4): 172.

The above statement may not necessarily be taken as a prophecy, since a future low per capita wood consumption may be less indicative of living standards if wood were replaced in many uses by substitutes. Nor do they suggest a static condition of consumption in currently less-developed countries. As Westoby (1962) has observed, the disparities indicate potential developments in future, in wood consumption trends in presently less-developed countries. In the short-run, they suggest significant opportunities for international trade in wood and wood-based products. He showed that income elasticity of

demand ranged from moderately high for sawnwood and wood-based panels to very high for paper and paperboard. Thus, for paper and paperboard it is as high as 2.5 to 3 at income levels around $100 per capita; 1.5 to 2.5 at income levels of $200 to $400 per capita, and at income levels about $500 to $1000 per capita, it is still greater than one.

The very high positive correlation between income and paper and board consumption levels has been firmly established in a study by the FAO (1961). Where forests provide the major inputs for paper and board production, their contribution to economic development in low income countries could thus be great. With the other wood products, however, the behaviour of income elasticity of demand is less clear. This is because, as Gregory (1966) observed, not only income but prices of substitutes, and wood availability, become important operative factors.

The conclusion that may be drawn from the trend of wood demand aspect of Westoby's analysis is that a continuing increase in world consumption of wood products should be expected, even after allowance is made for technological developments leading to creation of substitute products. The present concentration of wood consumption in the developed countries means, in the short-run, opportunities for well-endowed developing countries to capitalize their forest resources through international trade in wood products. In the long-run, however, the less-developed countries will have to apply their forest resources to meeting their own rising wood consumption requirements. The development of forest resources should thus be seen as a necessary step in the realization of their own development goals.

1.6.3 Linkages, external effects and interdependencies of the forestry sector.

The most important contribution of Westoby's (1962) paper is his discussion of linkages, external effects and interdependencies of the forestry sector. The following statement summarizes the essence of his argument:

> "In the light of this interdependence of the industrial and agricultural sectors in the development process, forestry and forest industry activities take on particular significance. At one end they reach back into the rural economy; at the other, they penetrate into many branches of the industrial sector. The flexible range of forest industries, with their considerable variation in requirements of capital, skill, raw materials and other production factors means that most developing countries, provided they haved a suitable raw material base, are in a position to develop one or more of these industries on an economic scale. However, these industries can exercise a propulsive influence on the general economy, frequently permitting the establishment of secondary and conversion industries. At the same time, the forestry activities associated with the establishment of these industries, exercise a beneficial influence on the rural sector, relieving under - and unemployment in the countryside, and in general diversifying the rural economy. For these and many other reasons (including their high import saving effect and the fact that they valorize indigenous renewable resources), forest and forest industry development has a rightful claim to high priority in the development plans of many underdeveloped countries".

It must be admitted that such an impressive case for forestry development has never been previously made by any writer on the subject. To support his argument Westoby (1962) using Hirschman's (1958) original format produced a table (Table 13) for four countries to show the degree of indirectness of the forestry sector. The data of Table 13 are coefficients calculated from input-output tables and provide a measure of backward (ratio of value of purchased inputs to total production) and forward (ratio of the value of intermediate demand to that of total demand for its products) linkages associated with the sector. He then compared these ratios with the

Table 13. Indices of Interdependence of Forest Industries

Country	Ratio of value of purchased inputs to value of total production			Ratio of value of intermediate demand to value of total demand		
	Average all Industries	Wood & Wood Products	Paper & Paper Products	Average all Industries	Wood & Wood Products	Paper & Paper Products
Japan	48.7	68.2	62.8	46.1	29.5	80.2
Italy	43.8	71.6	53.8	41.1	43.1	75.3
U.S.A.	42.6	42.1	56.6	41.9	40.4	79.2
Norway	36.4	51.5	55.7	30.4	29.1	42.5

SOURCE: Westoby, J.C., 1962. op.cit. p.171.

average for the whole economy to determine the "strength of linkages" (Hirschman, 1958) of the forestry sector with the rest of the economy. From the results it is concluded that wood and wood products have poor backward and strong forward linkages, whereas, paper and paperboard products have moderate backward but very strong forward linkages. A given level of investment in the paper products industry would thus stimulate economic growth more than an equal amount of investment in the wood and wood-products industries. These conclusions are, in general, consistent with Hirschman's (1958) findings.

Nautiyal (1967) gave a number of valid reasons why one should exercise caution in interpreting the coefficients calculated by Westoby (1962). In my view, the strongest of these is that the data referred to developed countries and, therefore, a danger exists in extrapolating them for less developed countries. This is unacceptable, since it is implicitly assumed that accounting procedures and availability of all inputs in forestry and other sectors

of the economy are identical in both sets of countries. Westoby's (1962) data were not meant, essentially, for intercountry comparisons but rather for interindustry comparison. In that case, coefficients calculated for other industries, including agriculture, would have proved valuable.

The role of forestry in economic development has, also been examined by a number of other forest econmists. Zivnuska (1966) discussed the integration of forest development and national development plans. He presented a model of economic growth in which increasing aggregate productivity is maintained through the simultaneous development of the agricultural and industrial sectors of the economy. The model was abstracted from that developed by Ranis and Fei (1961) and, Fei and Ranis (1963). Assuming that the country concerned possessed a suitable endowment of forest resources, the main issue is the appropriate rate of development and the flow of capital into this sector of the economy.

Zivnuska (1966), drew a parallel between forest development and the process of general economic growth in a labour surplus underdeveloped economy. At the early stages, forestry activities exhibit a low capital to labour ratio and demand very simple skills. Since these activities are typically located in rural areas, the excess labour released from agriculture can be more easily absorbed by the sector than in highly urbanized and mechanized operations. At the same time, forestry operations economize on the most scarce factor, capital. Infrastructural development required to increase agricultural productivity will, in turn, service the forestry sector. The expansion of forestry activities, also, means release of frozen capital in form of natural resources into a more liquid form which can be directed to various sectors of the economy as needed. Finally,

reduction in import requirements as domestic production of forest products increases, will help improve the country's balance of payments and conserve her domestic capital resources. He concluded that:

> "... the forest industries sector of the economy represents an intermediate stage between the agricultural sector and the general industrial sector. Thus development of the sector can often be a highly useful approach to facilitating the structural shifts in the economy which must be achieved in overcoming the problems of underdevelopment".

The same author demonstrated that the significant feature of forest development is the diversity of the process. Through increasing diversification and efficiency of production from simple to more sophisticated products, there is a steady build up of capital resources, labour skills,and appropriate technology,which are the critical inputs required for the successful development effort. There is a difficult problem in obtaining the initial inputs which lead to the take-off stage in development. However, once forest development gets under way, the process can generate its own capital requirements for continuing expansion. In this context, the traditional concepts of sustained yield can in general be seen as possibly incompatible with the conditions of rapid growth and change.

Zivnuska (1966) also discussed the justification for forest development under conditions of forest scarcity. He noted the problems that will arise in view of the necessity to tie up scarce capital for an unusually long period, even if an acceptable rate of return is eventually forthcoming. Still, there may be some conditions under which such development will nevertheless be justified. Apart from a consideration of available alternatives for investment, the direction of forest development must be carefully thought out

in view of economies of scale, capital intensity and market requirements, which differ significantly between different processes in the forest industry. Zivnuska (1966) seems to accept all the other points already made by Westoby (1962) regarding earning of foreign exchange, saving of imports, technological advantage and linkage effects. The major problem he recognized is that of integrating forest development with national development plans, so as to convince national policy makers to make the necessary capital allocations to the forestry sector.

In his discussion of the role of forest industries in industrial development in tropical Latin America, Lewis (1966) noted that wood-based industries are primarily established with a profit motive. The role of forest industries in opening new lands, constructing railway systems, introducing basic machinery, providing a source of income, and aiding development of labour skills, as well as converting capital presently invested in timber into capital available for investment in other industries, may only be secondary to profit-motivated forest industry operations. To ensure the proper balance between the output of social benefits and private returns, he advocated government control through appropriate planning. In discussing the Mediterranean and Near East regions, Chapman (1966) emphasized the need for forest planners to plan forest development on the basis of trends of wood demand. Forest development should be planned with the financial and economic implications carefully considered in "deciding which program pays off best or which policy saves most in imports and foreign exchange". Other papers on the subject with reference to particular countries have been contributed by Arrellano (1966), Lansigan (1966), Lamprecht (1966) and Hernandez (1966).

There is general agreement, at least among forest economists, that forestry and forest industries can contribute significantly to economic growth. The problems arise with the conditions of a given country with regard to available resources, the political will too effectively utilize them, and appreciation of the sector's potential. Nautiyal (1967) has, however, stressed that "nothing can be presumed unique about forestry". As one of the sectors of an economy, decisions regarding forest development must be predicated on its actual and potential profitability when compared to the alternatives available. For purposes of investment policy in the less-developed country, it may be argued, the analysis of the contribution of the forestry sector to economic development will involve not only the rate of return or economic linkages, but also such key issues as employment generation, rural stabilization, contribution to local incomes and capital formation, as well as impact on the resource base. These issues may be considered of central concern in the less-developed country where "forest exploitation" as opposed to "forest development" with a view to serving export markets has been prevalent. To the extent that the wood products export trade has dominated forestry activities in Nigeria, these considerations weigh heavily in efforts to mobilize the forest resources for economic development.

1.7 Summary

The role of international trade in economic growth has received the attention of economists, politicians and businessmen for a long time. According to the classical theory, international trade benefits a country by permitting a more efficient allocation of its resources, and improved domestic

welfare resulting from a more diversified bundle of consumption goods. As a corollary, world welfare would be improved if each country engaged in production and trade along lines of its comparative cost advantage. It is also assumed, in international trade theory, that secondary but significant gains would accrue to a country, from specialization, in the form of economies of scale and technological change, which constitute the bases of an on-going development process. Models of export-led economic growth have been developed in the context of particular countries to explain their successful development experience. In this study, suitability of export-led models of economic growth for currently underdeveloped countries is critically appraised.

In the post World War II period, widespread controversy has developed among economists about the effects of international trade on the economic growth of the underdeveloped countries. Many seem to share the view that, for these countries, foreign trade has hindered rather than facilitated development. Explanations which have been given for the failure of foreign trade to act as an "engine of growth" in the currently underdeveloped countries include:

1) The nature of the export commodities.
2) Sluggish overseas demand.
3) Development of substitute products.
4) Economy in the use of raw materials in importing countries.
5) Restricted access to export markets due to tariff and non-tariff barriers.
6) The structure of political power relationships.

Available evidence on the impact of foreign trade on the economic growth of

less-developed countries is inconclusive. However, in view of the importance which they attach to foreign trade for their development efforts, international trade has come to occupy a dominant position in their economic policies. It would appear that the real issue is not whether foreign trade is beneficial but rather how it can be made so, given the urgency of the economic problems which confront the poor countries of the contemporary world.

Analysis in this study has showed that Nigeria's economic growth performance in the postwar period has been generally good. A substantial part of that performance can be attributed to the influence of foreign trade. It was argued that both internal and external factors operated to blunt the bull impact of foreign trade on the economy. In the circumstance, it is advocated that future policy should concentrate on maximizing gains from profitable foreign trade opportunities, while diversification of the economy is being fostered.

Forestry and forest industries can play a potentially important role in the achievement of rapid economic growth of underdeveloped countries. Unfortunately, the sector remains the least understood and most ignored in many of these countries. More intensive studies, and the adoption of dynamic policies, can enhance the future contributions of the sector to the economy and improve its ranking in the priorities of national economic development. It is argued that the export trade in wood products is one aspect of such studies demanding urgent attention.

CHAPTER TWO

DEVELOPMENT OF THE NIGERIAN WOOD PRODUCTS EXPORT TRADE

2.1 Introduction

The rise of the Nigerian wood products export trade antedates organized forestry in the country. The trade comprises, almost entirely, of sawlogs, veneer logs, sawnwood, veneer, and plywood. Minor quantities of charcoal, industrial roundwood (poles and pitprops), sleepers (crossties), blockboard, and manufactured wood, are also exported. Development of the trade has been influenced by the growth of external demand for wood, the rise of a domestic timber industry, and increased local awareness of the value of forests, backed by the efforts of the forest administration. The present study covers exports of sawlogs and veneer logs, sawnwood, veneer,

and plywood.[1] These products are, entirely, of tropical hardwoods which derive from a narrow belt of lowland rain forest stretching across the southern coast belt of the country (see map in Appendix 9).

Appraisal of development of the Nigerian wood products trade is undertaken in this chapter, in order to provide a basis for an understanding and justification of policies towards the trade, which are subsequently recommended in the study. The Nigerian wood products export trade is directly influenced by development in international trade in wood products. The trends, patterns and prospects of the latter, with special reference to tropical hardwoods, are examined and analyzed in Section 2.2. The major problems in the expansion of tropical hardwood exports are indicated. The policy implications for tropical hardwood producing countries are set out. Growth of the Nigerian wood products export trade is examined in four phases:

1) The period before 1900.
2) The period, 1900 - 1929.
3) The period, 1930 - 1949.
4) The period since 1950.

In Section 2.3.5, the trade patterns are evaluated for the impact on the forest resource and general economy. Possible explanations of the observed

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1 This restriction of coverage has been deliberately made in view of the realities of the current situation in Nigeria, whereby other wood-based products such as particle board, fibreboard, pulp, paper and paperboard, have not been developed to an extent to make exports possible. It is not implied that Nigeria should not, or could not, develop exports of such products in the future.

patterns are advanced. Development factors in the trade are discussed in Section 2.4.

2.2 International tropical hardwood trade

Tropical hardwoods represent a dynamic and rapidly growing component of the world trade in wood and wood-based products. World annual consumption of tropical hardwoods increased from 38.6 million m^3(r) in 1955 to 71.3 million m^3(r) in 1968, or by 4.8% per annum[2] (Takeuchi, 1974). It rose further to 115.7 million m^3(r) in 1973 or by 62% (FAO, 1974). The bulk of the consumption took place in the industrially advanced countries of Western Europe, North America,[3] and Japan. Trends of world wood consumption show its heavy concentration in the industrially advanced countries. For example, the developing countries account for about four-fifths of world consumption of fuelwood, whereas, the share of the developed countries in industrial wood products consumption is about 86% for sawnwood, 92% of wood-based panel products and 90% for pulp, paper and paperboard (FAO, 1971).

Differences in the pattern and level of wood products consumption between developed and less developed countries are partly a reflection of differential levels of economic development and partly, a consequence of the locational patterns of world forest industries. Thus, although the developed countries contain only one-half of the world's forest area, they account for 80% of the world's annual wood removals, and, on average, 85% of

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2 All growth rates are compound.

3 Primarily the United States of America.

the world output of sawnwood, wood-based panels, pulp, paper and paperboard (FAO, 1975). Like production and consumption, world trade in wood and wood-based products is, also, largely among the developed countries, which accounted for 82% of the total value in 1960 (FAO, 1964).[4] However, the developing countries' share has increased rapidly since 1960, and as will be shown, the growth rate of their exports have generally surpassed that of the world trade in forest products.

Development of the international tropical hardwood trade has been influenced by both supply and demand factors (Pringle, 1969). Firstly, the tropical hardwood trade is, for all practical purposes, synonymous with the wood products exports of developing countries. In these countries shortage of foreign exchange constitutes a major constraint on economic development. For countries well-endowed with forest resources, wood products export earnings could contribute significantly to the effective prosecution of industrialization programs (Rola, 1974). Between 1950 and 1960, developing countries' exports of wood products increased from U.S. $0.21 billion to U.S. $0.5 billion, or by about 150% (FAO, 1964). It rose further to U.S. $1.6 billion, in 1970 or by 300% (FAO, 1971). Accelerated exploitation of forest resources has become an important means of providing urgently needed foreign exchange in many tropical developing countries.

Secondly, there has been a rapid increase in world demand and consumption of wood products. Recent appraisals of world wood balance (FAO, 1969; Pringle, 1973) suggest that substantial wood deficits are likely to

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4 Includes trade between centrally planned countries and, between them and other developed countries.

occur by the end of this century, particularly in Europe and Japan, and to some extent, in the U.S.A. Increasing reliance will be placed on tropical hardwoods to meet the deficits. Several studies have, therefore, forecast a bright future for tropical wood products exports. It is important, however, to recognize the many problems which confront the trade in a constantly changing and dynamic world economy. These must be resolved if the full potential of tropical forest resources is to be realized.

2.2.1 Growth of the international tropical hardwood trade

In Table 14 is shown wood products exports of the world and the developing countries in 1963 and 1973. Over the decade, world wood and wood-based exports rose from $6.7 billion in 1963 to $21.8 in 1973, representing an annual growth rate of 12.5%. The value of world exports of all commodities, over the same period, grew at an annual rate of 8.5%. Value of wood products exports from developing countries increased rapidly from U.S. $655 million in 1963 to U.S. $3.4 billion in 1973, or more than fivefold. The value increase represented an annual growth rate of 17.1%, higher than that for world exports of forest products and of all commodities. The 17.1% annual growth rate of value of tropical hardwood exports during 1963 to 1973 is more than twice the 7.5% achieved by exports of all commodities from developing countries over the same period.

The growth and relative importance of tropical hardwoods in world trade of logs, sawnwood, veneer and plywood between 1963 and 1973, are shown in Table 15. Total volume of exports of these products from the tropics rose from 19.0 million m^3 to 59.7 million m^3, or by about 300%, to

Table 14. World and Developing Countries' Exports of Wood Products, 1963 and 1973

Commodity	1963 VOL. million m^3	1963 VAL. $ million	1973 VOL. million m^3	1973 VAL. $ million
	WORLD EXPORTS			
Roundwood,	46.5	817.2	115.4	3847.0
of which Saw & Veneer Logs	26.5	589.5	82.3	3293.8
Sawnwood	46.7	1785.3	71.9	5466.6
Wood-based Panels	4.5	520.8	14.0	2425.9
Wood pulp*	11.4	1337.9	18.5	3053.9
Paper & Paperboard*	13.7	2228.1	27.6	6969.9
Total	-	6689.3	-	21763.3
	DEVELOPING COUNTRIES' EXPORTS			
Roundwood,	16.9	399.9	52.4	1868.8
of which Saw & Veneer Logs	16.6	395.7	50.3	1841.9
Sawnwood	3.1	161.3	8.0	654.5
of which Tropical Sawnwood	1.9	108.5	5.8	473.5
Wood-based Panels	0.6	59.6	3.8	669.0
Wood pulp*	0.13	14.5	0.5	69.5
Paper & Paperboard*	0.01	19.3	0.6	161.0
Total	-	654.6	-	3422.8

SOURCE: FAO; Yearbook of Forest Products Statistics, 1964 and 1973 (Review). Rome.

* Metric tons.

record an annual growth rate of 12.1%. World exports of the same products, on the other hand, increased 216%, representing an annual growth rate of approximately 8%. The share of exports of tropical sawlogs and veneer logs, sawnwood, veneer, and plywood combined, in world exports of these commodities, jumped from 25% in 1963 to 36.5% in 1973, in volume terms.

Table 15. Growth and Relative Importance of Tropical Hardwood Trade

Commodity	Volume of Exports (million m^3) 1963 A	1963 B	1973 A	1973 B	Estimated growth rate, 1963-1973 (% per annum) A	B
1. Sawlogs & Veneer logs	26.7	16.5	82.3	50.3	11.9	11.8
2. Sawnwood	46.7	1.9	73.5	5.8	4.6	11.8
3. Veneer & Plywood	2.4	0.6	7.9	3.6	12.7	19.6
Total	75.8	19.0	163.7	59.7	8.0	12.1

SOURCE: FAO, 1974. Yearbook of Forest Products Statistics, 1962 - 1973 Review. Rome.

_____, 1975. State of food and agriculture, 1974. Rome.

Note: A = World Exports; B = Developing Countries' Exports.

A comparison of the individual commodities reveals a significant variation in their growth and relative importance over the period under consideration. Thus, tropical sawlogs and veneer logs export growth was approximately equal to that of world exports. Their share of the total volume of world sawlogs and veneer logs exports, however, declined slightly from 62% in 1963 to 61% in 1973. Tropical sawnwood export volume increased by nearly 300% to record an annual growth rate of 11.8%, whereas, world exports increased by only 57%, representing an annual growth rate of 4.6%. The share of tropical hardwood sawnwood in total world sawnwood exports remained very low, even though it increased appreciably from 4% in 1963 to 7.9% in 1973.

The most spectacular expansion of tropical hardwood exports, between 1963 and 1973, was in respect of wood-based panels (veneer and plywood). Total volume of exports of this commodity class increased sixfold from only

0.6 million m^3 in 1963 to 3.6 million m^3 in 1973, indicating a phenomenal annual growth rate of 19.6% over the decade. By comparison, volume of world exports of veneer and plywood grew, approximately, 13% per annum. The share of tropical hardwoods in the volume of world exports of veneer and plywood jumped from 25% in 1963 to 46% in 1973.

It may be concluded, from the foregoing, that tropical hardwoods constituted a dynamic and rapidly expanding sector of world wood trade in the period since 1960. This conclusion is, of course, subject to statistical errors of recording and reporting of trade data which may vary significantly between countries, and are incomplete for others. Moreover, there is a substantial trade in the form of re-exports of tropical hardwoods by importing countries in Western Europe and North America, not accounted for by data in Table 15. Finally, world trade in pulpwood, pulp, paper and paperboard has not been taken into account in the comparisons, because the contribution from tropical countries is negligible. Inclusion of the latter items would drastically qualify the conclusion which emerges from the above analysis.

In spite of the significant expansion of tropical hardwood exports since 1960, a pertinent question which has been raised is whether the tropical developing countries are utilizing their valuable forest resources in the most rational manner (Westoby, 1975). It will be instructive, therefore, to examine the patterns of the tropical hardwood trade.

2.2.2 International tropical hardwood trade patterns

2.2.2.1 Composition

In Table 16 is shown the composition of tropical hardwood exports

Table 16. Composition of Tropical Hardwood Exports, 1961 - 1974

Year	Logs		Sawnwood		Veneer & Plywood	
	VOL.$_3$ (mill.m^3)	Share %	VOL.$_3$ (mill.m^3)	Share %	VOL.$_3$ (mill.m^3)	Share %
1961	11.6	82.8	1.9	13.6	0.50	3.6
1962	13.2	85.7	1.8	11.7	0.39	2.6
1963	16.5	87.0	1.9	10.0	0.55	3.0
1964	18.4	85.3	2.5	11.6	0.67	3.1
1965	19.6	85.6	2.5	10.9	0.78	3.5
1966	22.0	86.0	2.6	10.1	0.96	3.9
1967	23.3	86.2	2.7	9.9	1.03	3.9
1968	28.2	85.2	3.3	9.9	1.61	4.9
1969	33.0	86.0	3.6	9.4	1.73	4.6
1970	36.7	86.2	3.9	9.2	1.99	4.6
1971	38.6	86.4	3.7	8.3	2.38	5.3
1972	40.9	84.4	4.6	9.5	2.98	6.1
1973	50.3	84.2	5.8	9.7	3.62	6.1
1974	45.0	85.4	4.6	8.7	3.10	5.9
Average	28.4	85.5	3.2	10.2	1.59	4.3

SOURCE: FAO, Yearbook of Forest Products Statistics, 1973 (Review) Rome, 1974.

FAO, State of Food and Agriculture, 1974. Rome, 1975.

during 1961 to 1974. Sawlogs and veneer logs accounted for an average of 86% of the total volume over the period. The average shares for sawnwood and veneer and plywood were 10% and 4% respectively. Not only do logs dominate tropical hardwood exports, but their share in the total volume has been increasing. The share of sawnwood in the volume of tropical hardwood exports declined steadily between 1961 and 1974, whereas, that of veneer and plywood increased appreciably. The declining share of sawn wood is explained, partly by the fact that demand in the major markets has generally slowed down in recent years (FAO, 1975), and partly, by the strong competition from wood-based panels and non-wood substitute products such as plastics, steel and

glass (Runeberg, 1969; Clark, 1971). Increasing domestic demand in the tropical wood producing countries has been another factor. Increasing exports of tropical veneer and plywood, on the other hand, reflects the rapidly diminishing availability of suitable timbers and the slow growth of production, in relation to demand, in the major importing countries, particularly the U.S.A. (Hair, 1970).

The predominance of sawlogs and veneer logs in tropical hardwood exports may, to some extent, be attributed to the urgent need for foreign exchange and the absence of a sizeable domestic wood processing industry in the wood exporting countries. However, more important obstacles to a shift towards processed wood exports are the relationships between main markets and sources of exports, and trade policies of importing countries. These aspects are clarified in the discussion of the direction of trade.

2.2.2.2 Direction of tropical hardwood trade

In Tables 17 to 19 are shown the direction of trade of the major products in tropical hardwood trade. The Asian region dominates exports of tropical hardwood sawlogs and veneer logs. Volume of logs exports from the region in 1973 was 41.0 million m^3 out of the total of 50.4 million m^3, or 81.3%. Africa accounted for 8.2. million m^3,or 16.3%. The remaining 1.2 million m^3 was shared equally between Latin America and developing Oceania countries, each with 1.2%. The exports of tropical hardwood sawnwood, and veneer and plywood, also originate predominantly from the Asian region. In 1973, it accounted for 70.6% of total tropical hardwood exports and 89% of the veneer and plywood. Africa and Latin America had equal shares,of 14.4%,

Table 17. Direction of Trade in Tropical Hardwoods (LOGS), 1973

Exporters	MAJOR IMPORTERS W.Europe	In-transit-processor countries	Japan	Other Countries	Total	Shares %
	(million m^3)					
Africa	6.7	-	0.2	1.3	8.2	16.3
Ghana	0.7	-	0.05	0.35	1.0	
Nigeria	0.2	-	-	0.10	0.3	
Ivory Coast	3.0	-	0.04	0.46	3.5	
Gabon	1.2	-	..	0.50	1.7	
Others	1.6	-	0.10	0.00	1.7	
Asia	1.1	10.1	25.4	4.40	41.0	81.3
Philippines	0.3	1.4	6.1	-	7.8	
Malaysia	0.1	3.6	8.4	0.80	12.9	
Indonesia	0.6	5.0	10.7	3.60	19.9	
Others	0.1	0.1	0.2	-	0.4	
Latin America*	0.4	-	-	0.20	0.6	1.2
Brazil	0.3	-	-	0.10	0.4	
Others	0.1	-	-	0.10	0.2	
Oceania	..	-	0.4	0.20	0.6	1.2
Total	8.2	10.1	26.0	6.1	50.4	
Shares %	16.3	20.0	51.6	12.1		100.0

SOURCE: FAO, Yearbook of forest products statistics, 1973 (Review). Rome, 1974.

* Includes tropical Central American countries.

Table 18. Direction of Trade in Tropical Hardwoods (Sawnwood), 1973

Exporters	MAJOR IMPORTERS								
	N. America U.S.	Canada	W. Europe U.K.	Other Europe	Japan	Singapore	Others	Total	Shares %
	(000 m^3)								
Africa	52	3	246	316	-	-	239	856	14.4
Ghana	17	-	133	42	-	-	48	240	
Nigeria	5	-	26	6	-	-	2	39	
Ivory Coast	26	-	61	142	-	-	9	238	
Others	4	3	26	126	-	-	180	339	
Asia	337	39	485	1481	403	816	641	4202	70.6
Malaysia	129	8	295	1044	138	805	207	2626	
Philippines	102	5	8	49	113	-	150	427	
Singapore	22	12	104	193	17	-	7	355	
Others	84	14	78	195	135	11	277	794	
Latin America	514	48	35	45	1	-	212	855	14.4
Brazil	309	27	21	26	1	-	38	422	
Others	205	21	14	19	-	-	174	433	
Oceania	3	-	-	5	2	-	27	37	0.6
Total	906	90	766	1847	406	816	1119	5950	
Shares %	15.2	1.5	12.9	31.0	6.8	13.7	18.8		100.0

SOURCE: FAO, Yearbook of forest products statistics, 1973 (Review). Rome, 1974.

Table 19. Direction of Trade in Tropical Hardwoods (Veneer & Plywood), 1973

	MAJOR IMPORTERS							
	N. America U.S.	Canada	W. Europe U.K.	Others	Japan	Others	Total	Shares %
	(000 m^3)							
Africa	37	-	88	177	-	44	346	7.5
Ghana	-	-	33	3	-	-	36	
Nigeria	2	-	21	-	-	-	23	
Ivory Coast	10	-	2	30	-	-	42	
Gabon	1	-	16	47	-	-	64	
Others	24	-	16	97	-	44	181	
Asia	2295	206	441	155	790	248	4135	89.1
Philippines	486	6	13	-	27	25	557	
Malaysia	74	1	162	17	14	132	400	
Korea Rep.	1049	33	10	4	344	-	1440	
Taiwan	521	144	-	27	-	1	693	
Singapore	26	14	153	52	15	12	272	
Japan	134	8	19	28	-	5	194	
Others	5	-	84	27	390	73	579	
L. America	75	-	27	24	3	-	129	2.8
Brazil	50	-	26	24	3	-	103	
Others	25	-	1	-	-	-	26	
Oceania	6	-	-	-	1	22	29	0.6
Total	2413	206	556	356	794	314	4639	
Shares %	52.0	4.4	12.0	7.7	17.1	6.8		100.0

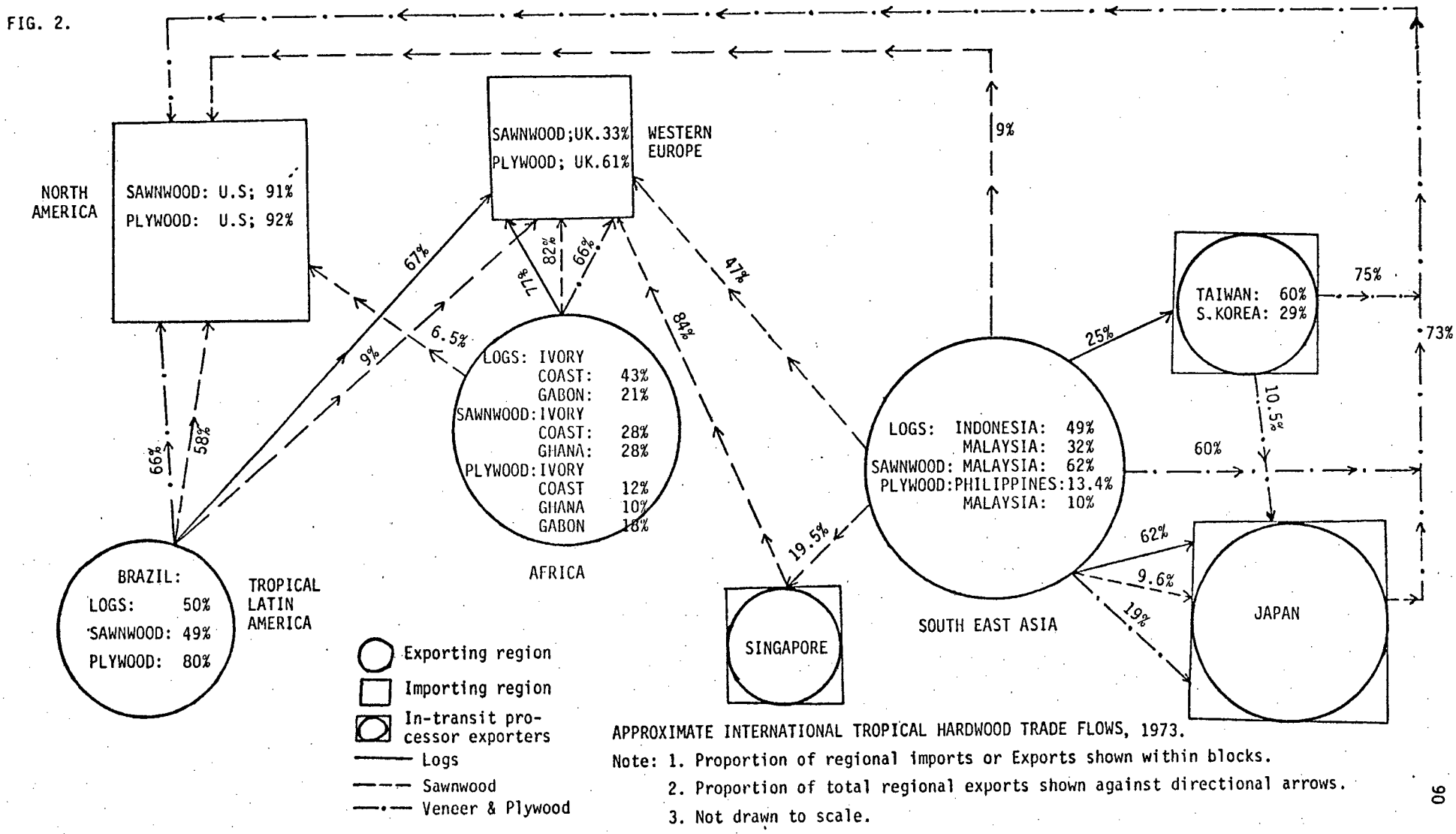
SOURCE: FAO; Yearbook of forest products statistics, 1973 (Review). Rome, 1974.

of the sawnwood but 7.5% and 2.8%, respectively, of the veneer and plywood. Oceania exports of sawnwood and veneer and plywood were in each case under 1% of the total in 1973.

Data in Tables 17 to 19 also show the relative importance of markets for tropical hardwoods. In 1973, Japan took nearly 52% of the tropical hardwood logs exports. Ninety-eight % of Japan's tropical hardwood log imports in 1973 came from South-East Asia. Western Europe's imports of tropical hardwood logs in 1973 amounted to 8.2 million m^3, or 16.3% of the total. This equalled Africa's total tropical hardwood logs in that year but the region's share in the West European imports stood at 82%. With respect to sawnwood, Western Europe's imports in 1973 was 2.6 million m^3 or 44% of the total. North America took 16.7%; Japan, 6.8%; Singapore, 13.7%, and other countries 18.8%. Finally, North America represents the leading market for tropical veneer and plywood exports with a share of 56.4% of the total in 1973. Western Europe accounted for 19.7%, Japan, 17.1% and other countries 6.8%.

The main flows of the international trade in tropical hardwoods in 1973 is depicted by FIG.2. It shows the predominance of the Asian region in the trade of all the commodities considered. Africa is the second major source of tropical logs but shares the same place with Latin America for sawnwood exports. The Oceania region accounts for an insignificant proportion of the trade. Japan is the major world importer of tropical hardwood logs, whereas North America dominates in imports of veneer and plywood. Western Europe is the major world importer of tropical hardwood sawnwood. However, a further examination of Tables 17 - 19 indicates a concentration of both sources and markets for tropical hardwood products. For example, in 1973, three countries of South-East Asia, (Malaysia, Philippines and Indonesia) accounted

FIG. 2.



APPROXIMATE INTERNATIONAL TROPICAL HARDWOOD TRADE FLOWS, 1973.

Note: 1. Proportion of regional imports or Exports shown within blocks.

2. Proportion of total regional exports shown against directional arrows.

3. Not drawn to scale.

for 99% of Asia's logs exports to the world and 97% of Japan's imports of tropical hardwood logs. Four West African countries, Ghana, Nigeria, Ivory Coast and Gabon, accounted for 76% of African logs exports to Western Europe and 62.9% of the latter's total imports of that commodity in 1973. Western Europe's imports of tropical hardwood sawnwood in 1973, came mainly from Malaysia, whose exports represented 68% of Asia's total exports and 51.2% of Western Europe's imports respectively. The Philippines was a major exporter of tropical hardwood sawnwood in 1973 but Japan and the U.S.A. were the main markets, taking 50% of the total.

Latin America's trade flow in tropical hardwoods shows a similar concentration pattern with Brazil alone accounting for 80% and 49% of the volume of logs and sawnwood exports, respectively, in 1973. The principal markets for the region's exports were North America (mainly the U.S.) which took 58% of the logs and 66% of the sawnwood exported in 1973. A significant proportion of the region's tropical hardwood log and sawnwood exports also went to Western Europe in the same year.

The export of tropical hardwood veneer and plywood is the most concentrated of all the commodities considered. Thus, in 1973, the Asian region accounted for 89% of the total volume exported. North America took 2.5 million m^3 or 60%, with the U.S.A. alone accounting for 2.3 million m^3 or 56%. Western Europe and Japan were the other major importers of tropical hardwood veneer and plywood, with shares of 17% and 19% respectively, in 1973. The wood products exports of tropical developing countries of Oceania have gone almost entirely to Australia and New Zealand. Finally, Africa's veneer and plywood exports derived mainly from the West African timber-producing countries (with over 47% of regional exports in 1973). Seventy-seven % of

Africa's exports of veneer and plywood went to Western Europe.

2.2.2.3 Role of in-transit wood processor countries

Of special interest in the tropical hardwood trade is the role of the so-called in-transit processor exporting countries - Republic of South Korea, Republic of China (Taiwan), Singapore and, to a lesser extent, Hong-Kong (Takeuchi, 1974; FAO, 1975). The first two are situated in the temperate zone, while the latter two lie in the tropics. All four have been classified as semi-industrialized (Balassa, 1970). They also possess the common characteristic of being strongly export-oriented economies and lacking in domestic forest resources. These countries, in spite of an absence of local wood resources, have successfully built up a large export trade in wood products based on imports of tropical hardwood logs from the South-East Asian countries.

In Table 20 are shown exports of hardwood plywood and imports of hardwood logs by South Korea and Taiwan during 1957 to 1969. Over the thirteen year period, the two countries imported a total of 16.6 million m^3 of tropical hardwood logs and exported 4.5 million m^3 hardwood veneer and plywood, or 10.4 million m^3 roundwood equivalent. In other words, only 37% of their total tropical hardwood logs imports went to domestic consumption.[4]

In 1973, the in-transit processor exporting countries imported

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[4] Domestic consumption of tropical hardwood logs imports in these countries is probably considerably less than 6.5 million m^3 after their exports of hardwood sawnwood and other products have been accounted for.

Table 20. Exports of Hardwood Plywood and Imports of Hardwood Logs by Korea and Taiwan, 1957 - 1969

	Unit	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Republic of Korea:														
Log imports	1000 M^3	102	118.0	173.7	222.6	316.8	481.5	385.4	251.0	603.0	1096.6	1493.8	2435.8	2422.0
Plywood exports	1000 M^3	-	-	0.8	2.4	14.2	15.2	46.7	151.6	169.6	276.6	311.4	600.0	708.6
Taiwan:														
Logs: Gross imports	1000 M^3	91.2	128.8	137.6	161.1	168.0	276.0	446.5	562	625	691.9	899.7	1090.1	1193.3
Logs: Net imports	1000 M^3	90.0	127.2	106.2	160.8	158.2	267.7	444.5	561	624	687	895.7	1088.4	1190.0
Plywood exports	1000 M^3	2.0	14.3	16.4	19.7	51.8	72.5	133.4	208.4	222.2	260.8	247.7	396.6	595.8
Korea & Taiwan:														
Log imports, gross	1000 M^3	194	247	311	384	485	758	832	813	1228	1789	2394	3525.9	3615.3
Plywood exports	1000 M^3	2	14	17	22	66	88	180	360	392	537	559	996.6	1304.4
Plywood exports	1000 M^3	5	33	40	51	152	202	414	828	901	1236	1286	2292	3000.0

SOURCE: Takeuchi, K., 1974. Tropical hardwood trade in the Asia-Pacific region. World bank staff occasional papers, No. 17. Johns Hopkins Press, Baltimore and London. p.76.

10.1 million m^3 of tropical hardwood logs representing 25% of Asia's hardwood logs exports and 20% of the total hardwood logs exports in that year. Ninety-nine % of the imports came from Malaysia, the Philippines and Indonesia. In the same year, exports of hardwood plywood and veneer by in-transit wood processor countries amounted to 2.5 million m^3 or 56% of the Asian exports of these commodities. In contrast, the main tropical hardwood producing countries, (the Philippines and Malaysia), exported only 957,000 m^3 of veneer and plywood, or 22% of the regional total.

The international tropical hardwood trade patterns show a predominance of sawlogs and veneer logs exports. Both the sources of, and markets for the various products are highly concentrated. Original exports of the highly processed veneer and plywood account for a small proportion of the annual trade of that commodity. Various studies also showed that the tropical hardwood trade is heavily concentrated in a few woods (OECD, 1969; FAO, 1973; 1967; Takeuchi, 1974). Finally, there is very limited trade in wood products between tropical developing countries, or between them and the centrally planned economies (i.e., the U.S.S.R. and communist Eastern Europe). These features of the trade provide the essential background for discussing the prospects for the trade, and the policies which both the exporting and importing countries might adopt for its improvement.

2.2.3 Prospects for the international tropical hardwood trade

The past growth and development of the tropical hardwood trade was primarily stimulated by the growth of external demand. As domestic wood supplies, in suitable sizes, qualities and species, became inadequate to meet rapidly increasing consumption in the major world wood-using centres, trop-

ical hardwoods were intensively exploited to fill the supply-consumption gap. Future prospects for the trade will continue to be influenced by trends of external demand. Even more important, however, will be the supply capacities of tropical hardwood forests in the face of rapidly increasing domestic demand for wood products, as well as the trade policies adopted by both exporting and importing countries.

Comprehensive studies of the evolution of production and consumption of wood products in various regions of the world now exist (FAO, 1969; 1971; U.S.D.A., 1973; Cliff, 1973; Manning and Grinnell, 1971; Pringle, 1969; 1973). The FAO (1971) examined the trends for the major forest product groups in terms of the supply and demand relationships in tropical developing countries, set against the prospective wood balances in the industrialized countries, with projections for 1975 and 1985. The study suggested that, even by 1985, the industrialized countries of the world will still account for about 90% of world industrial wood consumption. But, given the very high elasticities of demand for the main wood products (sawnwood, veneer, plywood, pulp, paper and paperboard), a rising proportion of world wood consumption will in future occur in the developing countries. By 1985, overall annual use of sawnwood is expected to rise by 145% and account for over one-third of the world's increased requirements of this product. Also, their share of world sawnwood production could rise from 22% in 1962 to around 33% by 1985.

With respect to wood-panels, a rapidly expanding sector of world wood production and consumption, the FAO estimated a ninefold increase from 0.9 million metric tons in 1962 to 8.2 million metric tons by 1985, in consumption in developing countries. Their production of wood-based panels will, however, considerably exceed domestic consumption requirements. For example,

the share of the developing countries in world plywood production is expected to rise from 5% in 1962 to 15% by 1985. The situation in respect of production and consumption of pulp, paper and paperboard in the developing countries is, however, the reverse. Substantial, but declining, deficits in their balances of these products will persist up to,and beyond 1985.

The analysis of demand trends for wood in the industrialized countries revealed that Western Europe and Japan will be the major wood deficit areas of the world up to 1985. These deficits are expected to continue rising after 1985. Substantial deficits, and increasing import requirements for hardwoods in the future, have also been forecast for the U.S.A. up to 1985 (U.S.D.A., 1973; Hair, 1970). Areas of considerable wood surpluses, such as Canada and, to some extent, the U.S.S.R.,[5] exist in the temperate zone, but their supplies to the wood-deficit regions will be primarily coniferous woods. The deficits in hardwood needs of the industrialized countries will not be met from internal regional sources, even assuming further intensficiation of forest management. Consequently, a role is foreseen for the tropical developing countries to supply these products, given that their estimated future productive capacities will exceed domestic consumption requirements.

The implications of these expectations are indicated by Table 21. The export availabilities estimated by the FAO show a very great expansion

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5 A more recent assessment of the forest resources of the U.S.S.R., indicates that this may not be an economic surplus region. See, Sutton, W.R.J., 1975. The forest resources of the U.S.S.R., their exploitation and their potential. Commonwealth Forestry Review, 54(2): 110-38.

Table 21. Annual Export Availability for Major Forest Products in Tropical Developing Countries in 1962, 1975 and 1985

(000 Units)

	Region	Logs (m3)	Sawnwood (m3)	Veneer & Plywood (m3)	Fibreboard & Particleboard (m.t.)	Pulp & Pulp Products (m.t.)
1962	Africa	5030	680	170	-	58
	Asia	5710	490	340	1	34
	L.America	350	1400	40	4	98
	Near East	10	50	3	-	-
	Total	11100	2620	550	5	190
1975	Africa	5200	1040	670	20	280
	Asia	21500	2300	2000	20	40
	L.America	300	1750	330	50	300
	Near East	-	-	-	-	-
	Total	27000	5090	3000	90	620
1985	Africa	4700	1500	1250	50	940
	Asia	32000	3200	3000	40	70
	L.America	300	1880	910	160	990
	Near East	-	-	-	-	-
	Total	37000	6580	5160	250	2000

SOURCE: F.A.O., 1969. Provisional indicative world plan for agricultural development. Vol. 1. Rome. p.317.

in all the main wood products, especially in sawnwood, veneer and plywood. What these estimates imply, in value terms, is indicated by Table 22. The total value of main wood products exports of tropical developing countries could rise from U.S. $555 million in 1962 to $1820 million by 1985. The value increase represents an annual growth rate of 5.5%, compared to a volume growth of 4.5% per annum. The higher growth rate of value of tropical hardwoods reflects partly, an increasing component in processed items and, partly

Table 22. Estimated Value of Developing Countries Exports of Forest Products ($ Million)

	Logs			Other raw materials			Sawnwood			Panels			Pulp and Paper			Total		
	1962*	1975	1985	1962*	1975	1985	1962*	1975	1985	1962*	1975	1985	1962*	1975	1985	1962*	1975	1985
Africa	140	172	120	10	25	30	40	62	86	21	95	168	5	12	86	224	366	510
Asia	127	311	450	15	35	55	27	68	90	37	180	260	10	7	12	216	601	869
L. America	9	7	5	15	25	35	66	87	101	6	45	145	3	55	138	113	209	430
Near East	-	1	1	-	-	-	2	3	4	-	-	2	-	-	-	2	4	11
Total	276	491	576	40	85	120	135	220	281	64	320	575	18	74	236	555	1200	1820

SOURCE: F.A.O. 1969. Provisional indicative world plan for agricultural development. Vol. 1., Rome. p.322.

increases in product prices (Takeuchi, 1974).

Pringle (1973), assessed the trade prospects for tropical hardwoods up to the year 1990. Details of the estimates are contained in Appendix 4. The forecast indicates a threefold increase in volume of logs and sawnwood exports, respectively, between 1965 and 1990. Over the same period, volume of veneer and plywood exports will increase sixfold. Total volume of tropical hardwood logs, sawnwood, veneer and plywood exports, in roundwood equivalent is expected to rise from 28.6 million m^3 in 1965 to 99.5 million m^3 in 1990, or by 248%. The forecast volume increase represents an annual growth rate of 5.2%. Pringle's (1973) study is, essentially, a refinement and extension of previous FAO studies, including that discussed above. The estimates indicate a spectacular expansion of tropical hardwood exports by 1990 and, possibly, up to 2000. In spite of the considerable expected expansion of processed tropical hardwood exports, there is no significant change in their structure. Logs account for 76% of the total volume of exports forecast for 1990.

Appraisals of the prospects of tropical hardwood trade, although highly optimistic, suffer the drawbacks of too many assumptions about unresolved obstacles hampering its development. Wood supply capacities in tropical developing countries, in terms of total output and proportion in processed form, depends on several factors. Firstly, is the efficiency of utilization, and prospects for exploitation of lesser-known woods. It has been estimated (Plumptre, 1974) that only 5 - 10% of the biomass of tropical forests is currently utilized, as logging and wood extraction continue to concentrate on a few choice timbers. Somberg (1973) showed that in the forests of the Amazon, in Latin America, the stocking of commercially useable species was very low. The same situation applies to most of the African forests (FAO, 1967). Sec-

ondly, only a very small proportion of tropical natural forests have been brought under management and are accessible compared to temperate forests. The large areas of inaccessible forests can contribute to future wood supplies only if necessary transport and infra-structure are developed.

Thirdly, increased tropical wood processing confronts the problem of capital shortage, a dearth of local skills, inadequate managerial and technical manpower, all of which reflect a state of generally low level of industrialization. Of course, some of these deficiencies can be rectified by borrowing capital, manpower and knowhow from the industrialized countries. Ultimately, however, domestically generated production factors would be more reliable and preferable.

On the demand side, it should be recognized that tropical hardwoods have traditionally been treated,in industrialized countries,as supplementary to domestic supplies. They do not really enjoy the status of such tropical agricultural products as cocoa or coffee for which developing countries are monopolies. In addition, there is still limited knowledge among wood users in industrialized countries about the characteristics and end-use potentials of tropical hardwoods (Preston, 1972; Chudnoff, 1969; Stearns, 1969; Core, 1969). It is important that problems of product research and marketing must be solved to stabilize tropical hardwood consumption in the industrialized countries. Finally, assuming that the prospective supplies of tropical hardwoods will be forthcoming, the problem of access to foreign markets for processed wood must be overcome. It has been shown that the pattern of flows of the tropical hardwood trade is dictated primarily by political association and/or trade preference arrangements between the exporting and importing countries (Farquhar, 1969). The existence of economic blocs, e.g. the E.E.C. and

Commonwealth Trading Area, which impose high tariffs on imports from non-member countries represents the major factor restricting expansion of world wood trade.

Data in Appendix 5 show duties and tariffs on imports of wood products in the industrialized countries in 1972. They indicate tariff escalation on wood and wood-based products in almost all the industrialized countries. Because imports of logs and other roundwood are exempted from duty, the effective rate of protection of processed wood products is actually higher than the indicated nominal rate (Takeuchi, 1974). For example, in Japan, the effective rates of protection in the sawmilling and plywood manufacturing activities are roughly 40% and 35% to 40%, respectively. A similar situation prevails in the U.S.A.

Under the UNCTAD Scheme of Generalized Preferences (Kennedy Round), concluded in 1967, the developed countries made offers of duty-free access or tariff reductions, in respect of manufactures and semi-manufactures, including wood products, of interest to developing countries. Consequently, exports of roundwood and sawnwood by tropical developing countries are now free of duties in almost all the industrialized countries (UNCTAD and GATT, 1973). It is significant, however, that some countries, (e.g., the U.S.A. and Canada), have, by 1974, not fully implemented their offers. In general, regulations which impose quotas, invoke escape clauses, or embody non-tariff barriers, have tended to reduce the impact of tariff concessions on wood products imports into the industrialized countries. As the FAO (1969), has observed, restrictions on access to markets in industrialized countries may constitute the most serious obstacle to expansion of the tropical hardwood trade in the future.

2.2.4. Policy implications

In the tropical developing countries, there is increasing appreciation of the value of forests and the potentially important contribution of wood products exports to national development and welfare. Many are initiating policies for restructuring wood products exports away from extreme dependence on logs and narrow markets. For example, the major timber-exporting countries of Asia-Pacific region are phasing out of log exporting and moving toward manufacturing their own wood products (Sanvictores, 1975). Optimal development of the forestry and forest industries sector of most developing countries is, however, still hampered by economic, institutional, and social problems. To a great extent, these problems have their roots in the non-existence, or defective nature, of forest policies. Large areas of forests are being devastated or alienated to other land uses without careful planning. The situation is not helped by attitudes which regard forests, simply as a resource to be mined and the earnings invested elsewhere in the economy.

The economic problems of tropical forest resources development are equally important. To ensure efficient utilization of their forests, tropical developing countries need to assess the productive potential of the resource, institute proper management, develop necessary infra-structure, and plan the type and location of industries to be established. Poorly stocked and heterogenous forests should be replaced by plantations of fast growing species (FAO, 1965; 1969). Wood-based industries should be carefully selected and located so as to maximize benefits from the economies of scale, and to facilitate servicing of both domestic and export markets. Also, the necessary manpower must be trained to man the forestry and forest industries

operations.

In many tropical developing countries, especially in South-East Asia and West Africa, there is evidence of increasingly detailed planning of the forestry sector, including programs of afforestation and wood industries development (World Wood, 1975). However, all these activities involve heavy financial commitments, as is indicated by data in Table 23. It is unlikely that the individual developing countries can internally generate these financial requirements without jeopardizing overall development effort. In the circumstances, an international plan for tropical forest development seems to be called for (Leslie, 1966). Such a plan should involve not only bilateral governmental aid, but also the active participation of private industry and wood marketing organizations with interest in the tropical forest resource.

On the demand side, there is a need for intensive research into, and improved marketing of tropical hardwoods, to enhance knowledge of their properties and end-uses in the industrialized countries. The problem here, as Preston (1972) has put it, is one of collation and dissemination of essential information. The government could also support export promotion programs for tropical hardwoods, acting through their appropriate agencies, institutes, and in cooperation with other governments, international agencies and trade associations (Yavorsky, 1973).

The importance of improving market access for processed tropical hardwoods has been stressed. It would appear to be in the mutual interest of the developed and developing countries to pursue a decentralization of world wood industry which is consistent with an optimal international division of labour. This would mean the location of an increasing proportion

Table 23. Investment Requirements for Expansion of Forestry and Forest Industries Sector in Developing Countries

Region	Forestry & Logging		Forest Industries	
	1962 - 1975	1975 - 1985	1962 - 1975	1975 - 1985
	U.S. $ Million			
Africa	480	480	550	800
Asia	600	650	1550	2800
L. America	600	750	1700	3200
Near East	200	260	150	200
Total	1880	2140	3900	7000

SOURCE: F.A.O., 1969. op.cit. p.324.

of world production capacity in the primary processed wood products (sawnwood, veneer and plywood) in the tropical developing countries, while the industrialized countries shifted to the more advanced wood, pulp, and paper products. The desire to protect value-added and employment in domestic industries seems, at present, to discourage adoption of internationally optimal trade policies by the industrialized countries. It may be noted, though, that some developing countries have also adopted tariff distortions in their wood products trade in an effort to develop domestic import-substituting industries, especially in the pulp and paper field. It is arguable whether the case for tariff protection of primary wood processing industries in industrialized countries is as strong as tariff protection of key industries, such as pulp and paper, in the less-developed countries.

Efforts to enhance trade prospects for their processed wood products are being intensified by tropical wood producers through demands for concessions under UNCTAD, as well as regional cooperation and trade agreements

between themselves. For example, the Philippines and Indonesia established the Joint Philippine-Indonesian Commission on Economic and Technical Cooperation in 1969 which, among other things, would consider cooperation in wood products processing and trade. The Association of South-East Asian Nations (ASEAN), which includes five countries, has studied cooperation in wood processing and trade (Takeuchi, 1974). In Latin America, regional cooperation in wood products trade is being fostered through the Latin America Free Trade Association (LAFTA), the Central American Common Market Area (CACMA) and the Carribean Free Trade Area (CARIFTA) (Casasempere, 1970). Formation of the Economic Community of West African States (ECOWAS), in May, 1975, and of the African Wood Organization[6] (AWO), in July, 1975, could be the beginning of a coordinated and concerted approach to the problems of improving the international tropical hardwood trade.

Cooperation among tropical hardwood producers is an important, but only one, aspect of the many problems of the tropical hardwood trade which must be overcome. Its success cannot be assured, in view of the failure of previous commodity trade agreements involving agricultural products exports from these countries (Pincus, 1966). Given the peculiar feature of forest products production (e.g., high capital requirements), and the unusually bright demand prospects, regional agreements and policies which seek to enhance or restrict the expansion of the tropical hardwood trade are obviously inferior substitutes for a truly international approach which

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6 The member countries include Cameroon, the Central African Republic, Congo, Equatorial Guinea, Gabon, the Ivory Coast, Liberia, Madagascar, Tanzania and Zaire. The organization modelled on OPEC is to ensure better market control and price stabilization. It will also give member nations a common front when negotiating transportation costs. (CIDA Release, August, 1975).

takes full cognizance of the growing interdependence of the world economy.

2.3 Nigerian wood products export growth and patterns

The growth and development of the Nigerian wood products export trade may, for convenience, be examined in four phases; the period before 1900, 1900 - 1929, 1930 - 1949, and the period since 1950. These sub-divisions have been adopted in order to bring out the influence on the trade, of trends of external demand, the impact of development of the domestic industry, and the role of government. Throughout, it will be shown that while external demand provided the main stimulus to the trade, the fundamental factor has been the changing attitudes and relationships of government and the timber industry. It will also be argued that the success of any policies directed towards improvement of the trade depends largely on the nature of these attitudes and relationships.

2.3.1 The period before 1900

There are no reliable records of the beginnings of the Nigerian wood products export trade. Dike (1956), in his account of the transition to legitimate commerce in Nigeria, reported that by 1830 "timber, including camwood, barwood, redwood and bleeding wood, was next in value to ivory. Of these, camwood was the most lucrative at £28 to £30 a ton".[7] In 1842,

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7 Dike, K.O., 1956. op.cit. pp.63-64; p.101.

exports of camwood and other dyewoods were worth between £10,000 and £15,000 a ton. The timber trade, although increasing, was still unimportant. In 1874 the Secretary of State for the Colonies issued a circular letter to the West African colonies drawing their attention to the importance of forestry. Commercial exploitation of Nigerian forests appears to have reached a significant scale by 1880. Thus, in 1887, the governor of Lagos, Sir C.A. Moloney, in his Sketch of the Forestry of West Africa, warned of the consequences of excessive exploitation of the forests around Lagos.

Geary (1965) stated that "the Nigerian timber trade sprang up in 1896 when 22 mahogany logs valued at £275 were shipped from Lagos".[8] The expansion of the trade is indicated by the fact that three years later, in 1899, 7,680 logs valued at £34,737 were exported. The government reacted to the boom in the timber trade at this time by appointing a Mr. Hitchens as Inspector of Forests. His functions included the control of exploitation of timber and rubber, as well as conservation and replanting of forests.[9] The timber trade before 1900 was organized and controlled by European merchants without any government intervention. Exploitation was concentrated along river banks and in the Delta area, where timber merchants obtained concession agreements with local chiefs. Timber was also being extracted from forests in Abeokuta, north of Lagos, as salvage fellings

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8 Geary, W.N.M., 1965. Nigeria under colonial rule. Frank Cass, London. p.58.

9 Nigeria, 1971. Bulletin of the Nigerian forest departments, Vol. 31, No. 1. Ibadan, Jan. 1971. p.2.

when the railway line from Lagos was being constructed (Ekundare, 1973). Exploitation, however, remained on limited scale due to difficulties of transportation and incessant hostilities among neighbouring local communities.

Due to a lack of adequate statistical records, the extent of the Nigerian timber trade before 1900 cannot be accurately quantified. It may be said that by the end of the 19th century its importance had been recognized and, responsibility for its control for the benefit of the owning communities accepted by the government.

2.3.2 The period 1900 - 1929

In 1902, Mr. H.N. Thompson took over control of the new Forest Department. He was instrumental to the introduction of various legislative orders and regulations affecting timber exploitation and trade.[10] Thus, the Forestry Proclamation No. 28 of 1901, was in force together with other Orders and Regulations framed under it for the purpose of controlling timber and rubber exploitation. Regulation No. 14 of 1903 specified the procedure to be followed in acquiring concessions, provided for inquiries into the titles of the grantor of concessions, prescribed fees and royalties payable by grantees, raised felling girth obligatory on licensees from 8 feet to 12 feet, 10 feet above ground,[11] and provided for the hammer-marking of stumps and logs of trees felled. Also, the size of concessions

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10 Nigeria, 1971. Bulletin of the Nigerian forest departments. op.cit.. p.5.

11 Geary, W.N.M., 1965. op.cit. p.131.

and the extent of their water frontage were regulated, while provision was made against any one firm acquiring a monopoly of concessions. Finally, all timber cutting carried with it the obligation, to plant, in the nearest available spot, a tree of the same species or, in lieu, a payment to the Forest Departments who would themselves do the planting.[12]

Forest concessions were,however, not directly controlled by the Forest Department but were usually under a sort of supervision by the District Commissioner in whose district they happened to be. The method of granting concessions also varied from district to district as the statement below illustrates:

> "The rules in Ondo District seem to be that the concessionaire pays £1 per square mile for the area taken up and 10 shillings per tree royalty on all trees cut. In Badagry, nothing is paid for the concession and the royalty varies from 12 shillings to £1 per tree according to the District in which it is cut".[13]

Besides regulation of timber and rubber exploitation, the Forest Department also initiated studies of the vegetation and, in 1909, produced a small handbook titled "Notes on Nigerian Trees and Plants", which was most valuable in publicizing the potential of Nigerian forests in export markets.

The export of Nigerian timber maintained a rising trend after 1900, as indicated by data in Table 24. The value of timber exports increased from £58,374 in 1900 to over £105,000, or by 81%,in 1913. The year 1901 was, however, a bad one for the trade due primarily to the slump of overseas

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12 Geary, W.N.M., 1965. op.cit. p.133.

13 Nigeria, Colonial reports, miscellaneous, 1906. p.21.

Table 24. Timber Exports from Nigeria, 1900 - 1913

Year	Logs (No.)	Value (£)
1900	13320	58374
1901	4540	12216
1902	12049	33292
1903	15785	56167
1904	8767	59132
1905	13442	49557
1906	20274	68718
1907	17237	62834
1908	N.A.	77054
1909	N.A.	47086
1910	15198	60469
1911	N.A.	55576
1912	N.A.	78007
1913	N.A.	105440

SOURCE:
1. Geary, W.N.M., 1965. op.cit. pp.58 and 133.
2. Nigeria, Colonial reports, 1908 - 1912.
3. Forest Department, Annual report of the forest administration of Nigeria, 1913.

demand after the boom in 1900. Logs had accumulated in Lagos and exploitation ceased in many concessions. The trade quickly picked up again. African mahogany timber was in high demand in England and America due to the short supplies from the West Indies. The size of concessions was increased in 1904 from 9 square miles to 100 square miles to encourage the industry (Adeyoju, 1966). But the trade slumped in that year because of transport difficulties and the very low rainfall which halted the floating of logs to Lagos for export. High wood prices in the domestic market gave an impetus to the trade in 1906 and 1907. By 1908 exports had reached a peak and declined in 1909 to their 1905 level. The long period of drought, depression in the trade and consequent low prices reduced the working of concessions and number of trees

felled.[14]

Towards the end of 1909, there was a recovery of timber prices. This stimulated a substantial increase of output and intensive working of concessions. In 1910, the number of licensed concessions worked in Southern Nigeria was 36 compared to 26 in 1909. The value of timber exports exceeded £60,000. More permits to fell trees were issued and new concessions granted. An all-time record value of timber exports at £105,440 was achieved in 1913. A total of 18,214 logs valued at £99,596 were shipped from Sapele, Koko, Forcados and Warri. Also, "Iroko had at last established itself in the European market under the name of "African Teak" and commanded a price of 3s 8d a cubic foot".[15]

From 1914, and during the period of hostilities, the Nigerian timber trade suffered a severe set back and, generally, remained inactive. The volume and value of mahogany log exports fell sharply. Tight money, shortage of shipping facilities for exporting the produce to Europe, and prohibition, in 1916, of import of timber into the U.K. were the main contributory factors. Mahogany exports in 1918 amounted to only 9,016 logs valued at £68,480 (nominal).[16] Temporary relief to the trade was provided during the war by Admiralty contracts for the supply of mahogany for aeroplane construction but this was discontinued after 1919. The war period was, however, significant for the trade in drawing attention to domestic demand for wood, especially

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14 Nigeria, Colonial reports, miscellaneous, 1908. p.423.

15 Nigeria, Colonial reports, miscellaneous, 1913. p.8.

16 Forest Department, Nigeria, Annual report of the forest administration of Nigeria, 1919. p.8.

in public construction. To meet this demand the Forest Department organized direct government working of Akilla and Oni forest reserves in Western Nigeria. Because the operation was uneconomic financially, it was handed over to private industry in 1920.[17] The export trade in mangrove timber was another interesting development during the war but it soon faded away because of extraction difficulties and poor demand in the chief markets in the U.K. and South Africa.

After the war, there was a decided recovery of the timber export trade, stimulated by both increased demand and a reduction of felling fees and royalties. Though many concessions were being worked again, fellings had not reached a desired level "due to considerations of a commercial nature".[18] The improved state of the trade was reflected in the rate of fellings in Southern Nigeria, which stood at 15,349 trees in 1922 compared to 3,408 in 1920. Mahogany exports rose steadily to reach a peak in 1925 (see Table 25) but fell off again in 1926 due to "the general fall in prices in the European markets, and the fact that a considerable number of logs cut from trees felled were still lying in the forest and, in consequence, few permits were taken out this year" (Forest Department, Nigeria, 1922).

The Nigerian timber export trade grew steadily over the period 1900 to 1929 but, was subject to frequent fluctuations caused by war, poor overseas demand and domestic production difficulties. However, the trade was still small when compared to exports of cocoa, groundnuts and palm produce.

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17 Forest Department, Nigeria, Annual report of the forest administration of Nigeria, 1916. p.17.

18 Forest Department, Nigeria, Annual report of the forest administration of Nigeria, 1920. p.17.

Table 25. Timber Exports from Nigeria, 1923 - 1928*

Year	Volume $000\ ft^3$	Value £000
1923	13582**	201.7
1924	1571	275.9
1925	2034	307.3
1926	1338	213.9
1927	1637	294.7
1928	1754	307.0

SOURCE: Nigeria, Annual reports of the forest administration of Nigeria, 1923-28.

* Data refer to mahogany logs exports only.

** Number of logs.

Moreover, the timber exports comprised entirely of mahogany logs occasionally supplemented by iroko. This was in spite of the vigorious efforts of the Forest Department, in cooperation with timber firms, to introduce and popularise many new species in European markets beginning in 1905. It was claimed that the prospects for species other than mahogany in European markets were poor because "given the price of about 3d per superficial foot and conditions of freight, the expense of handling the timber by human labour is too great to admit of any profits being made from such species".[19] Not until the 1930's did these efforts begin to yield positive results, with the introduction to the trade of an increased number of timbers and sawnwood, leading to improved utilization of the forest resource.

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19 Nigeria, Colonial reports, miscellaneous, 1906. pp.27-28.

2.3.3 The period 1930 - 1949

The world-wide economic depression which began in 1929 severely set back Nigerian exports of timber, as well as of other commodities. Total wood exports in 1930 was 1.1 million ft^3 valued at £194,853 compared to 2 million ft^3 in 1925 valued at £307,000. Mahogany log exports accounted for 61% of the volume and 56% of the value, respectively. The position in the U.K. market was described as one of "unrelieved gloom" and only mahogany and sapelewood were being imported. The continental European markets were, in contrast, more active. Thus, "as late as December 31st (1930) a large consignment of sapele wood (200 logs) met with an excellent reception in Hamburg".

By 1931, the trade had revived as a result of the "Buy British" movement in England and the fall in the value of the £ sterling. British timber buyers began to look to the colonies for supplies of tropical hardwoods as substitutes for temperate hardwoods, and to supplement dwindling wood supplies from the West Indies. The hardwood trade of West Africa was actively encouraged and supported by the Empire Marketing Board, the Forest Products Research Laboratory at Princes Risborough, and the British hardwood import trade, as well as certain municipalities and semi-government departments. In Nigeria, the Forest Department stepped up efforts to introduce more timbers to export markets through large-scale experimentation and physical mechanical testing of local timbers at the Forest Products Research Laboratory at Princes Risborough. As a result of these tests, many new timbers such as agba, abura, idigbo, opepe and obeche, among others became established in the trade by 1938, with demand only being limited by

the question of available supplies.

A most important development in the history of the Nigerian wood products export trade occurred in 1933 when Major F.M. Oliphant visited the country to investigate the commercial possibilities and development of the forest resources. In his two reports,[20] Major Oliphant concluded that,"the potential supply of timber in Nigeria was very encouraging and, that Nigeria was one of the most important sources of hardwood supplies to the United Kingdom from within the British Empire".[21] He classified Nigerian timbers into the following seven main groups:

A. Timbers Established on the Market:

African and Sapele mahoganies, Obeche, African Walnut, Iroko.

B. Timbers Exported but Demand Limited; Further Investigation and/or Organization of Supplies and Marketing Required:

Abura, Mansonia, Opepe, Agba, Ekki, Guarea, Idigbo, Ebony, African Padauk.

C. Possible Export Timbers; Next for Investigation:

Canarium, Okan, Afara, Antiaris, Celtis, Afzelia, Poga, Pycanthus, Odoko.

D. Possible Export Timbers for Later Investigation and Development:

a) General Districts: Albizzia, Dahoma, Zebrano, Xylopia, Ayan.

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20 Oliphant, Major F.M., 1933. "Timbers of Nigeria." Draft circulated for addition and correction. Unpublished;and Oliphant, Major F.M., 1934. "Report on the commercial possibilities and development of the forests of Nigeria". Sessional paper No.7. Government Printer, Lagos, 61pp.

21 Pollard, J.F., 1955. A history of efforts to export timbers from Nigeria. Empire Forestry Review, 34(3): 285-293.

b) Cross River Cameroons Area: Carapa, Mimusops spp., Stauditia, Irvingia, Okwen.

E. Timbers Probably Limited to Domestic Use by Reason of Character or Limited Supply:

Danta, Tali, Klainedoxa, Saccoglottis.

F. Timbers Not Common Enough for General Exploitation:

Local Use Only.

G. Possible Timbers for Pulp and Paper

Group A timbers have been referred to as "staples" in Nigeria and were regarded as the only exportable timbers before 1933. It may be noted, however, that all the timbers in Groups B and C are now established and regularly exported, either as logs or sawnwood. Some timbers in Group D are also finding export markets, at least for specific end uses, while others, such as danta in Group E and ceiba in Group G, have also featured in the export trade in recent years.

The continuing growth of the timber trade in the 1930's is reflected in Table 26. Not only did an increasing number of species begin to find markets, but export of sawnwood is reported separately in the trade statistics for the first time in 1936,[22] involving 90,297 ft^3 valued at £7,850. Almost all the sawnwood export came from the new sawmill at Sapele. Also significant is the export of obeche, a timber hardly known in the trade before 1930. In 1938, 767,407 ft^3 of obeche logs were exported. This exceeded the volume of mahogany export, and accounted for 51% of the total volume

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22 Nigeria, Annual report of the forest administration of Nigeria, 1936. p.24.

Table 26. Timber Removals in Nigeria, 1932 - 1938 (No. of Trees)*

	For Export	For Local Use	Total	Export as % of Total
1932	5774	5277	11051	52.2
1933	6215	3643	9858	63.0
1934	10835	4015	14850	73.0
1935	10354	4803	15157	68.3
1936	8730	5952	14682	59.5
1937	12423	9266	21689	57.3
1938	11210	4904	16114	69.6

SOURCE: Forest Department, Nigeria, Annual reports of the forest administration, 1932-38.

* Includes only removals from the Western and Mid-Western States of Nigeria, both from inside and outside forest reserves. These two States account for over 95% of the annual volume of timber exports.

of wood exports.[23]

The onset of the Second World War, in 1939, posed a threat to the timber trade as German and other East European markets were lost, while shortage of shipping space and buyer uncertainty affected shipments to the U.K. market. However, the war did not prove damaging to the trade for very long. As a result of the war, the U.K. was cut off from its North European sources of softwood supplies and from its European and Japanese supplies. The rich West African forests, which had the advantage of proximity over American sources, were turned to for alternative supplies. Tropical hardwoods, including many previously unheard of timbers, had to be used as sub-

23 Nigeria, Annual report of the forest administration of Nigeria, 1938. p.26.

stitutes for softwoods. Pollard (1955) has stressed that war and substitution were not the only factors in the great expansion of the number of timbers and quantity of wood products exported from Nigeria during this period. According to him,

> "The export, in 1938, of a greater quantity of obeche than of the mahoganies was an indication of a changing emphasis from the traditional mahoganies to lighter general purpose timbers such as abura, afara and agba and of the increasing demand for plywood. The war accelerated this change but did not initiate it".[24]

The special advantage of the mahoganies, regarding shrinkage, had been eroded by new production techniques developed between the wars, in which plywood made of mahogany face veneers and backed by less expensive core woods, such as obeche, was being increasingly used in furniture manufacture in preference to solid wood.

Thus, far from being a retarding influence, the Second World War provided unusual opportunities for the expansion of the Nigerian timber export trade. As Latham (1960) stated:

> "It is very doubtful if the great expansion of West African timbers, which tend to displace U.S. hardwoods in Western Europe, would have taken place, or at any rate, so quickly without the occurrence of the Second World War and the consequent disturbances of markets and currencies .... Large consuming markets found themselves suddenly cut off from sources of supply to which they had been accustomed for several generations. Without this stimulant, it is by no means certain that markets would have been found or, at any rate, so speedily for such a number of West African species in a comparatively short space of time".[25]

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24 Pollard, J.F., 1955. op.cit. p.286.

25 Latham, E.B., 1960. Development of markets for forest products: Needs and techniques . Unasylva, 14(4): 174-178.

Reliable statistics of Nigerian wood exports during the war years are not available. However, most mills were operating at full capacity to meet the greatly increased domestic demand for wood, especially by military. There was a slight depression of the trade in 1939 and 1942, but between 1943 and 1946 the average number of trees felled annually was about 70,000, a figure higher than that for any pre-war year. Unclassified (secondary) species accounted for nearly 15% of the volume of log exports in 1942, while agba had established itself in European markets as the most popular sawnwood timber. An interesting development during the war years was the great expansion of sawnwood exports from Nigeria. In 1944, 886,500 ft^3 of sawnwood was exported, compared to an annual average of about 200,000 ft^3 before the war. This was due, not only, to expansion of the sawmilling industry but, also, the preference for sawnwood over logs imposed by the shortage of shipping facilities.

The influence of the unprecedented post-war boom in European timber markets on the growth of Nigerian wood products exports is indicated by data in Table 27. The total value of exports increased more than five-fold between 1945 and 1949. The volume of log exports increased 125% between 1945 and 1949, whereas the value of veneer and plywood exports, introduced only in 1947, rose sevenfold. Sawnwood exports grew steadily until 1947 and then dropped, as shipping problems eased and the trade in logs received greater emphasis once again. The post-war demand for wood in Europe and North America was so high that practically all available timbers and grades were being imported. In Nigeria, the trade now offered such unusually high profits that there was a rush, by "various small contractors and all kinds of people who knew nothing about the timber trade,

Table 27. Timber Exports from Nigeria, 1945 - 1949

	Logs		Sawnwood		Veneer & Plywood		Total (all wood Products)
	Vol. 000 m^3	Val. $000	Vol. 000 m^3	Val. $000	Vol. 000 m^3	Val. $000	
1945	55.3	465.4	17.1	293.5	-	-	758.9
1946	64.1	568.7	20.4	434.7	-	-	1003.4
1947	76.0	1290.4	21.0	689.6	1.4	142.8	2122.8
1948	90.9	1750.0	14.8	436.8	9.5	938.0	3124.8
1949	118.9	2368.8	16.8	574.0	12.0	1002.4	3945.2

SOURCE:
1. Nigeria, Annual reports of the forest administration of Nigeria, 1945-1947
2. MacGregor, J.J., 1959. Some economic problems of forestry in Western Nigeria, Oxford, 1959. pp.152-153 (Appendix FR 2(2)).

to exploit the forest".[26] Dishonest practices, collusions among importers and exporters, as well as largescale theft of logs, became rampant. One timber firm in Sapele estimated its losses from log thefts at £200 per month.[27] Although there was changing preferences for different timbers in overseas markets, the number entering the trade by 1949 exceeded 20. It is recorded in 1947 that "the percentage of "other species" rose from 6.4% in 1945 - 46 to 17% of the total in the present year" and "the largest timber firm, the United Africa Company, now takes nearly thirty species in the high forests".[28]

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26 Rosevear, D.R., 1953. "Forestry". In the Nigerian Handbook. Government Printers, Lagos, 1953. p.196.

27 Gordon, W.A., The law of forestry. H.M. Stationery office, London, 1955. p.42.

28 Forest Department, Nigeria, Annual report of the forest administration of Nigeria, 1946-47. p.14.

In summary, the period 1929 - 1949 represented a crucial development phase for the Nigerian timber export trade. The great expansion of the quantity and number of timbers exported was spurred by external demand. The domestic timber industry had similarly expanded to take advantage of the new opportunities and some restructuring took place to gradually introduce processed products. Private industry (mainly foreign capital and manpower) played a major role in this expansion. But the initiative had come primarily from the government and the forest department which actively promoted Nigerian timbers in overseas markets, and at home, established pilot sawmills to encourage private industry and demonstrate possibilities of more efficient utilization of the forest resource.

2.3.4 The period since 1950

In Table 28 are shown exports of wood products from Nigeria between 1950 and 1973. The trends of total and individual product growth are illustrated in FIGS. 3 and 4, respectively. The general indication is that the total value and volume of exports rose steadily from 1950 until 1964 and thereafter declined. The growth of logs and sawnwood exports have also tended to fluctuate together, though the former has fluctuated more violently. Veneer and plywood exports maintained a steady, if not a rising growth trend throughout the period. Years of growth spurts, such as 1951, 1960, 1964 and 1973, as well as years of depression, 1952, 1962 and 1965 - 1971, in the trade can also be easily recognized from the data in Table 28.

Between 1949 and 1950, the total value of wood products exports from Nigeria doubled to reach $7.8 million in the latter year. It doubled

Table 28. Nigerian Wood Products Exports, 1950 - 1973

	Logs		Sawnwood		Veneer & Plywood		Total	
	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.
	(VOL. = 000 M^3; VAL. = $000)							
1950	261	6233	15	627	11.60	975	287.60	7835
1951	477	14218	27	1338	11.01	1151	515.01	16707
1952	218	6028	26	1420	12.77	1464	256.77	8912
1953	334	9024	32	1756	12.94	1515	378.94	12295
1954	290	7785	36	2033	13.25	2456	339.25	12274
1955	410	10438	42	2467	15.12	2114	467.12	15019
1956	300	7143	49	2764	15.07	2593	364.07	12500
1957	367	9313	53	2573	12.18	2092	432.18	13978
1958	434	11600	62	3385	14.61	2548	510.61	17533
1959	547	13656	63	3310	14.98	2660	624.98	19626
1960	629	16598	59	3111	19.09	3072	707.09	22781
1961	576	16437	62	3480	20.33	3329	658.33	23246
1962	459	12247	66	3643	21.78	3629	546.78	19519
1963	529	15246	77	3814	20.53	2901	625.53	21961
1964	596	17886	86	4292	21.10	3074	703.10	25252
1965	462	13868	81	4183	24.92	3380	567.92	21431
1966	440	12579	74	3640	21.01	2985	535.01	19204
1967	261	7118	53	2475	14.87	2192	417.87	11785
1968	246	7086	59	2873	16.54	2089	321.54	12048
1969	256	8341	67	3475	20.22	2624	343.22	14440
1970	211	5617	45	2940	26.16	2790	281.16	11347
1971	250	5157	33	2247	21.00	2691	304.00	10095
1972	158	5669	53	3062	22.40	2583	233.40	10607
1973*	335	14504	39	2248	21.00	2691	395.00	19443

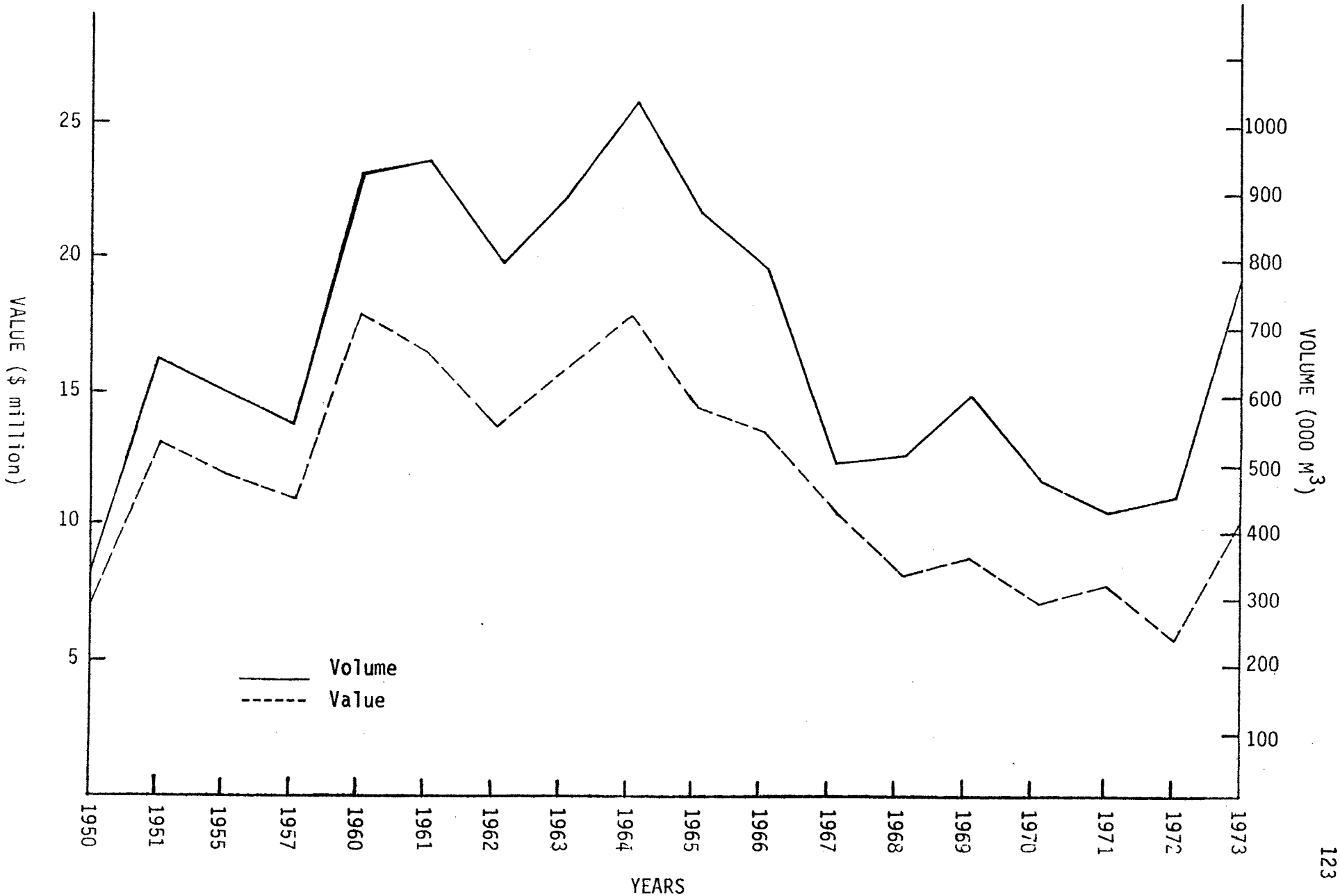
SOURCE: 1. Federal Office of Statistics, Nigeria Trade Reports, 1950-1960. Lagos.

2. _____, Nigeria Trade Summary, 1961-1972. Lagos.

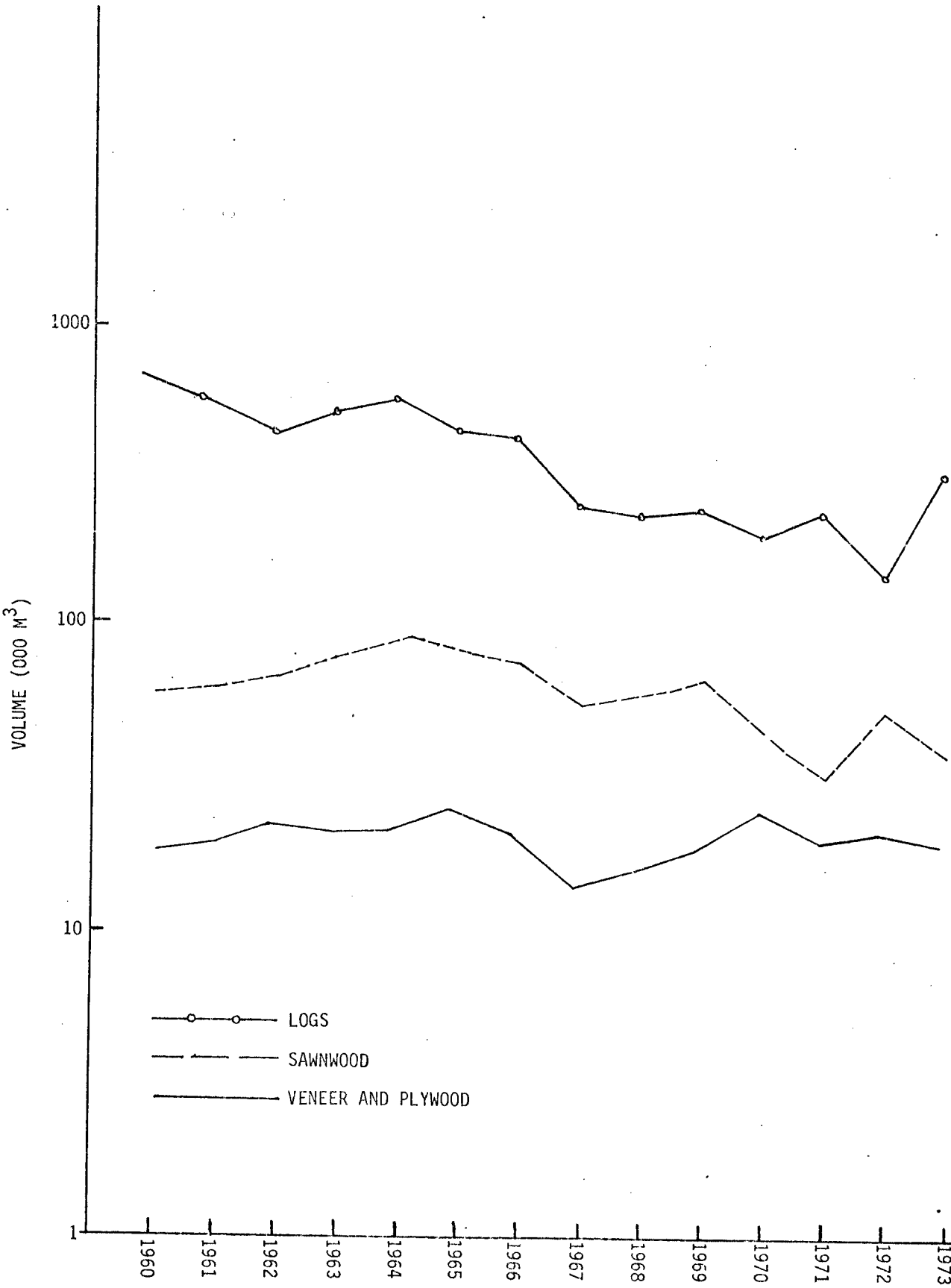
* Estimate, See FAO, 1974, Yearbook of Forest Products Statistics, 1973 (Review) Rome.

again between 1950 and 1951. Total exports in 1952 was $9.5 million, a decrease of nearly 47% compared to 1951. However both volume and value of the exports increased steadily from 1953 to reach an all time record of 707,000 m^3 valued $24 million, in 1960. The trade registered another peak

FIG. 3. TOTAL VOLUME AND VALUE OF NIGERIAN WOOD PRODUCTS EXPORTS, 1950 - 1973



. FIG. 4. GROWTH TRENDS OF NIGERIAN EXPORTS OF LOGS, SAWNWOOD AND VENEER AND PLYWOOD, 1960 - 1973



in 1964 when 703,000 m^3 of logs, sawnwood, veneer and plywood, valued at $26 million was exported. From 1965, both the volume and value of total exports have declined continuously, although signs of recovery were again apparent by 1973. Finally, a visual inspection of the data in Table 28 also shows that the growth and fluctuations of the wood products export trade between 1950 and 1973 was primarily determined by the fortunes of log exports which weighed heavily in the total. In particular, a rapid decline of log exports is noticeable from 1965 with the volume exported in 1972 representing the lowest over the whole period.

In view of the extreme fluctuations of the volume and value of the wood exports during 1950 to 1973, no estimates of the annual growth rates of the series have been made in the present study; such estimated growth rates in fact, conceal variations in the export levels achieved between the years compared. It is clear, that quantitatively, wood products have,since 1965,become an insignificant item in Nigeria's total commodity trade. Before discussing the factors which have affected the level of the wood exports, it will be useful to examine their pattern.

2.3.5 Pattern of Nigerian wood exports

2.3.5.1 Product composition

The composition of Nigerian wood products exports for selected years is shown in Table 29. The share of logs in the total volume of annual wood exports has been very high and, for these years, averaged 84%. Sawnwood accounted on average for 11.5% and veneer and plywood made up the remaining 4.5%. What do these figures signify? Obviously, there have

Table 29. Composition of Nigerian Wood Products Exports, Selected Years

	(Percentages)			
	Logs	Sawnwood	Veneer & Plywood	Total
1950	90.6	5.2	4.2	100.0
1951	92.6	5.2	2.2	100.0
1955	87.8	8.9	3.3	100.0
1960	88.9	8.3	2.8	100.0
1964	85.0	12.2	2.8	100.0
1969	74.6	19.5	5.8	100.0
1972	67.8	22.7	9.5	100.0
1973	85.0	9.8	5.3	100.0
Average	84.0	11.5	4.5	100.0

SOURCE: Calculated from Table 28.

been fluctuations in the shares of the different products in total volume of annual wood exports, which, combined with the problems of accuracy of reported data, makes a more definite conclusion rather difficult. But the point has been made (Okigbo, 1964, Ntima, 1967) that the pattern of Nigerian wood products exports, which features 80% or more of the volume in logs, is unsatisfactory when compared to the situation in Ghana and Malaysia where sawnwood accounts for about 45% and 70%, respectively. On the other hand, the share of logs in the annual volume of wood exports by such major tropical wood producing countries as Ivory Coast, Gabon, the Philippines and Indonesia, has in recent years averaged 80 - 90%. In fact, the commodity shares in Nigeria's wood products exports are, on average, about the same as that of the tropical developing countries as a whole. In other words, the factors underlying the pattern must be traced to the simulataneous working of both domestic conditions and the nature of export markets for wood products.

Table 30. Unit Values of Forest Products and Proportion of Production Entering Into International Trade (1959 - 1961)*

Commodity	Unit Value (U.S.$ per m.t.)	Raw Material Index**	World Trade as Proportion of World Production (%)	Remarks
Unprocessed Roundwood			2	
Fuelwood	10	100	0.2	Great variation in quality.
Poles	30	100	2.0	
Pitprops	20	100	6.0	
Pulpwood	15	100		
Hardwood logs	35	100	8.0	
Utility Grades	10			
Quality Grades	50			
Coniferous Logs	25	100	0.9	
Processed Wood			11	
Sawn Hardwood	75	195	6.0	
Utility Grades	65			
Quality Grades	110			
Sawn Softwood	65	215	13.0	
Plywood	210	265	10.0	
Particleboard	115	140	9.0	
Pulp & Paper Products			16	
Fibreboard	90	140	19.0	Proportion in world trade has been stimulated by surplus capacity.
Woodpulp	125	310	16.0	Most production directly convertible to newsprint in integrated units.
Mechanical	65	165	7.0	
Chemical	130	330	20.0	
Paper & Paperboard	165	180	16.0	
Newsprint	135	190	54.0	Usually tariff-free. Imports subsidized in some countries.
Fine Paper	230	240	7.0	High import tariff in most countries.
Paperboard	120	110	5.0	

* All data are approximate.

** Tons of raw material required to produce one ton of product x 100. This depends on processing wastage, moisture difference and additives.

SOURCE: FAO, 1965. Timber trends and prospects in Africa, Rome. 165 pp.

The concentration of the Nigerian wood products export trade on logs must be accepted as undesirable, and a determined effort should be made to raise the proportion of wood exported in processed form. The advantage to be derived from domestic processing of wood before export, is indicated in Table 30. It is only through increased processing that more complete utilization of wood and the introduction of new timbers to the market, can be effected. Moreover, increased processing would contribute to domestic incomes via the higher value-added, (subject to repatriation of incomes by foreign factors), provide more employment opportunities and enhance development of indigenous entrepreneurship and skills. Finally, log exports suffer the advantage of bulkiness and very high freight costs per unit value, whereas sawnwood, veneer and plywood not only have a higher relative transportability (Duerr, 1960) but should receive a more favourable consideration for shipping space, especially, if adequately packed.

If Nigeria wishes to maximize the benefits from wood products export trade, increased domestic processing is imperative. However, production of processed wood, though theoretically desirable, is not enough; markets must be found for the processed output. This latter depends on many factors such as economic growth and wood demand trends of importing countries, the character of woods exported, effectiveness of marketing programs, and the existence, or otherwise, of trade barriers.

2.3.5.2 Species composition

The species composition of the wood products exported may be taken as one measure of the success of the trade and the effectiveness of utilization of the forest resources. In Table 31 is shown the "species" com-

Table 31. Volume of Nigerian Wood Products Exports by Species, Selected Years

(Percentages)

"Species"	1951	1953	1957	1960	1963	1967	1972	Average
LOGS								
Obeche	45.5	50.6	63.7	63.8	65.1	59.0	41.2	57.0
African Mahogany	12.8	8.9	2.7	2.2	5.4	5.8	1.3	5.6
Sapele Wood	2.3	4.8	4.5	4.0	3.5	3.9	2.3	3.6
Abura	20.8	20.2	17.8	11.3	9.2	6.3	10.3	13.7
Agba	7.0	6.6	3.4	4.0	2.8	7.0	9.5	5.8
Iroko	0.8	2.1	2.2	1.7	0.8	0.4	1.1	1.3
Guarea	0.8	0.9	1.9	0.9	1.2	0.6	3.1	1.3
Idigbo	0.8	1.8	0.4	0.6	0.5	0.2	0.4	0.7
African Walnut	1.5	1.2	1.0	1.1	1.4	0.2	2.3	1.2
Afara	1.8	0.1	0.1	1.5	0.2	0.6	0.8	0.7
Sub Total	94.1	97.2	97.6	91.1	90.1	84.0	82.3	90.9
Other Species	5.9	2.8	2.4	8.9	9.9	16.0	17.7	9.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SAWNWOOD								
Obeche	31.9	33.4	32.7	34.3	32.9	29.6	10.2	29.3
African Mahogany	11.5	8.4	6.7	4.1	3.0	3.5	0.6	5.4
Sapele Wood	5.4	7.0	4.2	4.8	3.8	5.0	0.5	4.4
Abura	0.6	3.0	3.1	1.9	1.2	0.8	0.1	1.5
Agba	25.9	14.7	17.2	15.6	15.9	19.3	2.3	15.8
Iroko	2.7	3.0	4.1	3.3	3.1	6.1	1.2	3.4
Guarea	4.5	11.0	8.9	6.6	8.6	3.5	1.2	6.3
Idigbo	2.1	1.0	2.5	2.1	1.5	1.5	0.2	1.6
African Walnut	5.5	3.8	3.3	7.0	5.7	2.4	2.0	4.2
Afara	0.4	0.4	0.3	0.2	4.6	0.2	..	0.9
Sub Total	90.5	85.7	83.0	79.9	80.3	71.9	18.3	72.8
Other Species	9.5	14.3	17.0	20.1	19.7	28.1	81.7	27.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE:
1. Forest Department, Nigeria, Annual report of the forest administration of Nigeria, 1951-52. Table B. p.34.
2. Federal Office of Statistics, Nigeria trade report. Lagos, 1953 and 1957. Lagos.
3. Federal Office of Statistics, Nigeria trade summary, 1960, 1963, 1967 and 1972. Lagos.

position of Nigeria's wood products exports for selected years. The data clearly indicate the high species concentration of the trade. One "species" (obeche) has accounted, on average, for over 55% of the annual volume of log exports. Two timbers, (obeche and abura) together, have accounted for roughly 70%, while the average share of the 10 leading ones is about 91%. A similarly high, though lower, degree of concentration of exports on a few timbers is also noticeable in respect of sawnwood. Two "species", obeche and agba, have on average, accounted for 45% of the annual export volume. Exports of mahogany in form of logs, and sawnwood, have declined steadily since 1950 due, partly to exhaustion of supplies and, partly, to the fact that an increasing proportion of this species has been diverted to domestic manufacturing of veneer and plywood. It is also of interest to note that whereas agba forms a higher proportion of sawnwood than it does of logs, the reverse is the case in respect of abura and guarea.

The variation in both quantity and shares of timbers exported is primarily a reflection of the preferences in export markets. Frequently, choice of wood and product size specifications are determined by the importer. In Nigeria, the number of timbers in the wood products export trade has risen from only 5 in 1938 to more than 40 for logs and, 25 for sawnwood. It appears that at least 30 of these are lesser known. They enter the trade irregularly, and in very limited quantities. For many of these timbers, the problem is frequently not market conservatism but one of availability of supplies. A leading timber export firm in Nigeria indicated to me that regular orders were being received for so-called "secondary" species but these could not be supplied because they were either not available or were uneconomic to exploit. It has been suggested (Plumptre, 1974) that the problem

of utilization of tropical timbers may be resolved by grouping them separately for decorative, utility and structural purposes. In Nigeria, it was estimated (Okigbo, 1964) that the high forests contain about 600 "species" of which 100 have potential commercial value. Of these only about 40 are being exported. It was observed that about 75% of the number of timbers in the trade may be classed as "lesser-known" judging by the volume of their annual exports.

Most tropical wood producing countries face the problem of finding market outlets for lesser-known, or lesser-used, timbers. But a comparison with Ghana or the Ivory Coast, reveals that Nigeria has made the least progress, as far as export markets are concerned (MacGregor, 1959; Wellwood, 1966). Thus, in Ghana, lesser-known timbers have made up about 30% of annual wood export volumes; in the Ivory Coast, they account for about 40%; whereas the comparable figure for Nigeria is about 5%. In general, the tropical hardwood trade has been conducted on the basis of species names rather than their known properties and performance. Assuming that adequate supplies are available, success of the lesser-known timbers in export markets is going to require intensive research into wood properties and promotional campaigns. As an alternative, these timbers could be utilized in more advanced wood products, such as in cores for plywoods, particle board and fibreboard, as well as in the manufacture of pulp and paper products.

2.3.5.3 Direction of trade

Nigerian wood products are now sold in more than 40 countries. In 1920, they were being sold only in the United Kingdom and in Germany.

Table 32. Direction of Nigerian Wood Products Exports, Selected Years

Destination	1961	1963	1965	1967	1969	1970	1972
	(Percentages of Values)						
United Kingdom	43.0	41.7	45.3	44.0	47.7	48.3	42.1
Fed.Rep.of Germany	20.3	18.0	12.3	10.5	10.5	9.7	10.8
France	..	0.6	0.3	0.6	1.5	0.4	0.4
Netherlands	15.9	17.7	17.7	15.3	9.6	6.1	8.1
Italy	11.2	12.0	12.1	13.6	14.8	16.9	14.9
Belgium-Luxembourg	..	1.5	1.7	1.9	2.0	2.3	0.9
Sweden	..	1.3	1.3	1.9	1.4	2.7	1.5
Norway	..	0.3	1.1	0.1	0.6	1.0	0.6
Finland	..	..	..	0.1	..	..	..
Denmark	1.7	1.5	1.4	1.9	3.1	4.5	3.2
Other Europe	..	1.3	2.5	4.5	2.9	2.4	4.8
U.S.A.	2.1	2.5	2.8	3.6	3.8	4.9	10.6
Canada	-	-	-	..	0.2	-	-
Israel	0.3	0.3	0.2	0.2	-	-	-
Japan	-	..	0.1	..	..	-	-
U.S.S.R.	-	-	0.3	0.9	0.3	..	-
Ghana	0.4	..	..	..	..	..	..
Other Africa	0.6	0.9	0.7	0.5	0.4	0.5	0.2
Other Countries	4.2	0.2	0.1	0.1	0.2	0.1	1.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Federal Office of Statistics, Nigeria trade summary, 1961, 1963, 1965, 1967, 1969, 1970 and 1972. Lagos.

Note: .. = negligible or less than 0.1%; - = NIL.

The number of countries reached, increased to about 15 by 1940. Diversification of the export trade is of great importance in ensuring stability of sales since poor market conditions in one area may be compensated by rising demand in another. In addition, it facilitates the spreading out of different timbers to take advantage of differential market preferences.

In Table 32 is shown the direction of Nigerian wood products exports for selected years. The most important single market is the United Kingdom

which has consistently accounted for over 40% of the total annual value of the sawlogs, sawnwood, veneer and plywood exports. Other markets, in order of importance, are the Federal Republic of Germany, Italy, and the Netherlands. These four countries together account for about 75% of the value of annual exports. The two leading countries, the United Kingdom and the Federal Republic of Germany, have accounted on average for about 55% of the total. The two other major markets are the Netherlands, whose share has tended to decline, and Italy, where it has increased. The data in Table 32 clearly show that Nigerian wood products exports, like those of other West African countries, have gone primarily to Western Europe. In the Nigerian case, Western Europe takes about 90% of the total annual exports by value. The U.S.A. represents a growing market, with its share rising from 2.1% in 1961 to 10.6% in 1972. In contrast, exports to other African countries and the Communist Bloc countries, have been insignificant.

A further examination of the export patterns, in respect of individual commodities, reveals the particular features of different markets. Table 33 contains the data for logs and sawnwood. (Details of the volume and value of exports by destination are given in Appendix 8, Tables 1 -14). The United Kingdom and Federal Republic of Germany constitute the major markets for logs with combined shares in total volume ranging from 60% to 70%. Together with the Netherlands and Italy, the four countries account for an average of 90% of the annual volume of wood exports from Nigeria. For sawnwood, the same pattern of high market concentration emerges. Indeed, market concentration is higher for sawnwood than for logs, with the average share of the United Kingdom at 71%. The U.S.A. has emerged

Table 33. Direction of Nigerian Wood Products Exports, Selected Years

Destination	1953	1957	1960	1963	1967	1972	Average
	(Percentages of Volumes)						
				LOGS			
United Kingdom	83.0	44.6	30.0	27.9	22.8	25.6	39.0
Fed.Rep.of Germany	5.7	29.9	31.0	25.4	17.9	19.7	21.6
Netherlands	1.7	12.7	21.7	24.1	22.9	5.8	14.8
Italy	2.2	4.9	11.1	14.4	19.7	27.4	13.3
France	..	..	0.3	0.6	0.8	2.1	0.7
Belgium-Luxembourg	..	0.1	0.6	2.0	2.7	1.9	1.5
U.S.A.	0.6	0.2	0.3	0.1	0.2	0.5	0.3
Spain	-	-	-	0.5	5.4	4.9	1.8
Norway	0.1	0.2	0.8	0.3	..	0.9	0.6
Denmark	1.0	2.1	2.5	1.8	2.7	5.0	2.5
Other Countries	5.8	5.3	1.7	2.9	2.7	6.2	4.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				SAWNWOOD			
United Kingdom	91.9	86.0	73.0	66.8	70.3	39.2	71.2
Fed.Rep.of Germany	..	1.5	3.5	5.5	1.4	2.2	2.3
Netherlands	0.2	5.0	3.4	4.2	4.7	3.2	3.5
Italy	-	0.2	0.3	1.1	0.8	1.3	0.6
France	-	-	..	0.1	0.2	0.1	0.1
Belgium-Luxembourg	..	..	0.3	1.0	2.0	0.5	0.6
U.S.A.	0.4	2.7	13.5	10.8	13.2	48.2	14.8
Spain	-	..	..	0.3	2.1	0.5	0.5
Norway	-	0.3	0.2	0.3	0.1	0.3	0.2
Denmark	0.1	0.3	-	-	0.4	1.8	0.4
Other Countries	7.4	4.0	5.6	9.8	4.8	2.7	5.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: 1. Federal Office of Statistics, Nigeria trade summary, 1960, 1963, 1967 and 1972. Lagos.

2. _____, Nigeria trade reports, 1953, 1957 and 1960. Lagos.

Note: Totals may not add up due to rounding errors or omission of negligible values. .. = negligible (less than 0.1%); - = NIL.

Table 34. Direction of Nigerian Exports of Veneer and Plywood, Selected Years

Destination	1961	1965	1970	1972
	(Percentages of Values)			
United Kingdom	94.0	92.0	88.0	89.8
Fed. Rep. of Germany	-	..	..	-
Netherlands	2.0	6.0	3.0	0.4
Italy	-	-	-	..
U.S.A.	-	-	-	6.0
Other Countries	4.0	2.0	9.0	3.8
Total	100.0	100.0	100.0	100.0

SOURCE: Federal Office of Statistics: Nigeria trade summary, Lagos, 1961, 1965, 1970 and 1972. Lagos.

Note: .. = negligible (less than 0.1%); - = NIL.

as the second most important market for Nigerian sawnwood, its share in the total annual export volume having risen from under 1% in 1953 to 48% in 1972. Other countries which have regularly imported significant quantities of Nigerian wood products in recent years include Spain, Poland, Denmark and Greece. Finally, it should be noted that France, an important European hardwood consumer, imports only very limited quantities of Nigerian logs and hardly any sawnwood, veneer, or plywood.

Exports of veneer and plywood from Nigeria began in 1947 and have gone almost entirely to the United Kingdom as shown in Table 34. Exports of veneer and plywood to the Netherlands have fluctuated widely. There have been some exports of veneer to the U.S.A. since 1970.

A high concentration of products, wood "species" and markets characterize the Nigerian wood products export trade. Western Europe continues to be the major market for all the classes of commodities

Table 35. Commodity Distribution of Nigerian Wood Products to the Five Leading Markets in 1961, 1965 and 1970

Destination	(Percentages of Volume)											
	1961				1965				1970			
	A	B	C	Total	A	B	C	Total	A	B	C	Total
United Kingdom	41	26	33	100	38	30	32	100	23	35	42	100
Fed. Rep. of Germany	98	2	-	100	95	4.7	0.3	100	95	4.6	0.4	100
Netherlands	94	4	2	100	88	6	6	100	61	28	11	100
Italy	99	1	-	100	98	2	-	100	96	4	-	100
U.S.A.	5	95	-	100	18	82	-	100	2	98	-	100

SOURCE: Federal Office of Statistics, Nigeria trade summary, 1961, 1965, 1970. Lagos.

A = Logs, B = Sawnwood, C = Veneer and Plywood.

considered. Within Western Europe, however, there have been strong preferences for particular products and/or wood species (see Table 35). Thus, over 95% of the exports to the Federal Republic of Germany is comprised of logs. Over 90% of the logs exports are in two wood species, obeche and African walnut. In contrast, 95% of the exports to the U.S.A. is sawnwood, primarily of mansonia and African walnut timbers. The United Kingdom is the most broadly-based market, with a more even distribution of its imports between logs, sawnwood and plywood. Almost all wood species in the trade have been exported to the United Kingdom.

2.3.6. Possible explanations of Nigerian wood products export patterns

The observed patterns of Nigeria's wood products exports may be attributed to a variety of factors. One, the product concentration of the

trade is, partly, an indication of the fact that the more processed products (sawnwood, veneer and plywood) are more difficult to produce and market internationally than logs. Log exporters are able to avoid the necessity of investment in processing facilities and producing to the more rigorous standards of international product specifications. Many wood products exporters in Nigeria do not operate processing mills or, where they do, are unable to meet the importer's specifications due, either to poor equipment and manufacturing methods, or the low quality of available wood supply.[29] Concentration on log exports is, also, partly a reflection of trade policies in importing countries. As already indicated, most of the developed countries which import tropical hardwoods are primarily interested in logs for conversion in local mills. These policies, which aim to protect value-added and employment in domestic industries, have been implemented with the aid of tariff escalation, whereby log imports are generally allowed into the country but other wood products face increasing duties according to degree of processing. An additional factor in the Federal Republic of Germany has, however, been a lack of confidence in the exporter to produce to the required specifications (Farquhar, 1966).

Two, trade preferences have been a significant factor in directing Nigeria's wood products exports to the United Kingdom, where she had duty-free access to the market under the Commonwealth Tariff Preference Scheme provided under the Ottawa Agreement of 1932. In contrast, exports of sawnwood, veneer and plywood faced varying levels of import duties in the

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29 Wellwood, R.W., 1966. Forest industries: Report to the government of Nigeria, 1966. 64pp.

original six EEC countries established under their Common External Tariff. Past political and economic relationships with the United Kingdom has also been an important factor.

Three, geographic proximity to Western Europe has meant that Nigerian wood exporters should look first to that market for their sales. Wood is a bulky commodity which attracts high freight rates in relation to unit value. Processing leads to weight loss and permits exports to more distant markets. Four, the pattern of Nigerian wood exports has been affected by limited knowledge of the markets by exporters. Most of the wood-exporting firms generally concentrated on markets, in their countries of origin, with which they were more familiar and usually had established commercial contacts. This is particularly true of the foreign-owned firms which exported their products mainly to their countries of origin. Thus, it is more than coincidence that the largest wood exporting firm in Nigeria was British owned and managed. Similarly, recent veneer exports to the U.S.A. has come from a veneer mill in Calabar with substantial U.S. financial interest. Diversification of markets requires knowledge and information to be available to producers. These can frequently be acquired only after intensive search and considerable expense (Hirsch, 1960). The majority of Nigerian wood exporters have neither the resources nor the expertise needed to acquire the essential knowledge and information about markets.

Five, the concentration of the trade on a few timbers was previously explained (p.131) in terms of buyer ignorance, user conservatism and consumer preferences in importing countries. Introduction of new timbers to export markets may involve considerable expense to overcome buyer uncertainty and consumer resistance. Wood products exporters in Nigeria in-

terviewed by me have accepted the desirability of introducing lesser-known woods to the export trade but, stressed that its implementation is beyond the capabilities of individual producers. In addition, they argued that a start could be made by promoting the domestic use of such timbers in order to make available for export the more valuable ones which are currently wasted in inferior uses at home.

The foregoing explanations of the observed patterns of Nigeria's wood products export trade are not necessarily exhaustive. For example, the institutional arrangements for wood marketing, corporate links between wood-exporting firms and headquarters located in foreign countries, together with the complex accounting and transfer pricing practices, which the latter facilitates, may be additional factors (Westoby, 1975). These may be relevant to the Nigerian situation but it is impossible to obtain reliable information for their assessment.

2.4 Factors in Nigeria's wood products export development

Development of the Nigerian wood products export trade has been influenced by both external and internal factors. Howard (1928) summed up these factors as "vested interests", "apathy of the producer" and "blind prejudice of the buyer". The external factors include the general economic conditions of importing countries, foreign-user knowledge of the properties and uses of tropical timbers, trade barriers, competition from alternative wood suppliers and from non-wood substitute products, and consumer preferences. Among the internal factors are the diminishing resource base, capability of the timber industry, timber allocation and pricing

policies, freight, export taxes, domestic demand for wood,and the role of government. An understanding of the impact of these forces is essential to the formulation of sound policies towards wood products exports in Nigeria.

2.4.1 External factors

The export of any commodity is possible only where a demand for it exists. The tropical hardwood export trade developed in response to rapidly increasing demand for wood in the high wood-consuming centres of Europe, North America and Japan. Early tropical hardwood exports were demanded for special uses because of their attractive decorative properties. Over the years, however, the volume of trade in these woods has expanded rapidly as their application to many and diverse end uses has stabilized.

Several studies on the trends of demand for wood in the industrialized countries of Europe and North America have been carried out in recent years (FAO, 1955, 1966; 1974; Hair, 1969; U.S.D.A. 1973; UNCTAD and GATT, 1973). These studies will not be reviewed in detail here,but it suffices to note that all have concluded that excellent opportunities exist for expansion of tropical hardwood exports. In a study of the tropical sawnwood market in Western Europe, UNCTAD/GATT (1973) observed that the problem is not one of demand but the capacity of the tropical countries to bring forth the supplies. Hair (1969), in a study of hardwood consumption trends in the U.S.A., forecast increasing imports from tropical sources up to the end of the present century. Thus, demand per se,

in importing countries cannot be regarded as a factor limiting the Nigerian wood products trade. However, wood demand in industrialized countries has been noted (Zivnuska, 1952) to move in sympathy with the cycle of building activity. This is reflected in booms and slumps in wood consumption, separated by intervals of 10 to 15 years, which are inevitably transmitted to the trade in tropical hardwoods.

If external demand per se, is not a limiting factor on the Nigerian timber trade, the problems of market acceptance, access, consumer preferences must still be overcome. Of these, market acceptance turns out to be the most important for Nigeria's wood products. Market acceptance extends beyond the technical aspects of satisfactory performance to the economic ones of steady supplies in sufficient volume and at the right prices. In a description of this problem in 1928, the Imperial Institute Advisory Committee on Timbers stated that:

> "The introduction of "new" timbers is not an easy task. Apart from useful technical qualities, a timber must be able to compete in price with an established timber of the same class, while supplies must be available regularly in quantity and offered in sound condition. If manufactured, it is essential for the timber to be true to size and specification. For various reasons it is often difficult to comply with all these requirements... Again architects and other timber users hesitate to take risks with woods of which they have no experience and hence trade receives no demands for new woods which otherwise they might be stimulated to supply. Further the predilection of the workman for a relatively small number of well-tried timbers is no small factor in the situation - such a position is not satisfactory and can best be improved by demonstration to the parties interested that excellent new timbers or timbers used less extensively than their merits warrant are available from Empire sources and can be recommended for a variety of purposes".30

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30 Imperial Institute, London, 1928. Descriptive list of some Empire timbers recommended by the Imperial Institute Advisory Committee on timbers. Imperial Institute, London. 77pp.

In the Nigerian case, failure to sustain supplies of many timbers already in the trade has generally hindered introduction of new ones.

The influence of trade barriers on the Nigerian wood products exports trade can be described, at worst, as slight. All the wood products enter the United Kingdom free of duty. The logs and sawnwood exports to the other major markets in Western Europe and North America are exempted from duties. With the entry of the United Kingdom into the EEC in 1973, and their implementation of the Kennedy Round tariff concessions, duties on veneer and plywood will be, eventually, eliminated. Nigeria's veneer and plywood exports are, however, still subject to import duties in the U.S.A., the worlds largest and fastest growing market for this commodity class. Removal of such duty barriers could increase the exports to this market, but stiff competition from Asian exporters and the very tight product specifications of American importers, appear to be the major hindrances to this trade.

Consumer preferences and competition from other tropical hardwood suppliers have been important factors influencing the Nigerian wood export trade. Consumer preferences have been determined, not so much by price relationships of wood and non-wood products, but by changes in fashion and tastes. These preferences are reflected in consumer choices between hardwoods and softwoods, between different hardwoods, as well as between wood and non-wood products. It is consumer preference which has given Asian redwoods the competitive edge over most African timbers in Western European and North American markets. UNCTAD and GATT (1973) have observed that, for sawnwood, better organization, higher quality and ability to produce to specifications, as well as faster delivery, have enabled Asian wood

exporters to capture an increasing share of the Western European market at the expense of African producers.

The general feeling among Nigerian officials has been that the timber industry has not been active in exploiting the widening overseas markets for wood products. The timber industry has insisted that it is domestic production conditions and government policies which hinder the development of the trade.

2.4.2 Internal factors

Successful export performance depends on recognition of available opportunities as well as the willingness and ability to exploit them. (Slijper, 1972). It has been noted (p.138), that the majority of Nigerian wood products exporters either have limited knowledge of export market opportunities, or do not possess the means to exploit them. Full exploitation of the available opportunities has been hindered by a number of other internal factors.

2.4.2.1 Resource base

A most important factor is the size and nature of the resource base. Forest reserves in Nigeria amount to only 10% of the country's total land area. Productive forest reserves constitute only 2% of the total land area. The timber industry is concentrated in the Western and Mid-Western States, whose productive high forest reserve area is approximately one million hectares, 55% of the total high forest area. For many years the wood export trade was based on timber exploitation outside forest reserves. Uncontrolled exploitation and shifting agriculture have virtually eliminated

all commercial timber from outside reserves. Since 1960, the forest reserves of the Western and Mid-Western States have been increasingly brought under exploitation to meet rising wood demands for domestic consumption and for export. Given the extreme bias towards a few timbers and the inefficient logging practices of the industry, the threat of exhaustion of supplies has become ever more imminent. In the event of a shortage of wood supplies, it is expected that the export trade should be the first to suffer. Substantial forest reserves still exist in the South-Eastern State, but inadequate information about its contents and political problems have discouraged movement of the timber industry to this region.

2.4.2.2 Allocation and pricing of timber

A second, and related factor is the timber allocation and pricing policies. In Nigeria, this is the responsibility of the government which exercises monopoly power on behalf of the owning communities. In general, forest concessions have been allocated to firms on the basis of requirements and ability to pay the stipulated fees and royalties. However, Mabogunje et al. (1969) found that, in Western Nigeria, there were several cases of unauthorized and illegal forest allocations. Although the regulations for allocation of concessions require the concessionaire to own and operate processing facilities, concessions were often granted to applicants without facilities for exploitation and processing of timber. Such successful applicants usually resold their concessions to other firms for a commission. Consequently, wood costs to timber processing firms tended to be higher than they would otherwise have been, with adverse effects on the competitive ability of wood exporters. In addition, local communities have frequently interfered with the choice of concession holders on the

basis of their identity rather than ability.

Timber pricing policies in Nigeria have been a major cause of disagreement between the government and the timber industry. In 1969, the President of the Nigeria Timber Association described the change in the timber pricing system in Western and Mid-Western Nigeria in 1968, as "unreasonable and a move calculated to kill the goose that lays the golden eggs".[31] The government has defended the change as necessary to induce more efficient utilization of the forests and to offset the increasing costs of silvicultural operations. The timber trade has based its case on the fact that the governments in Ghana and the Ivory Coast charge lower fees for timber. Mervart (1968) and Nautiyal and Love (1971) have demonstrated that fees and royalties based on unit areas represent the optimal timber pricing policy under depleting resource conditions. In my view, the unit area system of assessing timber fees and royalties is theoretically sound on economic grounds but it is essential that they be based on accurate information about the volume of standing timber and make adequate allowance for differential location and accessibility. MacGregor (1959) suggested application of a "sliding scale" of fees and royalties for Nigerian timber, based on the market prices of wood. This is essentially, the "residual" approach to timber pricing, which takes full

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31 See, for example, NTA, "Presidential Address". The annual general meetings of the Nigerian Timber Association, 1968, 1969 and 1970. Unpublished. Also, "Minutes of a Conference Held Between Representatives of the Forestry Division of the Western and Mid-Western Regional Governments, the University of Ibadan (Forestry Department) and the Nigerian Timber Association", held in Benin City, 1966; Ibadan, 1968; and Benin City, 1974.

account of industry production costs (Weintraub, 1958; Davis, 1966). In Nigeria, where industry production costs data are either unavailable or too unreliable, the residual or stumpage appraisal approach to determination of timber prices does not appear as feasible at present. However, it is essential to establish equitable prices for timber, the most important input of the wood-based industries. To achieve this, in Nigeria, requires mutual confidence and cooperation between the government and the timber industry.

2.4.2.3 Export taxes

Export taxes were first levied on Nigerian timber in 1951. The rates of duty varied between 5% and 10% ad valoreum for logs, and 2½% and 5% for sawnwood. It is of interest that the export duties were first imposed on sawnwood, and later extended to log exports. Veneer and plywood exports have been exempt from taxes.

Wood products exports have been affected by the general periodic changes in the tariff structure designed to increase government revenue. In 1970, export taxes on logs and sawnwood were raised to 20% and 10% ad valoreum, respectively. The timber industry vehemently protested against the increases, especially in respect of sawnwood. The government may be justified in raising taxes on commodity exports for revenue purposes. It appears, however, the possibilites of employing such taxes to induce exports of processed wood products have not been fully appreciated by policy makers in Nigeria. The potential increase in government revenue needs to be carefully weighed against the possible "losses" from wood exported in form of

logs, which might occur where the differential tax (between logs and processed wood exports) is not sufficiently great. Export tax concessions may, to a great extent, stimulate exports of processed wood products (Towler, 1975).

2.4.2.4 Freight

Freight rates on Nigerian wood exports have been rising steeply and are among the highest in the world, accounting for up to 60% of the delivered price. According to Mr. Brisbourne (1970);[32]

> "The greater barrier to the development of the West African timber export trade is the level of freight rates charged by the shipping lines....It is estimated that since the year 1959, the rates on export logs have increased by 98% and for sawn lumber (unbundled) by 112% and as the year (1968) ended we were notified of the intention of the conference lines to impose a further increase of 10% during the year 1969".

The trade subsequently reacted by arranging shipments with East European shipping lines but its position has not been strengthened by the irregularity of this service, even though it induced greater cooperation from the West African Conference Lines. Monopoly of the West African carrier service by the Conference Lines has not been the sole cause of rising freight rates on timber exports. Nigerian port facilities have been generally inadequate, frequently congested, and ill-equipped to handle wood products exports. Moreover, wood cargo has been consistently discriminated

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32 Brisbourne, R., 1970. "Hard times for Nigerian timber", Timber Trades Journal, December 1970. p.21.

against in allocating shipping space in favour of the government-sponsored marketing board produce.[33] Thus, interminable delays, high handling and insurance costs (usually borne by the importer) have discouraged wood exports from Nigeria.

2.4.2.5 Capability of the timber industry

Many of the problems of the Nigerian timber export trade reflect the deficiencies of the timber industry. The industry has developed essentially without any planning and little governmental control. Consequently, there has been a proliferation of small, uneconomic plants which are poorly located and using out-dated equipment. Many mills have been set up without adequate thought of raw material supplies and employing inexperienced managers. A high proportion of the wood products exported comes from a few mills employing modern techniques and equipment. Given the optimal conditions, and government cooperation, these firms should be able to produce to international product specifications and compete effectively in export markets.

The timber trade also features a large number of exporters whose volume of business is completely out of proportion to the damage they do to the country's reputation. Usually without wood processing facilities or concessions, these speculators, who operate as part-time timber traders from their bedrooms, have perpetrated malpractices which destroy the importer's confidence in Nigerian wood products. To protect the industry and

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33 Minutes of Conference, 1966. op.cit. p.5.

Nigeria's reputation in the overseas timber trade, the government encouraged the formation of the Nigeria Timber Association in October, 1956. In a speech to representatives of the timber trade in 1954, the Minister of Commerce and Industries, remarked:

> "....we are all of us aware that in the past five years, particularly in the timber boom, the reputation of Nigerian timbers has suffered through the malpractice of a few individuals. That is a matter of concern not only to the trade but also to the government of Nigeria. I feel that if you form an association, you yourselves will be in a far better position to deal with such malpractices in future than any Government Department could be. With an association, in short, you would be in a much better position than you are now to safeguard the reputation of the Nigerian timber trade".[34]

The establishment of the Nigeria Timber Association has been valuable in helping to check malpractices in the trade but has not eliminated it. The Association, in 1961, established a Voluntary Log Inspection Service and applies its seal to inspected timber which can be identified by the overseas importer as a mark of quality. It is not in any position to control activities of non-members. Some members have withdrawn because of the heavy burden of membership fees or stringent discipline imposed on them, by association rules, for minor offences. In the last five years, membership of the Association has declined rapidly and many timber exporters interviewed expressed the view that it has outlived its usefulness.

The weakening of the Nigerian Timber Association has revived

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34 Secretary's Report on the Progress and Activities of the Nigerian Timber Association. Lagos, 1968. p.1.

demands for the establishment of a Timber Export Marketing Board under government control. The usefulness of such a board depends on its functions and the extent of its powers. It is doubtful if a Timber Export Marketing Board, to assume responsibility for the bulk purchase of Nigerian timber for resale in export markets, is desirable or even necessary. The results of a similar experiment in Ghana in 1967 has clearly demonstrated the inherent difficulties of organizing the timber export trade through a Marketing Board.[35] Such a Board might be established on a similar pattern to the reformed Ghana Timber Marketing Advisory Board (Boateng, 1968), to provide advice and services to exporters. Similar agencies have been established in the Ivory Coast, the Philippines and Malaysia. In addition, the Timber Marketing Board could assist in the establishment of an appropriate timber grading system, provide wood seasoning and preservation facilities to small-scale producers, arrange programs for the promotion of wood products in export markets, and operate a log depot for the sale or purchase of timber by local timber producers.

It cannot be over emphasized that the present structure of the Nigerian timber industry is deficient for meeting the international standards of wood products specifications. It should be stressed that a timber industry successful in export markets would also serve the needs of domestic wood consumers more efficiently. Any reform of the organization of the timber export trade should, therefore, be implemented as

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35 See, Republic of Ghana, 1968. Report of the commission appointed to enquire into the affairs of The Ghana Timber Marketing Board and the Ghana Timber Cooperative Union. State Publishing Corporation (Printing Division) Accra-Tema, Ghana. 150pp.

part of a program to improve the efficiency and capabilities of the timber industry.

2.5 Summary

The development of the Nigerian timber export trade has been examined against the background of international trade in tropical wood products. International trade in tropical hardwoods has grown rapidly during the last 15 years, stimulated by the rapid increase of wood consumption and insufficiency of domestic supplies in the industrially advanced countries. The continued expansion of the trade faces bright future prospects provided tropical wood producing countries can take the measures necessary to ensure that the required supplies are available at reasonable prices, and if importing countries are willing to make necessary adjustments to barriers which restrict access to their markets. An international approach to solutions to the problems of the trade is suggested.

Nigeria's wood products trade emerged in the last decade of the 19th century with exports of mahogany logs to Europe. Efforts of the government, expansion of the timber industry, and favourable external demand stimulated the growth of the trade, especially after 1950. The trade at its height, accounted for about 5% of the annual value of domestic exports. The products exported include logs, sawnwood, veneer and plywood, involving about 40 timbers and sold in more than 30 countries. Following a period of sustained growth from 1950 to 1964, annual volume and value of wood products exports declined continuously from 1965. The pattern of the exports

shows a high concentration of products (on logs), markets and species. The pattern of the trade was explained in terms of problems of marketing and market access, geography and transport costs, trade policies of importing countries,and the influence of trade preferences based on close economic and political association with a former colonial power.

The factors affecting the growth of the export trade were categorized into external and internal influences. External factors were not considered to be as crucial as the internal factors. The latter include the inadequacy of the resource base, timber allocation and pricing policies, export taxes on timber, and capability of the timber industry.

In conclusion, it is stressed that cooperation and assistance of government are essential to the progress of the timber export trade. However, the role of government should be dictated by the importance it attaches to the exports of wood products in the context of developing the forest resources for the economic and social improvement of Nigerians. The role of forestry in the Nigerian economy is appraised in Chapter Three.

CHAPTER THREE

FORESTRY AND THE NIGERIAN ECONOMY

3.1 Introduction

It was indicated, in Chapter One, that there is nothing sacrosant about forestry. Forestry and forest industries constitute one of many competing sectors in an economy. Its importance should be judged by its relative efficiency in utilizing scarce resources to promote national development and welfare. Many countries can, and have been able to, do without significant forest resource endowments, but this does not mean that a country can dispense totally with the products and services of forests. Sartorius and Henle (1968) have illustrated, with the examples of medieval Europe and contemporary North Africa, how wanton destruction of forests by excessive harvesting, overgrazing, and/or uncontrolled shifting agriculture, could lead to

"diminished population, a stagnant or regressing economy and eventual decline of political power". More recently, interest in forestry has focussed on its role as a potentially propulsive influence on the general economy (Westoby, 1969).

The present chapter appraises the role of forestry in the Nigerian economy, using indicators such as contribution to GDP, foreign exchange earning, domestic incomes and employment, and value-added in manufacturing. The degree of interdependence between the sector and the rest of the economy is extremely difficult to determine for a number of reasons. Firstly, there is the general problem of a lack of an adequate and comprehensive statistical base. In such an economy, the national accounting system is generally undeveloped (Eke, 1966). The Gross Domestic Product may be underestimated because monetary transactions cover only a part of the total national output.

Secondly, forestry activities are frequently lumped with agriculture. Nautiyal (1967) has noted this practice and suggested that "it is reasonable to treat agriculture and forestry as two independent sectors in economies which are either developed or wish to be developed". Thirdly, forests often produce non-timber values such as recreation, water supply, wildlife, soil protection and amelioration of climate. In some regions the extra-market values may be more important than the timber production function of forests. The non-timber values of forests defy quantification in monetary units. Consequently, the actual contribution of forestry to an economy may tend to be understated in national accounts and, the sector accorded unduly low priority in development programs (Leslie, 1971).

The forestry sector of an economy may be defined to include forests, other wildlands, and all those activities connected with the development and

use of forest values. In Nigeria, what constitutes the forestry sector is not so clearcut. For example, all unoccupied lands outside forest reserves have, in principle, been declared agricultural lands (Forest Department, Nigeria, 1945). Yet, a high proportion of the national forestry output, derives from such areas. From the earliest times, forests have played a vital role in the lives of Nigerians, as a source of wood for fuel, boat building, simple handicrafts, and for constructional purposes. Forests provided shelter and defences for many communities in times of war or invasion (Dike, 1956; Edokpayi, 1963). In most parts of the country, and especially in rural areas, there is high dependence on forests for game (bush meat), herbs and medicinal plants, vegetable dyes, fruits and nuts, snails, chewing sticks, palm wine and other minor produce which form part of the daily diet of the population. It is impossible to provide an accurate estimate of the value of these goods and services but their magnitude is such that the survival of many communities depends, largely, on forests. It is clear that a comprehensive appraisal of forestry's role in Nigeria is virtually impossible. The analysis that follows, is necessarily restricted to indicators for which meaningful data are available.

3.2 Forestry and national product

In Table 36 is shown the sectoral composition of Nigeria's GDP during 1958/59 to 1969/70. In 1958/59, the forestry sector ranked third, with 6.2% of GDP, after agriculture (50.0%) and distribution (12.5%). With the exception of agriculture, forestry and fishing, all other sectors of the economy either grew substantially or maintained a constant share of the

Table 36. Gross Domestic Product of Nigeria by Sectors at 1962 Prices (Factor Cost)

Sector	1958/59	1960/61	1962/63	1964/65	1966/67	1967/68+	1968/69+	1969/70+
	(Percentages)							
Agriculture	50.0	51.3	49.8	46.3	39.3	40.9	40.7	37.8
Livestock	6.1	5.6	5.5	5.5	5.1	5.0	5.0	4.2
Forestry	6.2	5.4	4.8	4.6	4.5	2.6	2.7	2.3
Fisheries	2.1	1.8	1.7	2.3	3.0	4.2	4.2	3.4
Mining and Quarying	1.1	1.2	2.1	2.7	6.9	6.4	3.3	7.9
Manufacturing & Crafts	4.7	4.8	5.6	6.1	7.3	7.4	7.9	8.2
Electricity & Water Supply	0.2	0.3	0.4	0.5	0.7	0.6	0.7	0.6
Building & Construction	4.2	4.0	4.3	4.3	5.3	5.3	4.6	4.4
Distribution	12.5	12.7	12.0	13.5	12.8	12.9	13.1	12.8
Transport & Communications	4.8	4.6	4.8	5.1	4.7	4.4	4.9	4.0
General Government	3.0	3.2	3.0	3.0	3.2	3.3	5.5	7.5
Education	2.5	2.6	3.0	3.2	3.6	3.5	3.6	3.3
Health	0.5	0.5	0.6	0.7	0.9	0.8	0.7	0.8
Other Services	2.1	2.0	2.2	2.1	2.7	2.7	3.1	2.8
Total*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
GDP ($ million)	2917.9	3490.8	3636.6	4126.6	4262.7	3601.0	3561.3	4488.1

SOURCE: Federal Office of Statistics, Annual abstract of statistics, 1971. Lagos, Nigeria, 1971. p.141.

* Details may not add up to totals due to errors in rounding.

\+ The three Eastern States are not included in the estimates.

GDP. The share of forestry in the GDP between 1958/59 and 1969/70, declined by 60%. Admittedly, the relative and absolute decline of the forestry sector's output after 1966/67 may be attributed, in part, to the effects of the Nigerian civil war (1967 - 1970), which brought forestry operations to a halt, particularly in the three eastern states. However, estimates of the GDP over

the war period also excluded the three eastern states. The contribution of the war to decline of forestry output between 1967 and 1970 is, thus, unlikely to have been very great. Between 1958 and 1966, forestry output growth was only 0.7% per annum (compound), compared to 35.3% for mining, 14% for manufacturing and 5.6% for the whole economy - (Adyoju, 1975). The inescapable conclusion from the above, is that forestry has been a lagging sector of the Nigerian economy.

The deficiencies of Nigeria's national accounting system are clearly brought out by estimates of forestry output. For example, fuelwood accounts for about 95% of domestic wood consumption (FAO, 1967; Enabor, 1971). The bulk of fuelwood consumption takes place in rural areas. Only urban fuelwood consumption has been included in the national accounts, on the ground that:

> "....in the rural areas fuelwood was there to be collected by anyone who so wished, and that no further effort was spent beyond that of its collection. We decided to count only urban consumption of firewood as part of the gross domestic product". (Okigbo, 1963).

The validity of the above reasoning has been seriously questioned (Adeyoju, 1975), especially in view of the inclusion of other products, such as palm produce (which are also freely collected), in the national accounts.

Nevertheless, it is unlikely, even if the accounting error is corrected, that the relationships indicated by Table 36 will be materially changed since the rate of growth of firewood consumption over time is not only declining, but is well below that of income. This conclusion, of course, does not minimize the necessity for accurate forestry output data relative to other sectors of the economy.

3.3 Employment

Unemployment is a most serious social problem in Nigeria. It has been manifested in recent years in the high urban drift of young school leavers in search of better economic opportunities and has its roots in the rural sector. The high unemployment situation has been attributed to such factors as the substantial income differential between urban and rural areas (IBRD, 1974), fast population growth, the disequilibriating influence of accelerated schooling and the increasing capital intensity of investment (Lewis, 1967). Expansion of the industrial sector is one way of increasing employment opportunities, so as to absorb more school leavers; but the problem could be attacked more directly through rural job creation. Very often, it means investment in labour-intensive projects located in rural areas. Forestry meets admirably these criteria for selecting investment projects in the labour-surplus, underdeveloped economy (Lewis, 1955).

Reliable information on employment trends in Nigeria is not available. However, a survey of the labour force in 1966/67[1] showed that 5% of the total labour force were employees (wage-earners) while the remaining 95% were self-employed or family workers. Of the workers in the rural sector, 80% were in agriculture, while only 20% of the urban workers were wage earners. The majority of wage earners, both in urban and rural areas, are employed in government service, or other public agencies. The contribution of manufacturing to employment in Nigeria in 1966/67 was only 25.6% of wage labour. Of these, 17.1% were in the urban, and 8.5% in the rural sector.

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1 Federal Office of Statistics, The 1966/67 labour force sample survey. Lagos, 1967.

Table 37. Employment Status in Agriculture and non-Agriculture, Nigeria, 1970 (percent)

	Agriculture	Non-Agriculture	Total
Wage Employment of which:	0.7	5.1	5.8
Large and medium scale	(0.3)	(2.9)	(3.2)
Small scale	(0.4)	(2.2)	(2.6)
Own Account and Unpaid Household Workers and Apprentices	69.1	25.1	94.2
Total	69.8	30.2	100.0

SOURCE: Federation of Nigeria, Second National Development Plan, 1970-1974. p.327, Table 4.

By 1970, wage employment absorbed only 5.8% of the total labour force (see Table 37). Agriculture still employed 70%, the non-agricultural sector absorbing the remainder, the small size of the industrial sector, virtual stagnation of the agricultural sector, and a high rate of population growth, combine to make unemployment the most serious problem confronting Nigerian policy-makers.

Forestry and related activities have already made a noteworthy contribution to relieving the problem of unemployment in Nigeria. It has been estimated that the sector employed 170,000 persons in 1933, 360,000 in 1947 and 586,000 in 1966.[2] These included those engaged as management staff,

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2 See, Nigerian Statements to the British Empire Forestry Conferences, 1933 and 1947; FAO, Production Yearbook, Rome 1967. p.667.

the labour force in wood-based industries, and marketing of processed wood products, employees in industries processing various types of minor forest produce,and others,such as charcoal-burners and collectors of minor forest produce. In addition, a large number of workers are employed in various phases of forest management and silviculture to undertake such tasks as demarcation, bush clearing, site preparation, nursery operations, weeding and tending of young plantations. Forestry employment is providing additional work for farm workers, especially where the peak season of farming operations does not coincide with that for forestry operations.

In Table 38 is shown employment in Nigerian wood-based industries in 1963, 1967 and 1969. With 17.5% of total employment in manufacturing, wood-based industries ranked first in 1963. The share of manufacturing employment attributable to wood-based industries dropped to 14.6% in 1967 and 11.3% in 1969, but was still second only to that of the textiles industry. Employment in wood-based industries in Nigeria is, however, understated by the published statistics due to incomplete coverage or omission of some establishments by the surveys. For example, the number of reporting sawmills ranged from 52 in 1967 to 65 in 1969. This contrasts with 80 sawmills in 1960, reported by Okigbo (1964), and nearly 200 sawmills by 1970 (Adeyoju, 1975). Moreover, the surveys covered only establishments employing 10 or more persons, so that many portable,or small,sawmills, resawbench operators, pitsawyers and literally thousands of small-scale woodworking establishments which dominate the industry are not taken into account. Were all the establishments and activities covered, it is certain that employment in wood-based industries and its share in total manufacturing employment would have substantially exceeded the estimates shown in

Table 38. Employment in Nigerian Wood-Based Industries, Selected Years[a]

Industry	1963		1967(b)		1969(b)	
	No.of Establishments	No. Engaged	No.of Establishments	No. Engaged	No.of Establishments	No. Engaged
Sawmilling	55	8001	52	6430	65	7684
Furniture & Fixtures	55	2947	41	3818	41	2850
Other Wood Products	4	118	N.A.	N.A.		
Paper Products	4	323	10	991	5	1001
Boat Building	3	524	N.A.	N.A.	N.A.	N.A.
Total Wood-based Industries	121	11913	103	11239	111	11536
Total All Industries	649	67978	555	77177	639	102532
Wood-based Industries as % of all industries	18.6	17.5	18.6	14.6	17.4	11.3

SOURCE: 1. Federal Office of Statistics, Industrial survey, Nigeria, 1963 and 1967, Lagos, Nigeria.

2. _____, Annual abstract of statistics, 1971. Lagos, Nigeria. p.41.

Notes: (a) Employees include professional and managerial, skilled, semi-skilled and unskilled categories.

(b) Excludes the three Eastern States of Nigeria.

Table 38.

No precise estimate of the contribution to employment can be given, in view of the wide variation in response to surveys by different industries and the effect of the arbitrary classification of what constitutes an industry. Nevertheless, employment capacity of wood-based industries is particularly important since they tend to be located close to the forest and rural areas, and exhibit a production function with a bias towards high labour

absorption intensity. Given the very high priority which has been accorded to solution of the problem of unemployment, it is important that the potential of forestry in providing rural employment and stability be fully exploited (Roche, 1975), since "in no case can modern sector employment be expected to fully absorb the current growth of the urban labour force" (Frank Jr., 1967).

3.4 Domestic incomes

It is extremely difficult to obtain a reliable estimate of the incomes of forestry workers in Nigeria, many of whom, in addition to their regular forestry employment, also operate as part-time farmers, retail traders, artisans, carpenters and barbers. The importance of the forestry work as a source of income frequently varies from place to place and between age groups and levels of education. However, the majority of those employed in the sector are persons in search of permanent employment, an indication that this is the dominant, if not the sole source of income. Nigerians derive incomes from forestry either as employees in forest management operations or as workers in industries engaged in the processing, distribution and marketing of wood products, or as contractors and suppliers of materials to forestry firms. In recent years, the operation of the taungya system[3] has provided local farmers in some parts of Nigeria with substantial additional incomes and materially improved welfare in rural

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3 A detailed description and evaluation of the taungya system in Nigeria is given in King, K.F.S., Agri-silviculture (the taungya system). Bulletin No.1. Department of Forestry, University of Ibadan, Nigeria, 1968. 109pp.

areas (Enabor, 1973). Under the system local farmers are permitted to cultivate the relatively fertile soils within forest reserves which are being converted into plantations. The communities involved usually suffer a severe land hunger. The qualified access to forest reserves granted to local farmers under the taungya system not only has enabled them to achieve immediate higher crop yields but also relieves pressure on the already depleted soils in agricultural lands occupied by shifting cultivators. Some criticisms have been directed at the taungya system as a rational approach to forest land use (Boateng, 1968). Others have questioned the economics of the system, the inequities involved and consequences of neglecting the possible biological effects (King, 1968). It must be emphasized, that whereas the taungya system may have many shortcomings, there is little doubt that, in Nigeria, it has had an ameliorative impact on rural incomes and contributed to halting the drift to the urban areas.

A partial picture of the contribution of forestry to domestic incomes in Nigeria can be gleaned from the statistics on wages and salaries earned by Nigerians employed in wood-based industries given in Table 39, for the years 1963, 1967 and 1970. Between 1963 and 1970, incomes accruing to Nigerians from wood-based industries nearly doubled from U.S. $3.6 million to U.S. $7.1 million. This represented a compound annual rate of growth of about 10%. Wages and salaries paid to Nigerians in all industries, over the same period, rose from U.S. $27.7 million to U.S. $69.5 million, an increase in excess of 150%, or a compound annual growth rate of about 14%.

The share of wood-based industries in industrial wages and salaries earned by Nigerians has fallen steadily from 13.1% in 1963 to 12.2%

Table 39. Wages and Salaries of Nigerians in Wood-Based Industries, Selected Years

Industry	1963	1967[a]	1970[b]
		U.S. $000	
Sawmilling	2438.2	3301.2	4381.4
Furniture & Fixtures	780.4	1374.8	1317.2
Other Wood Products	9.8	N.A.	N.A.
Paper Products	117.3	585.2	1421.8
Boat Building	274.1	N.A.	N.A.
Total	3619.8	5261.2	7120.4
All Industries	27583.9	43128.4	69473.4
Wood as % of All Industries	13.1	12.2	10.2

SOURCE: 1. Federal Office of Statistics, Industrial survey, Nigeria, 1963 and 1967. Lagos.

2. Federal Office of Statistics, Digest of statistics, Vol. 22, No.1. January, 1973, (Summary statistics for the 1970 industrial survey). p.19.

(a) Excludes the three Eastern States of Nigeria.

(b) Derived from total wages and salaries paid by each industry in 1970 using the percentage share of Nigerians in total wages in each industry in 1967.

in 1967, and 10.2% in 1970. The interpretation of these comparisons demands some caution. Firstly, the industrial surveys in Nigeria include only establishments employing 10 or more persons. This means that the many small sawmills, and other literally thousands of small-scale wood workers such as carpenters, furniture makers and wood-carvers are excluded. Given the current structure of Nigerian wood-based industries, these sub-sectors together, certainly, account for a significant proportion of incomes earned in the sector. Secondly, the industrial surveys have concentrated on industries located in urban centres, whereas a large number of wood-based in-

dustries are located in rural areas. Under-coverage and/or inaccurate reporting of incomes in these (wood-based) industries is therefore likely to be higher than average for all industries. Also, changes in the number of establishments covered in successive surveys do not permit direct comparisons, over time, of gross wages and salaries in wood-based industries.

To overcome some of the foregoing objections, three other indicators of sectoral income contribution may be examined. These are wages and salaries earned by Nigerians as a proportion of value-added, trends of average wages in wood-based industries, and relative shares of Nigerians and non-Nigerians in total sectoral wages and salaries. In Table 40 is shown the share of Nigerian wages and salaries in value-added in wood-based industries compared with all manufacturing industries. The share of wages and salaries in value-added is an important measure of the contribution to incomes from an activity since the former is the dominant component of the latter. The indication from Table 40 is that wages and salaries of Nigerians have formed a small part of the value-added both in manufacturing in general and in wood-based industries in particular. However, the situation in wood-based industries has been generally better than the average for all industries, with the Nigerian share reaching 36% in 1967. This obviously reflects the fact that indigenous participation as workers, contractors and entrepreneurs, in the Nigerian wood-based industries has been traditionally high and well above the average for all industries.

Although the share of Nigerian wages and salaries in value-added in wood-based industries has been higher than in industry as a whole, its

Table 40. Wages and Salaries of Nigerians as a Proportion of Value-added in Wood-based Industries, Selected Years

Category	1963	1967*	1970
Wages & Salaries ($000)			
Wood-based Industries	3619.8	5261.2	7120.4
All Industries	27583.9	43128.4	69473.4
Value-added ($000)			
Wood-based Industries	13076	14448	23436
All Industries	153804	245367	551925
Wages/Value-added (%)			
Wood-based Industries	27.7	36.4	30.4
All Industries	17.9	17.6	12.6

* Excludes the three Eastern States of Nigeria.

relationship to average wage trends in the industry is worth examining, since the latter gives a better measure of the purchasing power of individual workers. In Table 41 are given comparative data on average wages in wood-based and all manufacturing industries. Wages and salaries of Nigerians engaged in wood-based industries have been generally lower than the average for industry as a whole but have shown relative improvement, from 75% in 1963 to 97% of the all-industry average in 1970. A number of explanations of the lower wage rates paid to Nigerians in wood-based industries suggest themselves. First, productivity increases in the industry may have lagged behind that in other industries due, partly, to scale economies and, partly, to the technology of the production function. Second, the majority of the employees in wood-based industries have been unskilled cheap labour. Third, the rate of remuneration to other factors (e.g., foreign labour and capital) may have been relatively higher in this

Table 41. Average Wages of Nigerians in Wood-based and All Manufacturing Industries, Selected Years

Year	(U.S. $ per annum) Wood-based Industries	All Manufacturing Industries
1963	304	406
1967[a]	468	559
1970[b]	559	578

SOURCE: 1. Federal Office of Statistics, Industrial survey, Nigeria, 1963 and 1967. Lagos.

2. Federal Office of Statistics, Digest of statistics. Vol.22, No.1. January 1973.

(a) Excludes the three Eastern States of Nigeria.

(b) Estimated from "Summary of Results of 1970 Industrial Survey" on the assumption that Nigerians accounted for 97.5% of employment and 75% of wages in all industries. The corresponding figures for wood-based industries assumed were 98.5% and 80%, respectively.

industry. Finally, labour union activity may have been less effective than in most other industries.

Any conclusions from the above possible explanations must take cognizance of some important qualifications. There is considerable dispersion of average wages in the various branches of the wood-based industries compared to the aggregated estimate in Table 41. Also, non-monetary payments, such as free lodging and transportation, are often provided to the logging crew in wood-based industries. In addition, the majority of forest industry workers live and work in rural areas, thus making comparisons of their wages to those of urban workers more difficult. Finally, the estimated average wage levels obscures the pattern of wage distribution among

different categories of Nigerian workers. For example,the IBRD (1974) found that one wood-based firm, African Timber and Plywood, Ltd., located at Sapele,paid its Nigerian professional staff,wages and salaries which were nearly 150% that paid by some non-wood industries.

Industrial wages in Nigeria have become,partly,a matter of government legislation and,partly,a matter of the ability and willingness to implement government directives. However, it has often been suggested that one reason why manufacturing has made very little contribution to domestic incomes in Nigeria is the high remuneration earned by foreign factors. After taking account of the other items accruing to Nigerian income,such as taxes (direct and indirect) on expatriate incomes, the income tax on firms (still small because of pioneer exemptions), profits on that part of equity capital which is locally owned and incomes generated by local purchases of intermediate goods and services,Lewis (1967) concluded that:

> "It is unlikely that Nigerian income benefits by as much as 30% of the value-added in large scale manufacturing, and undoubtedly, foreign investments add so little to Nigerian income not because wages are a small part of value-added but because the major part of value-added goes abroad".

Adeyoju (1975)[4] observed that "study of the wage structure in sawmilling shows that the services of expatriates may have been overvalued, especially as people in comparable posts in Britain earn only about 50% of the wages paid in Nigeria". Comparative data on wages paid

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4 Adeyoju, S.K., 1975. op.cit. p.150.

Table 42. Distribution of Wages in Wood-based and All Manufacturing Industries in Nigeria, 1963 and 1970

	1963			1970		
	Ave. Wage $ P.A.	Share of Employment %	Share of Wages %	Ave. Wage $ P.A.	Share of Employment %	Share of Wages %
Wood-based Industries						
Nigerians	304	98.7	74.7	559	98.5	80
Non-Nigerians	8156	1.3	25.3	9203	1.5	20
All Industries						
Nigerians	416	97.6	70.8	577	97.5	75
Non-Nigerians	6938	2.4	29.2	7508	2.5	25

SOURCE: Federal Office of Statistics. Industrial survey, Nigeria, 1964 and 1970. Lagos.

in wood-based and all manufacturing industries in Nigeria are shown in Table 42. The data indicate a great disparity between Nigerian and non-Nigerian wages both in wood-based and in all manufacturing industries. The disparity has remained higher in the wood-based industries, where the wage ratios were 27:1 in 1963 and 16:1 in 1970, compared to 16:1 in 1963 and 13:1 in 1970, in all industries. The wage gap has narrowed more rapidly in the wood-based industries. A comparison of the wages of Nigerians and non-Nigerians at the supervisory level in wood-based industries shows a substantially decreased wage ratio of 5:1 (A.D. Little Inc., 1965; Adeyoju, 1975) in 1963 and 2:1 in 1967.

The foregoing analysis has clearly shown that the incomes earned by non-Nigerians in wood-based industries is entirely out of proportion to their employment share. The differential may be explained in terms of the fact that foreign employees have dominated the professional and skilled positions, whereas the majority of Nigerian employees were con-

fined to the unskilled, low-paid tasks. The impact on the economy of the observed income distribution patterns in the industry would depend on the proportion of their incomes repatriated by foreign employees. Data for evaluating this latter aspect are not available but, when it is further considered that a substantial part of the capital invested in the industry was foreign-owned, it became highly probable that a significant proportion of the income derived from the forest industries sector did not accrue to the economy.

Government policies to rationalize income shares in industry have largely relied on restriction of immigrant employees and persuasion of private industry to employ more local people in professional and managerial positions (Harris and Rowe, 1966). It is necessary to combine these with measures which lead to increased productivity and greater indigenous participation (through ownership) in the industry. The indigenization policy pursued under the Second National Development Plan (1970 - 74) is one way to achieve this objective; but it has encountered resistance in some sections of the wood-based industry.

3.5 Foreign exchange earnings

The export of wood products was one of the leading sources of foreign exchange earnings for Nigeria at the beginning of the present century, being surpassed only by palm produce. In Table 43 is shown the contribution of wood products[5]

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5 Include only saw-and veneer logs, sawnwood, veneer, plywood and wooden furniture exports. Some quantities of charcoal, railway sleepers and poles are exported from time to time but these make up less than 5% of the total value of wood exports.

Table 43. Contribution of Wood Products to Nigerian Export Earnings 1951 - 1973

1	2	3	4	5	6
Year	Wood* Exports $ million	Non-oil Exports $ million	Total Exports $ million	Share of Wood Products in Non-oil %	All Commodities %
1951	17.99	326.5	326.5	5.5	5.5
1952	9.55	350.3	350.3	2.7	2.7
1953	13.17	338.5	338.5	3.9	3.9
1954	13.16	409.4	409.4	3.2	3.2
1955	16.77	361.8	361.8	4.6	4.6
1956	13.39	370.4	370.4	3.6	3.6
1957	14.98	347.8	347.8	4.3	4.3
1958	18.79	364.8	367.6	5.2	5.1
1959	21.03	441.8	449.4	4.8	4.7
1960	24.41	451.4	463.7	5.4	5.3
1961	23.74	444.0	476.3	5.3	5.0
1962	20.91	412.3	459.2	5.0	4.6
1963	23.54	470.8	517.7	5.0	4.5
1964	26.65	501.6	589.4	5.3	4.5
1965	22.41	546.3	737.0	4.1	3.0
1966	20.09	522.9	780.4	3.8	2.6
1967	12.63	464.8	666.7	2.7	1.9
1968	12.35	474.6	578.2	2.6	2.1
1969	15.14	514.2	880.9	2.9	1.7
1970	11.80	514.1	1227.8	2.3	1.0
1971	9.80	458.9	1793.1	2.1	0.5
1972	11.34	343.8	1990.5	3.3	0.6
1973	20.44	526.3	4717.2	3.9	0.4

SOURCE: 1. Federal Office of Statistics, Annual abstract of statistics, 1964 and 1970. Lagos.

2. _____, External trade review, 1973. Lagos.

* Includes only sawlogs, sawnwood, veneer and plywood.

to the country's foreign exchange earnings since 1951. The data do not take account of the exports of minor forest produce such as gum arabic (Acacia nilotica), sheabutter, kapok, hides and skins, and live animals and birds.

The values of wood products exports over this period generally fluctuated but were relatively high in the 1960's, reaching a peak value of $27 million in 1964. The share of the products in total export earnings over the period averaged 3.2%,but rises to 3.9% when only non-oil exports are considered. Among Nigeria's principal export commodities, wood ranked seventh in 1951. It has, however, consistently dropped its position since 1965 due to such factors as the disruptions caused by the civil war, increasing domestic wood consumption,and the rapid expansion of petroleum exports. Adeyoju (1975) has argued that wood products exports are still important as the earner of the largest number of foreign currencies among Nigeria's commodity exports.

In 1970,wood products exports earned 34 foreign currencies compared with 21 by petroleum, 19 each by cocoa and groundnuts. Palm produce earned only 7 currencies. Number of foreign currencies does not appear to be a very strong criterion for evaluating export earnings by a commodity, since it erroneously gives equal weight to all currencies regardless of their convertibility and the value of trade involved. The evidence clearly suggests that the importance of wood products as an earner of foreign exchange for Nigeria has declined both relatively and absolutely in recent years. Future improvement in this contribution will require a change in the past pattern of wood exports, utilization of the forest resource towards higher-valued processed products,and introduction of the lesser-known species to the market.

3.6 Capital investment and value-added in manufacturing

The supply of investment capital and contribution to value-added from manufacturing are other measures of the importance of forestry activities

Table 44. Paid-up Capital and Value-added in Nigerian Wood-based Industries, Selected Years

Industry	Paid-up Capital			Value-added		
	1963	1967*	1970	1963	1967*	1970
			($000)			
Sawmilling	8759	7409	N.A.	19253	7350	10321
Furniture & Fixtures	1325	2887	"	4060	4553	3858
Paper Products	615	3363	"	1618	2545	4469
Other Wood Products	2	N.A.	"	34	N.A.	N.A.
Boat Building	868	N.A.	"	1187	N.A.	N.A.
Total, Wood Industries	11569	13659	"	26152	14448	18648
Total, All Industries	158952	173796	"	307608	245367	551925
Share of Wood Industries (%)	7.3	7.9	-	8.5	5.9	3.4

SOURCE: 1. Federal Office of Statistics, Industrial survey, Nigeria, 1963 and 1967. Lagos.

2. Federal Office of Statistics, Digest of statistics, Vol.22 No.1. January, 1973. Lagos.

* Excludes the three Eastern States of Nigeria.

in an economy. Paid-up capital and value-added in Nigerian wood-based industries in 1963 were $11.57 million and $26.2 million, representing 7.3% and 8.5% of the national totals, respectively (see Table 44). Paid-up capital increased to $13.66 million by 1967, showing an annual (compound) rate of growth of 4.2%, and a share of 7.9% of paid-up capital in all industries. The share of wood-based industries in value-added from manufacturing fell successively to 5.9% in 1967 and 3.4% in 1970. It is necessary to exercise some caution in interpreting the estimates shown in Table 44. First, there has been some inconsistency in the types of wood-based industries included

in the various industrial surveys in Nigeria. Second, the number of establishments covered in each industrial category has varied widely. Thus, the total number of establishments covered in 1963 was 121 as against 105 in 1967, and 130 in 1970. In all cases the inadequate coverage of wood-based industries has been substantial as noted above. The surveys of 1967 and 1970 excluded the Eastern States, but this is unlikely to have affected the share of wood-based industries in paid-up capital and value-added in manufacturing markedly, since other industries were similarly affected and, in any case, wood-based industries located in this area account for a relatively small proportion of the national output of the sector. In spite of these qualifications, two observations on the data in Table 44 appear warranted. First, the increase in share of wood-based industries in paid-up capital in manufacturing between 1963 and 1967 may be largely attributed to the increasing participation of indigenous capital whose share rose from 31% in 1963 to about 40% in 1967. This process has been facilitated by the typical small-scale nature, and low-skills requirements, of the industries involved, thus enabling local businessmen to participate in the sector effectively.

Second, increased indigenous participation in the wood-based industries has accentuated fragmentation and growing inefficiency of the sector as reflected in the decline of share in value-added between 1963 and 1970. The decrease in share of foreign capital in the paid-up capital in wood-based industries in Nigeria between 1963 and 1967, of 8 percentage points, compares with only 2 percentage points (from 67.6% to 66%) for all industries over the same period. Besides increasing indigenous participation, the relatively greater decline in the wood-based industries is not unconnected

with the changing fortunes of the wood products export trade and the attitudes of foreign owners of capital to investment in the sector.

The contribution of wood-based industries to investment in manufacturing and value-added is a direct function of the rate of expansion and level of efficiency in the sector. Both of these factors are influenced by the availability of indigenous and foreign capital,as well as the type of industries that are established. Availability of foreign capital may, among other factors, depend on the prospects for developing exports of wood and wood-based products. Indigenous capital has,so far,been directed largely to investment in numerous small-scale and inefficient establishments producing for the domestic markets. In this regard, it is clear that the policies adopted towards wood products exports could have a major influence on the overall efficiency of use of the forest resources and the contribution of the sector to the general economy.

It follows, therefore, that while efforts to achieve the goals for the forestry sector by increasing Nigerian ownership, management and control in the forestry and forest industries sector are being pursued, it will be equally important to minimize the possible negative effects on foreign capital availability to the sector. This consideration has relevance when it is appreciated that foreign capital is frequently accompanied by technological and managerial knowhow, which are critical scarce factors in an underdeveloped country such as Nigeria. In other words, an appropriate balance between foreign and domestic factor participation in the forestry sector required to maintain efficient utilization of the country's wood resources is essential, at least until indigenous industrialists have attained acceptable international standards in their production, management and marketing

abilities.

3.7 Linkage effects

The role of the forestry and forest industries sector in inducing linkages in the Nigerian economy defies any precise evaluation due to a lack of sufficiently detailed input-output data for the country. To this writer's knowledge,only one attempt to construct an input-output table for the Nigerian economy has been made (Carter, 1966).[6] Carter's input-output table refers to the year 1959-60 and could be regarded as out-of-date in view of the significant structural changes which have occurred in the economy since. Furthermore, the data are not sufficiently disaggregated. For example, "Livestock, fishing and forestry" are lumped together in one sector, while wood and leather are grouped together in another. The traditional interpretation of linkage effects by industry classes, as done by Hirschman (1958) and Westoby (1962),is thus not feasible for Nigeria with currently available data.

Nautiyal (1967), in an analysis of timber production forestry in India, concluded that linkage effects in forest industries ranged from low in sawmilling to moderate in wood-based panels industry,and high in the pulp and paper industry. In all cases, forward linkage was higher than backward linkage. An indirect evaluation of forestry and forest industries linkages was provided by Hainsworth and Davis (1972) in their inter-industry accounts

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6 See Appendix 3 for the estimates of the degree of interdependence in the Nigerian economy in 1959-60 as given by Carter (1966).

for the West Malaysia economy in 1960 and 1965. Their estimates showed significant linkages between wood-based industries and the construction industry. The strong linkages between the pulp and paper industry and the rest of the economy have been cited as a good case for the early establishment of the industry in an underdeveloped country seeking rapid economic growth (Nautiyal, 1967). It may be added that opportunities for significant linkages exist in other wood-based industries, which can be utilized through careful planning. For example, small-scale wood-based enterprises can be developed to utilize some of the output of sawmills (in irregular sizes) to produce specialty wood or turned wood, for decorative purposes. Such enterprises might provide avenues for utilization of so-called "secondary species" and thus increase efficiency of the forest resource use. A further advantage is that such small-scale enterprises may be conveniently located in rural areas.

In Nigeria, where a pulp and paper industry is virtually non-existent, one is inclined to conclude that the linkage effects of the forestry and forest industries sector are likely to be weak. However, justification of such an interpretation must rest on the assumption that the countries being compared have attained the same stage of general industrialization, have a comparable endowment of forest resources, and have an identical classification of products into final and intermediate goods.

Finally, one must not overlook the vital role of forestry in Nigeria in opening up the hinterland through the construction of roads and railways originally for extraction of timber, and in deepening waterways which later became available for general commerce and transportation within the country. Thus, Adeyoju (1970) has estimated that:

> ".... at least 2,400 km of the present road network in the Western and Mid-Western States were either originally constructed as railway tracks, corduroy and timber haulage roads or gained prominence through timber exploitation. While some of the timber roads have developed into vital national highways, others have had a tremendous impact on the agricultural settlement of the remote 'free' areas. The 'forestry roads' greatly improved the accessibility of the States".

Thus, while a lack of relevant data precludes quantitative measurement of the linkage effects of the forestry sector of the economy of Nigeria, its potentialities and dynamic character need to be constantly kept in mind and are such as to give the sector a higher priority in national development programs than has, so far been the case.

3.8 Supply of goods and services for domestic consumption

The supply of goods and services for domestic consumption is a fundamental function of forests in any country. Not only are such goods and services often essential to man's every day life, their availability may be regarded as strategic in reducing external dependence and in saving expenditure of scarce foreign exchange on imports. The protective functions and non-marketed services of forests are well recognized and sometimes more important than their wood supply function. The present discussion will, however, focus attention on the latter aspect which has wider impacts on the economy as a whole.

The various wood products supplied by forests are frequently classified into two groups - fuelwood and industrial wood. Fuelwood includes wood in any form but usually as roundwood, wood chips and slabs used as fuel for cooking and heating. Industrial wood includes roundwood in form of poles

and pulpwood, logs, sawnwood, wood-based panels, pulp, paper and paperboard. These products represent varying degrees of processing. They may be competitive or complementary in various end uses. The level and pattern of consumption of the several wood products have been associated with availability and level of economic development of a country (Zivnuska, 1949b; Westoby, 1962).

Comprehensive studies of wood consumption in Nigeria and of the contribution from domestic sources have not yet been carried out. Available estimates (Thulin, 1966; FAO, 1967; Enabor, 1971), however, indicate that close to 90% of the total is in fuelwood. In most rural areas and all of the savanna region, fuelwood supply is vital as the only available means of obtaining cooking and heating fuel. Gregory (1966) observed that availability of fuelwood relieves the depressing effects,on agricultural production,of the use of animal droppings for fuel. Fuelwood supply is bound to remain important as long as incomes are very low and/or substitute fuels are not available at economical prices. The development of the petrochemical and liquid fuel gas industry in Nigeria could conceivably reduce dependence on fuelwood in the country in the near future. However, the majority of the population reside in small rural communities which are generally remote and isolated from one another. Thus, problems of efficient distribution, particularly construction of transportation systems, must be solved if the products of the industry (e.g. kerosene and cooking gas) are to find sufficient domestic demand.

The use of poles and sawnwood in construction is a long established practice in Nigeria (Thulin, 1966). The bulk of the constructional wood use is in residential buildings,accounting for over 80% of the total (FAO,

1967). With the development of a veneer and plywood industry in Nigeria, there has been a great increase in domestic consumption of these products. There are no reliable data on the domestic consumption of the various wood products in Nigeria and the contribution from local forest resources. In the case of fuelwood, it is virtually impossible to arrive at a realistic estimate of domestic consumption because, as already observed, the higher proportion is collected freely from adjoining forest areas by consumers and goes unrecorded. The same argument applies to sawnwood consumption where the output from pitsawing operations is substantial but cannot be accurately estimated (Okigbo, 1964; A.D. Little Inc., 1965).

In Table 45 is shown the contribution of domestic supplies to consumption[7] of some wood products in Nigeria (see Appendix 6). Domestic supplies have accounted for 100% of the consumption of fuelwood (including charcoal) and other industrial roundwood (building, electricity and telegraph poles, and pitprops). In contrast, there is virtually complete dependence on external sources for paper and paperboard products consumption requirements.

The share of domestic supplies in sawnwood consumption tended to fluctuate before 1967. Following the prohibition of imports of sawnwood and wooden furniture into Nigeria in January, 1968, all sawnwood consumption has been met from domestic supplies. The share of domestic supplies in the consumption of wood-based panel products has also increased substantially, from around 50% in 1951 to 69% by 1972. On the whole, therefore, the role

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7 Nominal consumption, defined as Production + Imports - Exports.

Table 45. Estimated Contribution of Domestic Supplies to Wood Products Consumption in Nigeria, Selected Years (Percentages)

Year	Fuelwood	Sawnwood	Wood-based panels	Industrial Roundwood	Pulp,Paper & board
1951	100	88.9	49.7	100	0
1955	100	66.7	33.3	100	0
1959	100	67.6	69.2	100	0
1963	100	87.7	61.7	100	0
1967	100	100.0	57.4	100	0
1970	100	100.0	13.3	100	15.4
1972	100	100.0	69.0	100	15.4

of forestry in supplying domestic wood consumption requirements has been a commendable one, made possible by the increasing affluence of Nigerian consumers and the growth of a viable forest industry. It should be noted that, in relation to her income level, Nigeria has been an under consumer of wood products. The growth of population and economic development in the future will mean significant increases in the quantity and range of wood products consumed. The obvious implications point to increasing demands on the country's forest resources and greater opportunities for the forestry sector to exert the dynamic and propulsive influences on economic development which have been attributed to it.

3.9 Summary

Forestry and forest industries can exert a potentially important propulsive influence on economic development. It is emphasized that the sector cannot be automatically accorded a high ranking in every country. The role of the forestry and forest industries sector in economic development

depends on certain important preconditions and features of the environment surrounding it. Forestry's role in the Nigerian economy is appraised to determine the sector's contribution to national output, employment, income, capital investment and value-added in manufacturing, linkage effects and supply of domestic consumption commodities. The analysis revealed that, with the exception of the last mentioned indicator, the sector has declined in relative importance. The tentative nature of the underlying data must be stressed.

The declining role of forestry in the Nigerian economy is a result of the dominant position of foreign factors of production in the wood-based industries, past misuse and/or inefficient utilization of the forest resources, and a wood products export trade which relies heavily on log exports. If the sector is to play a more significant role in the future, dynamic policies, to ensure conservation and development of the forest resources, are urgently needed. The wood products export trade must be restructured to meet the developmental requirements of the economy.

CHAPTER FOUR

WOOD PRODUCTS EXPORT POLICIES IN NIGERIA

4.1 Introduction

Foreign exchange earnings from wood products exports represent a major contribution of the forestry sector to economic development in many tropical developing countries (Rola, 1974). In Nigeria, the history of forestry, for more than half a century, featured wood products exports as the predominant activity. Over the last decade, there has been growing controversy, between the government and the timber industry, over the pattern of use of the forest resource. Some government policies on forest development and utilization (for example, timber fees, royalties and export taxes), have been criticized by the timber industry as inimical to the wood products export trade. The controversy, essentially, reflects a state of unsettled

policy questions. It is essential that the issues and problems involved are clearly understood by all parties concerned.

The present chapter presents a systematic analysis of the issues and problems in the development of the Nigerian wood products export trade. The basis of a Nigerian forest policy is examined in Section 4.2. The significance of wood products export policies for the country is appraised in Section 4.3. Alternative policies on wood products exports are identified and their theoretical bases examined in Section 4.4. The analytical framework of wood products export policies in Nigeria is presented in Section 4.5. The suitability and feasibility of the policy choices are appraised in Section 4.6. Policy guidelines and recommendations on future wood products exports are provided in Section 4.7.

4.2 The basis of a Nigerian forest policy

According to Boulding (1958), the term policy "generally refers to the principles that govern action directed towards given ends". Worrell (1970) defined it as "a settled course of action that has been adopted by a group of people and is actually being followed by them". He noted that "a forest policy specifies certain principles regarding the use of a society's forest resources which it is felt will contribute to the achievement of the objectives of that society". The many-sidedness of policy is clearly brought out by its definition in Webster's Dictionary as "a settled course adopted and followed by a government, institution, body or individual". From the view-point of forest policy, it may be inferred that the settled courses adopted and followed by society as a whole are of paramount importance. In

many countries, the lack of proper understanding of the nature of forests and their interrelationships with the other societal elements has prevented any clear statement of policy and the objectives to which they are directed.

Greeley (1953) and Ely and Wehrwein (1964) have shown that pressure of population generates changing attitudes towards, and greater appreciation of, the value of forest resources leading to the conscious adoption of forest policies. According to Worrell (1970), forest policy is not sudden but evolves. In North America, forest policy was the outgrowth of extensive clearing of forests for agricultural purposes and the "cut out and move on" activities of loggers in the 18th and 19th centuries. Wanton destruction of forests leading to supply shortages and high product prices as in 18th century Europe, or realization of the dangers of excessive dependence on external sources of wood supplies, as in Britain (Johnston, et al., 1967), have been important signals to institute deliberate policies for forest resource conservation and development. Thus, in most countries, forest policies have been induced rather than anticipatory, often in response to ad hoc problems and characterized by a disjointed and painful process of evolution.

The evolutionary approach to forest policy is clearly unsuited to the needs of a less-developed country such as Nigeria where the problem of economic development demands urgent solutions. If forestry is to keep abreast with the demands of a dynamic and changing economy, recognition of its peculiar features requires a revolution in adopted policies which do not emphasize established and well-practised methods but take full account of the relevant goals and aspirations of the society. Boateng (1968) has argued that some of the important problems of forest policy in Ghana arose from the attempts to transplant to that country, practices established elsewhere (in

Europe) without due regard to the needs of the people of that country. Many of the arguments and conclusions of his study apply equally to Nigeria. Many complications have, however, been added in the Nigerian case which call to question the relevance and objectivity of whatever forest policies existed there. The aim of the present discussion is not to provide a comprehensive analysis of forest policies in Nigeria, but rather to spotlight the main underlying influences and elements in order to show to what extent the existing policies have hindered or facilitated the achievement of the declared goals of the economy. Emphasis is placed on the need to promote policies which take fuller account of the dynamic character, and the physical and socio-economic features, of the environment which now surrounds the forestry sector.

To date, no forest policy, to be uniformly and equally applied in all parts of the country, has been formulated for Nigeria. Numerous policy statements indicating proposed actions on the forest resources, and regulations governing its use, have been put forward since 1900, primarily at the instigation of the forestry department which was set up at the close of the 19th century. In terms of scope, orientation, and content, these statements may be classed into two groups: those before 1950 and those after 1950.

The policy statements before 1950 were prompted by concern over extermination of the forests of Nigeria by the destructive farming operations of the local population and the intensive exploitation of timber for export. H.N. Thompson, who was appointed to organize the new forestry department in 1899 and acted as its first Director, explained the position as follows:

> "The situation that had to be faced was this: shifting cultivation and the consequent damage to forest vegetation

> was the normal practice all over the country, added to which was the danger of large tracts of forest being destroyed in the immediate future for the cultivation of cocoa which was coming much to the front at the time, whilst the cutting of mahogany for export was unabated and trade in it as brisk as ever and the exploitation of rubber was increasing rapidly. The constitution of Forest Reserves .... being of necessity a lengthy procedure, it soon became obvious that unless some brake was put on the destruction of the more valuable trees in the course of farming and similar operations, there would be little left in the country to reserve ....."[1]

To combat the effects of shifting cultivators in causing forest destruction, provisions for contitution of forest reserves were made under the Forestry Proclamation - No.28 of 1901; Order No.10. Amendments to Order No.10, relating to constitution of forest reserves were made in 1905 and 1908, in which the procedures for acquiring forest reserves were clarified and elaborated together with recognition of the rights of the native communities to the land and to the forest growing on it. The enactment of the Forestry Ordinance No.XII of 1916 and Regulation (No.10 of 1916) made under its authority, was the first attempt at forest legislation applying to all parts of Nigeria. The 1916 legislation is significant in so far as it provided for the compulsory acquisition of lands for forest reservation especially for protective purposes. It also enlarged the list of protected timbers (including mahoganies and cedars) and established stricter penalties against illegal exploitation of forest produce. In an attempt to secure the cooperation of the people, and facilitate reservation, the 1916 Ordi-

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1 Thompson, H.N., History of Nigerian Forest Department. Farm and Forest. Vol.9, 1948. Reprinted in Bulletin of the Nigerian Forestry Departments, Vol.31. No.1. January-March, 1971. Federal Department of Forestry, Ibadan.

nance introduced, for the first time, the system of dual adiministration of forest reserves involving both the government and the local authorities. The participation of the local communities in forest management was, for practical purposes, regularized through various subsequent legislations[2] resulting in the constitution of lands or forest reserves into Native Authority Forest Reserves. A major document relating to forest policy in Nigeria before 1950 is the Forest Administration Plan, 1946 - 1955, put forward in 1946.[3] After a detailed review of progress and problems of forest reservation in the country, the document spelled out in a more comprehensive way the objectives of forestry development and the need for systematic and efficient management of the forest reserves. It emphasized the need to secure the forest estate and ensure its inviolability as a means of attaining the stated objectives. Beyond this, however, nothing was done to alter the complex relationships between various authorities in the management of forest resources, or the need to intensify forest reservation. Indeed, the plan tacitly accepted the supremacy of local authorities over government in matters relating to forestry when it stated that:

> "Wherever the competence and will to undertake it exists, the control and management of forest reserves shall devolve upon Native Administrations, who shall receive all revenue but subject to control by government as will ensure that management is in accordance with Government's forest policy. Policy shall be to encourage the acceptance of responsibility by Native Administrations".[4]

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2 The Forestry (Amendment) Ordinance of 1927; Ordinance No.38 of 1938; and Forestry (Amendment) Ordinance of 1941.

3 Forest Administration Plan, 1946-55, Sessional paper No.13. 1948, Lagos.

4 Forest Administration Plan, 1946-55. p.7.

Adeyoju (1975) has noted that, under these conditions of local government involvement in forest management, "competence for discharging the responsibility was easily superceded by the will to undertake it".

From the above, it would seem that excessive emphasis was put on the need for forest reservation and instilling in the people appreciation of forest values and conservation as the cornerstone of forest policy in Nigeria before 1950. Efforts were simultaneously directed to organizing management of reserved forests, extending and promoting the export trade in timber, as well as establishing a local timber industry to supply products for domestic consumption and for export. Experimental plantations, mainly with teak and some indigenous timbers, were established in Nigeria before 1910. A series of measures to improve productivity of the natural forests were adopted, culminating in the introduction of the Tropical Shelterwood System (adapted from the Malayan System) in 1944.[5] In addition, botanical specimens were regularly sent to Kew Gardens, the British Museum and the Imperial Forestry Institute, Oxford, for identification and determination of their commercial value.

To promote the export trade in timber, many wood samples were despatched "to various Government Departments and private firms in England, Canada, United States and the Continent of Europe, with details as to cost, utility, etc." (Forest Department, Nigeria, 1929). Special studies on the utilization potential of local timbers were commissioned[6] and a local Utilization Officer appointed

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5 For the history of the Tropical Shelterwood System in Nigeria, see, Lancaster, P.C., 1960. The history of Tropical Shelterwood System. Technical Note No.2. Department of Forest Research, Ibadan.

6 The most important of these are, Oliphant, Major F.M., 1934. Report on the commercial possibilities and development of the forests of

in Nigeria to secure improvements in the quality of products exported. Finally, the impetus for development of local wood-using industries derived from the efforts of the government in establishing sawmills as early as 1907, initially to supply the requirements of government departments and for public constructional purposes. The early government-owned sawmills were also intended to demonstrate the possibilities of wood-processing business and to encourage development of local entrepreneural skills. Although these mills were subsequently handed over to private operators, the government continued to encourage establishment of more modern and efficient industries to facilitate effective utilization of the timber resources in the wake of an expanding export trade in wood products and growing domestic wood consumption.

In contrast with the earlier period which emphasized reservation and conservation, forest policy in Nigeria since 1950 has been influenced by two major factors. First, following the Richards Constitution of 1952 and the establishment of a federal political structure for the country, forestry matters became vested in the regional governments. Second, as a result of the post-war boom in the timber export trade, the rate of timber exploitation has been vastly increased, bringing the country's forest reserves under unprecedented pressure for wood supplies. The new regional forest services broadly adopted the pre-existing colonial laws and regulations relating to forestry as the basis and framework of their policies. In spite of the apparent similarities of their stated objectives, however, the attendant

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6 (contd.)
Nigeria . Sessional paper No.7, Government Printer, Lagos. 61pp. and, 1935, A further report on the commercial possibilities and development of the forests of Nigeria . Sessional paper No.6, Government Printer, Lagos. 26pp.

statements of policy have been more marked by their divergent and often conflicting orientation. Excepting differences of emphasis, the statements of the regional forest policies may be summarized as follows:[7]

1) That an adequate area of land shall be dedicated to permanent forest to meet protection and production needs of the people; land outside the forest estate shall be regarded as potentially agricultural.

2) That the management of forests shall be always by methods aimed at obtaining maximum sustained yield. It is believed that only such methods seek to derive in perpetuity, the maximum benefits for the greatest number of people. Such benefits include protective, productive, wildlife, amenity, recreational and other necessary values of the forest estate.

3) That more government participation in the exploitation of forest and establishment of wood-based industries shall be fostered in order to increase the sectoral revenue and ensure that full employment shall occur.

4) Where the need exists plantations to provide fuel and poles shall be established.

5) That the savanna areas are to be managed for dual purposes of wood production and grazing.

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7 Ntima, O.O., Some economic aspects of forestry in Nigeria. Diploma in Forestry Thesis, Oxford University, 1967. pp.39-40, and, Adeyoju, S.K., 1975. op.cit. pp.45-46.

6) To intensify research and propaganda by cooperating with the Food and Agricultural Organization and other United Nations agencies in the search for knowledge on all aspects of forest resources, the consumption and utilization of forest products and in arousing public consciousness of forest values by all means.

7) To cooperate with other land-use interests.

8) That it shall be the aim of government to maintain efficient forest services and to provide adequate working funds to achieve this objective.

These statements may be taken to have broadly covered the various aspects of forestry with which policy should be concerned. But, they have been variously critized as doctrinaire and imposing institutional constraints (King, 1966), as well as lacking a clear economic and management objective (Ntima, 1967). For example, the term "adequate area of land" is not defined, whereas the policy to leave areas outside forest reserves under agriculture, runs counter to that requirement. The emphasis on "maximum sustained yield" shows a reverence for a long-established principle borrowed from European forestry. It has been increasingly demonstrated (Haley, 1966; Nautiyal, 1967; King, 1968) that the principle of sustained yield is not necessarily a rational management policy, especially for a country faced with the urgent problems of development and where capital shortage is a major constraint. Moreover, no provision was made either for the resolution of conflicts, in the demand for land, between forestry and other land uses or between different forest land uses. A classic example of the latter is the use of forest land in the savanna region for timber production and grazing. Grazing in-

terests in the region have always effectively resisted forest reservation. In addition, large areas of forest are destroyed annually by wild-fires and other causes. These have caused a general shortage of wood supplies, excessive erosion, desiccation and drought, with serious adverse effects on economic life of the population.

Other, more general, criticisms have been directed against regional forest policies in Nigeria. These include:

1) Failure to take account of the great disparities between available resources and demand for forest products.

2) The lack of inter-State contacts and coordination of forest development plans and programs.

3) Failure to take account of the costs and benefits associated with alternative forest land uses.

4) An inability, or unwillingness, to deal with the problem of traditional land tenure systems.

Regionalization is not the sole cause of defects in Nigerian forest policies. From the start, forestry was plagued by a lack of an overall purpose or objective. Compromises were frequently resorted to, in dealing with problems which arose. As a consequence, declared policies were no more than general, if not vague, statements of intent. They lacked operational content with regard to the form and extent of specific actions to be taken to achieve them, or to make them effective. These circumstances were bound to lead to a poor specification of objectives, or conflict of objectives. The evaluation of costs and benefits, even where this was pos-

sible,[8] was rendered particularly difficult, so that no effective machinery for the implementation of policy aims could be established. Ntima (1967) has suggested that "perhaps there were not enough data and experience to produce an objective policy". It seems, however, that political consideration and institutional constraints, rooted in the idea of self-sufficiency, were the primary influences militating against the proper definition of objectives and an appreciation of the scope of an adequately oriented policy.[9]

Since 1960, new, concerted efforts to review Nigerian forest policies have emerged, due partly to a new consciousness of national development needs and, partly, as a result of fears of a timber famine. The first National Development Plan (1962 - 68) attempted to establish production targets at the national level for forestry (see Table 46) over the period 1960 - 1991. It indicated a near trebling of output of the various types of wood products over the thirty-year period. Also, per capita consumption of wood in Nigeria was expected to increase eleven times, while the largest production increases were expected in respect of poles (up 18 times) and sawnwood for local use (up 18 times). To achieve the targets, reliance was to be placed on research into problems of regeneration, improvement of existing species, introduction of new species, and a considerable reduction of the felling cycle. Experiments were to be carried out into utilization of mangrove timber for pulping

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8 It is recognized, however, that evaluations of costs and benefits may be particularly difficult in forestry where the units of evaluation sometimes defy quantification. See for example, Gane, M. Priorities in planning. Commonwealth Forestry Institute Paper. No.43. Oxford, 1969.

9 Reference is made by GATT to the increasing political pressures for greater regional self-sufficiency in their report. See "The national development plan and future export capacities of the Federation of Nigeria". Geneva, 1966.

Table 46. Forest Production Targets, Nigeria; 1960 - 1991
(million ft^3 roundwood)

Type of Product	1959/60	1991 Targets
Fuelwood	720	1300
Poles	36	648
Sawnwood for Local Use	15	270
Sawnwood for Export	4	6
Logs for Export	17	22
Plywood for Export and Local Use	1	10
Pulpwoods	0	7
Per capita Consumption per year, ft^3	1.4	15.5

SOURCE: Federation of Nigeria: National Development Plan, 1962-1968. Lagos, Nigeria. p.57.

and wood products laboratories expanded to establish a basis for a viable paper industry. Separate policies were enunciated by the three regional governments, all of which emphasized production to meet domestic requirements for wood and the need to maintain the protective services of forests. Only the Northern regional government produced a fairly comprehensive plan for forest resource development. It recognized not only the local value and current deficiencies of the forest resources, but justified expenditure for the proper management of forests to increase productivity and efficiency, as "a long-term investment for the enrichment of the country as a whole". The Western Region policy, also specifically included the need "to maintain at present level, the export of high quality timber and to arrange for multiple land use". An assessment of future internal demand for forest products would be made to help in formulation of forest policy and give direction to the research initiated by the Federal Government into timber utilization problems. The

Eastern Region stated the objectives of the forestry program to be "the more intensive exploitation of the existing reserves, the regeneration of the reserves and the development of new Gmelina plantations covering 6400 acres". No mention is made about how "more intensive exploitation" is to be achieved, the extent of regeneration to be done, the necessity for, and type of, forest industries to be developed,or what measures will be taken to secure continuity of forestry.

The allocation to forestry under the First National Development Plan (1962 - 68) amounted to $5.1 million,or 0.3% of the total public sector capital expenditure. Although this sum is negligible compared with the contribution of forestry to the economy, the plan represents the first attempt at purposive forestry development effort. Nevertheless, it should be stressed that the first development plan in Nigeria was more a collection of virtually separate federal and regional plans, with equal authority, than a national integrated plan. In spite of the advances in individual state policies, they still lacked the essential ingredient of a national character. Thus, the basis of the federally-established forestry production targets have been questioned (Ntima, 1967), since it is doubted whether surveys of consumption of the wood products were undertaken in making the projections. Moreover, the figures are meaningless since there is no attempt to indicate the adequacy of the forest resources to meet the projected consumption, no mention is made about actions to be taken on forest industries, or on the need to strengthen the position of Nigerian wood products in both domestic and foreign markets.

A more condensed,but national (rather than states'),forest policy statement for Nigeria is contained in the Second National Development Plan

(1970 - 74).[10] The policy aims to provide an adequate supply of wood and wood products in perpetuity by intensifying regeneration of forests and utilization of lesser-known timbers, with emphasis on regeneration with fast-growing species. Measures to promote efficiency of forest industries to obtain more varied and better quality products are to be adopted, while provision is to be made for production of necessary raw materials to the pulp and paper, and match industries, and the development of game reserves and National Parks. It is significant that the forest policy under the 1970 - 74 plan is devoted largely to the problems of timber production and forest industries development, an obvious recognition of the fact that "Nigeria has been experiencing a general state of stagnation of forestry output for the past decade".[11]

Finally, it should be noted that, though the forestry problems of the country have been far from resolved under the first and second national development plans, major efforts have been made in the last fifteen years to revive the sector. For example, studies conducted by, or under the auspices of, the FAO into the forestry problems have been most important in improving the quality of available information and providing guidelines for management organization. Primarily as a result of these studies, a Federal Department of Forestry was set up in 1970. A University Department of Forestry to train professional manpower was established in 1963, and a Sawmill Technician Training Project started in Benin City in 1974. In addition, the Federal

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10 Federation of Nigeria: Second National Development Plan, 1970-74. Lagos, Nigeria, 1970. p.124.

11 Federation of Nigeria: Second National Development Plan, 1970-74. Lagos, Nigeria, 1970. p.124.

Department of Forest Research, established in 1954, was expanded in 1962 to include a Forest Products Laboratory Division. The Survey of Forestry and Forest Industries Development in the South-West of Nigeria, a project now being undertaken by the Federal Government in cooperation with the FAO, will supply vital information on the productive high forests and industries dependent upon them. Provision for the establishment of large-scale pulp and paper mills and production of the necessary raw materials has been made under the Third National Development Plan (1975 - 1980). It is hoped that these measures will increase productivity of the forest lands and the sectoral contributions to the general economy.

The foregoing discussion has shown the many problems and deficiencies of Nigerian forest policies. It is stressed that a more dynamic and forward-looking policy is required if the forestry sector is to meet the challenges of a rapidly changing economy. Some prerequisites for such a policy include the following considerations.

Forest policy is ultimately a function of the objectives or goals a society has in view. Forest lands can be used to satisfy a variety of objectives. It is therefore important that forestry objectives are clearly defined. Such objectives should also be ranked and provision made for reconciliation of conflicts between them in order to facilitate application of policy. Finally, forestry is only one of the many land uses in a country. Consequently, objectives for forestry should be consistent with,and subject to,the overall goals of society.

The question of an adequate forest estate should be resolved in concrete terms with due regard to the supply and protection functions of forests. The original forest reservation target for Nigeria was 25% of the

country's total land area. The usefulness of such targets has been seriously questioned (Fernow, 1902; King, 1968; Mabogunje et al., 1969). It is noted that, in relation to both total land area and population, Nigeria's area of forest reserves at 10% of total land area, and productive forest at 2%, are among the lowest in Africa (Ntima, 1967; FAO, 1967). Current views that forest reservation in the country must be regarded as complete would seem to be avoiding an attack on the problem.

The twin problems of shifting cultivation and land tenure pose serious difficulties in the way of investment and long-term management of forests. Timber production, being long-term, security of tenure is essential. The situation involves both economic and political aspects and no easy solution can be recommended. One possible solution is to transfer ownership and management of a substantial part of the forest estate of the country to the federal government. The political implications and financial costs of doing so must, however, be carefully weighed.

Detailed studies of prospective wood requirements for both domestic consumption and for export, as well as the capacity of the existing forests to meet them, should be carried out. Where deficits are foreseen, decisions must be reached on which and how much of the products involved should be met completely from domestic production. It is essential that such decisions are based on an analysis of the costs and benefits associated with the additional resources to be committed against the alternative of importing.

To promote effective utilization of the forest resources, the problems of forest industries development need to be closely examined. The choice between the different types of industries and their location should be based on clearly defined criteria rather than sentiment or political bar-

gaining.

Research into the various aspects of forestry and wood products utilization, as well as manpower training, need to be intensified. This will improve both efficiency of forest utilization and quality of resource management.

Finally, the forest administration structure should be carefully reviewed to conform with the aims of policy and ensure its effective implementation. The implications of the foregoing suggestions are detailed in Chapter 5, where an optimal forest development policy for Nigeria is synthesized. The remainder of the present chapter will examine policies towards Nigeria's wood products export trade. This is considered necessary in view of the undoubted connections between the current forestry and forest industries problems and the export trade in wood products.

4.3 Significance of wood products export policies for Nigeria

It has been demonstrated that the history of forestry in Nigeria has been essentially that of the development of the export trade in wood products. Although the desire to protect valuable timbers from the indiscriminate exploitive activities of timber traders was one of the major reasons for introducing organized forestry to the country in 1899, the Forest Department was soon preoccupied with the function of promoting "fuller utilization" of the forests through a vigorous export trade. To achieve this end, samples of several wood species were sent to Britain and other overseas countries to determine their suitability for, and acceptance in export markets (Pollard, 1955). Within a few decades, virtually all the productive high forest of Southern Nigeria had been allocated to timber pros-

pecting companies.

Measures for conserving the resource generally took the form of regulations specifying minimum girth limits and differentiating between "obligatory" and "non-obligatory" species which may be felled. Beyond this, the timber producing companies suffered no further restrictions on their freedom of action in the use of the resource. Government regulation of timber exploitation has applied almost entirely to production forest reserves. Timber exploitation in areas outside reserves is, for all practical purposes, uncontrolled. The quantity of timber removed from such areas is limited only by the capability of the exploiter and ability to pay the necessary fees to the local authorities concerned (MacGregor, 1959).

The post-war boom in the timber export trade accelerated the drain on the timber resources as more and larger wood-based industries were established. Mechanized, and more sophisticated harvesting methods were employed, while small-time operators and timber speculators became more active. As the available timber supplies in unreserved forest lands were rapidly exhausted, pressures on forest reserves have increased. For example, in 1950 - 51, 11.8% of the total number of trees felled in Western Nigeria came from reserves,whereas in 1951 - 52 and 1952 - 53, the proportions were 22.8% and 34.3%, respectively.[12] The proportion of trees felled in forest reserves has exceeded 60% of the total in recent years and is increasing. Almost all

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12 Western Nigeria, Annual report of the forest administration of Western Nigeria, 1952/53. Government printer, Ibadan.

the timber felled in reserves was destined for export.[13] Given the relatively small area (2%) of productive forest under reserves in Nigeria, and the growing domestic demand for wood, concern has been expressed over the capacity of the forest estate to meet the "requirements" of the export trade in wood products (GATT, 1964; Wellwood, 1966; FAO, 1967).

The past patterns of exploitation of Nigerian forests amounted, in practical terms, to "mining" of the resource with little or no effort at its replacement in order to ensure continuity of production and supplies. Fellings have been largely confined to the most valuable species such as the mahoganies, African walnut and iroko. Such creaming of the forests indicates a pattern of inefficient utilization of the forest, forced by the dictates of a conservative export market. It constrains maximization of the benefits to the economy. Moreover, the situation has not been helped by the export policy of wood-based industries which emphasizes exportation of the highest quality logs and domestic conversion of only timber judged unfit for export in the round. According to Wellwood (1966), "exploitation (of Nigerian forests) is carried out by concession holders, many of whom operate sawmills, although a main objective is the production of round logs for export".

It may be argued that Nigeria's experience of forest exploitation and wood products exports is nothing peculiar, but can be found repeated in some of the presently industrialized countries and in almost all the tropical

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13 In practice, timber exported is not differentiated on the basis of whether or not it is cut in reserves but rather on the quality of the log. The assumption however, is that over time almost all the high quality logs are derived from reserves. Moreover, firms holding substantial concessions within forest reserves have been largely export-oriented.

developing countries. Ely and Wehrwein (1964) have described the policy of "mining" the forest resource,and its consequences for forest production and the economy of the U.S.A. in the 19th century. The FAO (1975) estimated that the proportion of tropical wood exports in round logs increased over the period 1960 to 1973, in spite of increased domestic wood processing. The losses to the economy from the under-utilization of the forest resource and wood exportation primarily in the round, is only now being appreciated in the tropical developing countries. Some of them (especially the South-East Asian countries), have begun to review their policies and adopt measures concerning wood products exports which will enhance the contribution of their forest resources to the general economy (Rola, 1974; Takeuchi, 1974).

The present thesis argues the need for a sound wood products export policy for Nigeria. Existing forest policies make some reference to the export trade in wood products. They are, however, considered too general and inadequate, if not frequently conflicting. For example, the Eastern Nigeria forest policy,under the 1962 - 68 National Development Plan,emphasized production for domestic consumption. The policy statements of the Western and Mid-Western Regions have, in contrast, implied the desirability of continuing or maintaining the export trade,at least "at the present levels". No precise statement is made about the need to maximize the benefits to the economy from timber exportation, and the reconciliation of possible conflicting demands on the timber resources from domestic consumers and exporters.

An understanding of the key issues involved is important in formulating a wood products export policy for Nigeria. The first is the sustainable supply capacity of the country's forest lands. Second, there is the need to reconcile the domestic demand for wood with the export requirements

within the limits of the established supply capacity. Third, the problems of stability of the forest estate, and efficiency of long-term management, demand a more rational utilization of the resource as opposed to the past practice of creaming the forests. Fourth, while log exportation minimizes risk and increases profits to private industry, it involves considerable losses to society in the form of lower value-added, incomes, employment and linkage effects of forestry with the rest of the economy. It is, therefore, important to design a wood export policy which will reconcile the opposing interests of the society and forest users in the resource. It cannot be over-emphasized that such policies should have as their over-riding consideration, the benefits accruing to the economy of Nigeria.

4.4 Typology of wood products export policies

It is obvious that the nature of wood products export policies adopted by a given country is the result of a number of factors. Decisions affecting wood products exports constitute an integral part of the national forest policy. In many countries, the sustained yield principle has been adopted as the central forest policy in order to secure the foundation of forestry as a business, ensure orderlines of operations, as well as maintain the supply of essential products in perpetuity. The degree of emphasis which forest policy places on wood products exports will generally tend to reflect the orientation of the country's foreign trade policy. For example, the relative success of Japan, South Korea and Taiwan, as wood products exporters, compared with other, better-endowed countries of South-East Asia, has been attributed to the more aggressive and outward-looking trade policies of the former (Takeuchi, 1974; Rola, 1974).

Forest and trade policies are influenced by the national development policy according to whether the latter is outward-looking or inward-looking.[14] An outward-looking policy implies a high degree of reliance on foreign trade and exports to provide the main stimulus to economic growth. In contrast, an inward-looking policy aims primarily at some degree of national self-sufficiency through diversification of the economy. Under an inward-looking policy, emphasis shifts from export expansion to import-substitution as a growth strategy.

Since 1960, Nigeria has progressively adopted an inward-looking policy as the strategy of national economic development (Aboyade, 1973). The impact of the new strategy on forest policy has been a greater emphasis on production to meet domestic requirements for forest products.[15] Domestic consumption requirements take on added importance in view of the rapidly diminishing volume of standing timber stock in preferred species. In the past, both exports and domestic markets have tended to compete for the limited number of valuable timbers. Many of the problems of the export trade arise from the need to divert an increasing proportion of the commercially valuable timbers to domestic consumption. That domestic consumption should take precedence over exports under conditions of a static or diminishing availability of a national resource such as timber, can hardly be argued.

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14 For a discussion of outward and inward-looking policies, and their relative merits as growth strategies, see Balassa, Bela, Growth strategies in semi-industrial countries, Quarterly Journal of Economics. 84(1): 24-47.

15 This is clearly illustrated by the forest policy statement under the Second National Development Plan, which significantly makes no explicit statement about wood products exports. See, Federation of Nigeria: Second National Development Plan (1970-74), Lagos, 1970. p.124.

However, the assumption of a diminishing timber resource may not be entirely valid given the possibilities of improved utilization, increased processing and better marketing of wood products, and the adoption of policies to reconcile the competing demands for wood for export and domestic consumption.

What are the alternative policies which Nigeria might adopt towards wood products exports, and what potential impact would each have on the efficiency of forest resource use? For the purpose of this study, three broad alternative policies are identified:

1) Laissez-faire policy.
2) Incentives policy.
3) Regulation and control policy.

4.4.1 Laissez-faire policy

A laissez-faire policy may be regarded, essentially, as a "do nothing" policy option. However, a "do nothing" policy does not mean that there is no policy (Worrell, 1970). What it means, instead, is that the present arrangements should be allowed to continue. In the present context, a laissez-faire policy would involve a decision to allow a continuation of the situation whereby the export trade in wood products is carried on exclusively by private industry with little or no public intervention. The advantage of a laissez-faire policy is predicated on the power of a competitive free market system to allocate resources efficiently. Under the assumptions of such a system producers and consumers, behaving rationally and with perfect knowledge or information, will respond to price signals (in factor and product

markets) in guiding their allocation of resources so as to maximize profits and utilities, respectively. "Competitive sub-systems will aggregate into an "efficient" economic system which will produce a maximum aggregate output for given inputs" (Nagle, 1970). Scott and Shearer (1975) have argued that efficiency should be the guiding criterion for resource allocation. Maximum economic efficiency is attainable only under competitive free market system. In their words:

> ".... a highly competitive economy, promotes economic efficiency in the allocation of resources..... Values and prices that emerge (for goods, services, raw materials or land) in such markets act as reliable signals for efficient business performance. It is not generally realized how completely such a competitive market system could handle the many allocative problems about which decisions must continually be made".16

Economists have, for a long time, been impressed by the theoretical appeal of the perfectly competitive model of an economy or industry. It is now generally recognized that such a model is rarely, if ever, approximated in practice. In the real world, market imperfections and externalities are important factors militating against the achievement of efficiency. However, that market imperfections do always run counter to promotion of efficiency has been disputed by such writers as Keynes (1964), Galbraith (1967), Ferguson (1964), and Dorfman et al. (1958). Thus, a wide range, or spectrum of industry structures may be encountered in an economy from perfect competition to pure monopoly (Watson, 1968). For purposes of public policy in

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16 Scott, A.D. and R.A. Shearer, 1975. "Some sources of inefficiency in forest policy". A brief submitted to the Royal Commission on Forest Resources. Vancouver, B.C. November, 1975. p.4.

dealing with real-system situations the problem seems,therefore,to be one of determining an acceptable level of "workable competition as some sort of structural constraint for most industries" (Nagle, 1970).

An extension of the laissez-faire policy to foreign trade implies acceptance of free trade as leading to the most efficient allocation of resources, by encouraging specialization and mutually beneficial exchange among nations. Boulding (1958) has, however, observed that free trade and specialization have their disadvantages and may "diminish the power of a nation, by placing it in too great a degree of economic dependence on others". Thus, under certain conditions, some governmental interference with exports or imports is economically necessary and politically imperative. The case for a laissez-faire policy towards wood products exports, therefore, rests on the assumption that a perfectly competitive market for wood products prevails. The goals and economic philosophy of the government should also indicate whether such a policy is appropriate and optimal.

4.4.2 Incentives policy

Another policy option is the diversification and up-grading of exports towards more highly processed products through incentives to private industry. It was shown (Chapter 3) that, round logs have dominated Nigerian wood products exports accounting for, on average, over 80% of the annual volume . Exports of more processed products, particularly veneer, plywood, board products and wood manufactures would not only earn several times the value of an equivalent volume of log exports, but would also substantially reduce transportation charges on the more bulky and heavier logs. It is also

most probable that, under favourable demand conditions, production of highly processed products would lead to more efficient utilization of the timber resource by providing various uses for secondary species, mill waste and smaller size timber.

The desired shift to more highly processed wood exports in Nigeria may not be easily realized - past export trends confirm this - if the timber industry has neither the means nor the will to voluntarily effect the change. For example, the highly fragmented structure of the timber industry, has generally precluded the majority of existing mills from engaging in exporting because they are too small in size, tend to be uneconomic and lack the ability to produce to international product specifications. In that circumstance it may be necessary for the government to intervene to direct the pattern of exports towards conformity with its aims for the forestry sector. The change towards more processed wood products should be, initially, pursued by means of incentives to, and encouragement of, private industry. These could include export tax reliefs on processed products, direct subsidies to approved exporting firms, more liberal raw material pricing policies, duty-free import of machinery and equipment, provision of grading and seasoning facilities at minimal cost, reasonable foreign exchange allocations for necessary overseas transactions, as well as assistance with product development, market research and promotion. The aim of these measures would be to improve the technical competence and economic viability of the wood-based industries leading to higher quality of output and a greater ability to compete in international markets. To ensure the effectiveness of these measures, the government could direct the amalgamation or integration of existing firms, or enter into direct participation in any firm or, alternatively establish

new competing industries of its own.

The selection of appropriate incentives to the forest industry will depend on judgements about the relative importance of different obstacles to the diversification and upgrading of wood products exports. Some of the obstacles, which include uneconomic size, obsolete machinery and production methods, poor organization and management,as well as a lack of experience in marketing manufactured products in foreign markets, confront timber industries in Nigeria and, to varying degrees, those of many other tropical developing countries (A.D. Little, Inc., 1965, FAO, 1967, Moore and Cheslyn, 1975). The judicious use of appropriate incentives could lead to elimination of these obstacles and enhance industry long-term performance. A survey of timber-exporting firms in Nigeria revealed that the most widespread complaints were connected with the government's pricing policies on standing timber, allocation and security of concessions, export taxes on wood products and shipping problems. The common view of the industry is that there has been a failure of government understanding of the effects of these factors on the viability of their businesses and their ability to compete in foreign markets.[17]

The problem of incentives, and the methods of their application, are tied up with several considerations. The first consideration is whether there is a case for such intervention on the part of the government. Such intervention may be justified on grounds of its desire to protect its interests in the forest resource, and to stimulate development of the forest sector in a manner which will contribute to the socio-economic objectives of the

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17 NTA, 1969. "Presidential Address" to the Annual General Meeting, Nigeria Timber Association, Ibadan, 1969.

country. Also, it may be argued that in a less-developed country an export-oriented industry will face a series of handicaps in increasingly competitive world markets unless government assistance to overcome them is available (Boulding, 1958). Second, what impact will the incentive provided have on efficiency in the use of resources? Where the incentives involve transfer of real resources from other sectors of the economy to the forest sector, it must be demonstrated that they will lead to a net benefit to society and a positive contribution to welfare. Finally, application of incentive schemes may give rise to various problems of equity and administration. In the Nigerian context, for example, it must be decided whether the incentives will apply to all kinds of wood-based industries, whether they should benefit both indigenous and foreign enterprises,and what time period will be involved.

The policy of incentives as a means of stimulating appropriate behaviour by private industry has obvious advantages and disadvantages. The most serious disadvantage is that private industry may come to regard such incentives as a permanent feature of their operating conditions, hence, fail to adopt measures of their own which will make such incentives unnecessary at some later date. In Nigeria, however, the evidence does not indicate that sufficient incentives have so far been extended to the timber industry to enable them to compete more effectively in the export markets. There would seem to be a case for a closer examination of the problems of the timber industry in order to determine in what areas it will be feasible to provide government incentives and encouragement which will improve the sectoral contributions to the economy.

4.4.3 Regulation and control policy

It has been argued above that government incentives to private industry to diversify and upgrade wood products exports are justified where they are warranted, do not involve misallocation of resources and decrease of welfare and take into account equity and administrative costs. However, even where incentives are provided, there may be instances where private industry does not have the will to effect changes in the desired direction. For example, in their report on the timber trade in Western Nigeria, Mabogunje et al. (1969)[18] observed that "whatever measures are taken by Government to ensure that as much as possible of our logs is processed in the country for export will be stoutly opposed by the Trade". The opposition to any drastic change in the existing pattern of timber exports in Nigeria is primarily motivated by a desire for quick and high profits by log exporters. Also, many log exporters are small-scale, inexperienced businessmen who have no commitments to supply timber to mills. For some leading wood products exporters, who operated sawmills, export of logs is the only profitable segment of their operations. The export of processed wood products was only a "marginal business", earning little or no profits and actually "subsidized" by log exports. Finally, the export of logs is not highly complex and involves little risk. Unfortunately, none of the firms contacted during this study cooperated by producing records of transactions to substantiate these claims,although their attitudes clearly showed a lack of will to implement a policy of diversification and upgrading of their wood

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18 Mabogunje, et al., 1969. op.cit. p.91.

products exports.

The introduction of export controls could provide an effective means for government to regulate the pattern of wood products exports in Nigeria. It may be noted that export control measures have been applied or are being planned in many countries faced with excessive and unprofitable drain of their forest resources. Sweden introduced measures prohibiting wood exports in the round as far back as the mid-nineteenth century (Greeley, 1953). The Province of British Columbia, Canada, implemented a policy of restricting exports of essentially unprocessed forest products, logs and chips, under the terms of Timber Licenses in 1901 (Scott and Shearer, 1975). Most Latin American countries have, by legislation, limited or prohibited log exports (World Wood, 1975), while a plan to restrict log exports was announced by the Philippines in 1971.[19] In Nigeria, an attempt to control timber exports was first made in 1939.[20] Although the measure was short-lived due to the very favourable overseas demand for wood after World War II, pressures for its reintroduction have been growing in recent years.[21]

The control of wood products exports could take several forms. Some of these might include:

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19 World Wood, September, 1971. It might be noted, however, that for various reasons, the Philippines government has so far failed to implement this plan.

20 Adeyoju, S.K., 1975. op.cit. p. 80

21 A meeting of the forestry authorities and the timber trade was held in Benin City in June 1974 to consider a proposed partial ban on log exports involving the more valuable species such as mahogany and iroko. Some members of the trade supported this move while others were vehemently opposed to it.

a) Export quotas - under which each firm is allocated a fixed quantity that it may export in a given period - e.g., one year.

b) Restriction of total quantity of exportable timber in a given period, without allocation.

c) The use of tariffs and export taxes to discourage log exports.

d) Prohibition of exports of specified timber species in form of logs (i.e. a partial ban on log exports).

e) Prohibition of all log exports.

f) Government control of the marketing of timber exports.

g) Reduction of the allowable annual cut of timber.

The above measures, which are not necessarily in order of importance, do not exhaust all possible methods of timber export control. However, they indicate the range and possible combination of approaches which may be considered. The control of timber exports has three principal aims. First, it will ensure that more wood raw material is available to domestic industries and reduce the strains on the resource. Second, it may induce local industries to engage in increased processing of wood before export, if the diversion of logs to the local market leads to a reduction of raw material costs to industry. Third, increased local wood processing should foster attainment of socio-economic objectives for the forestry sector, including the capture of greater value-added, creation of more employment opportunities, development of local skills and generation of significant linkages with the rest of the economy. As in the case of the other policy alternatives already discussed, it should not be taken for granted that, direct governmental control of

wood products exports will necessarily be the optimal policy for every country. It is necessary to carefully weigh each alternative against the goals of the society, underlying assumptions and criteria, as well as the likely constraints on its successful adoption and implementation. A possible framework for analyzing these factors is exemplified by Worrell's (1970) recent work and is the basis for analysis of the Nigerian case in Section 4.5.

4.5 Framework of policy analysis for Nigerian wood products exports

Worrell's (1970) framework of policy analysis embraces goals, means and constraints, criteria, and process. The 'goals' of policy are, essentially, a statement of the ends that are to be attained with the use of a society's resources. The 'means' are the possible alternative techniques or methods of action that may be employed in the effort to attain the stated goals. The policy 'process' includes all those arrangements directed to effectuating the means of achieving the goals. In the context of this framework, "policy" may be considered as falling under the category of "means". Alternative policies towards Nigerian wood products exports were identified in the preceeding section. Worrell's analytical framework has therefore been modified for purposes of the present study, to include the following:

a) Goals

b) Criteria

c) Means and Constraints

d) Process (or implementation)

4.5.1 Goals of Nigerian wood products export policies

The goals of Nigeria's wood products export policies may be interpreted from the goals of the society as a whole. Dahl and Lindblom (1953) have given a fairly comprehensive list of the instrumental or prime goals of a society to include freedom, rationality, democracy, subjective equality, security, progress,and appropriate inclusion. Boulding (1958) stated that the fundamental objectives of economic policy are economic progress, economic freedom, economic stabilization, and economic justice. At least, in Western society, these goals can be generally taken as accepted and understood by the majority of the people. They can be grouped together under the fundamental goal of security and national welfare. Complex interrelationships and potential conflicts exist between the goals of a society, while their interpretation and ordering may differ both over time and between societies.

Political independence in Nigeria has brought with it not only unprecedented national consciousness and pride,but also an intense desire for change and rapid economic progress. National policy has been geared not only towards a break with the colonial past, but the establishment of the foundation of a progressive and dynamic economy which will lead to a substantial improvement in the living standards of the people at large. In the economic sphere, the four basic goals enumerated by Boulding (1958) seem to be fully accounted for in the declarations of Nigeria's national economic planners. Specifically, the Second National Development Plan (1970 - 74) has proposed the following five principal national objectives:[22]

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22 Federation of Nigeria: Second National Development Plan (1970-74), Lagos, 1970. p.32.

1) A united, strong and self-reliant nation
2) A great and dynamic economy
3) A just and egalitarian society
4) A land of bright and full opportunities for all citizens and
5) A free and democratic society

Under the framework of these broad national social goals a set of development priorities have been established:[23]

1) To rehabilitate war damage and restructure the whole economy
2) To create and maintain job opportunities
3) To produce adequate high level and intermediate technical personnel
4) To maintain a high rate of per capita economic growth
5) To provide and maintain a level of social services compatible with the economy

By comparison with the First National Development Plan (1962 - 68), a significant change in the orientation of national policy in Nigeria can be observed after 1970. Although economic growth retained the highest priority as a social goal, policy under the first plan placed considerable emphasis on the need to maintain a free and mixed private enterprise economy, stressed the role of international economic relations, the importance of expanding exports and encouraged foreign capital investment, while making the most efficient use of domestic resources. In contrast, the second national plan

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23 Ayida, A.A. "Development Objectives", Conference on National Reconstruction and Development, Ibadan, 1971. pp.27-29.

gives consideration to both economic growth and equity, self-reliance and economic independence through increasing control of the resources of the economy by Nigerians. While free enterprise is still recognized,in principle,as the appropriate form of organization of the economy, it explicitly provides for "government intervention in economic matters designed primarily to protect and promote the public interest".[24] The goals of national policy in Nigeria,thus,have political, economic and social aspects. This raises serious problems in appraising economic policies solely on the basis of economic laws and principles.

In a developing country just emerging from colonial rule, the political and social elements of national policies may be dominant. Any judgement of economic policies which does not take these into account may turn out to be faulty.

Wood products export policies must take account of both the national forest policies and foreign trade policy. The latter two are themselves subject to,and dictated by the goals of national policy. As Worrell (1970) has stressed, "forest policy in the United States must be viewed in the light of the general economic, political and sociological philosophy and organization of this country". As far as the forestry sector is concerned, it seems appropriate to regard the national goals as given and any appraisal of forest policy confined to the extent to which they conform,or fail to conform,with the stated goals.

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24 Federation of Nigeria, Second National Development Plan, (1970-74), op.cit. p.32.

4.5.2 Criteria

Assuming that the goals of national economic policy which should govern wood products export policies are known and given, definite criteria or standards for judging appropriateness of decisions regarding the latter are still required. A number of criteria have been advanced by economists for choosing between alternative resource allocation decisions. The technique of cost-benefit analysis, originally developed in the United States in connection with water resources projects, has received wide application in many other areas.

It includes such measures as benefit-cost ratio, benefits minus costs (or net benefit), internal rate of return and discounted present net worth.[25] Cost-benefit analysis focuses on economic efficiency as the criterion for choosing between alternative projects. Worrell (1970) has observed that the cost-benefit analysis approach, although useful, may actually lead to the wrong policy decisions because of the stringent requirement that benefits and costs be exactly measurable. Also, it ignores potential external economies and diseconomies associated with particular policies. He,therefore,suggested the "concept of optimum welfare" which takes into account social costs and benefits and embodies efficiency and distribution considerations. Whitby, et al. (1974) has suggested that economists have, in general, been reluctant to adopt the welfare criterion for the analysis

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25 The literature on benefit-cost analysis has grown tremendously during the last decade. A concise discussion of the technique is contained in Pearse, D.W., Cost-Benefit Analysis. London. MacMillan. 1971. See also, Mishan, E.J., Elements of Cost-Benefit Analysis. Allen and Urwin. London. 1971 and McKean, R.N., Efficiency in Government,through Systems Analysis. John Wiley & Sons, N.Y. 1958.

of resource allocation decisions because it involves untenable interpersonal utility comparisons. However, there may be instances where government decisions regarding the use of forest resources are primarily guided by considerations of distributional effects and welfare rather than efficiency narrowly defined.

Economic efficiency and welfare criteria deal with the economic aspects of resource use. They provide the initial steps in judging the desirability of particular policies but are not necessarily sufficient when used alone. Dahl and Lindblom (1963) have suggested such supplementary criteria as: freedom, subjective equality, democracy and appropriate inclusion. These indicate the political dimensions of policy decisions which seem to weigh heavily among the factors considered by policy-makers in the typical underdeveloped country. Finally, other criteria which seem relevant for forest policy decisions are conservation and the public interest. The use of conservation as a criterion for policy decisions has been criticized by Whitby, et al. (1974) because it assumes knowledge of the direction of future demand and ignores the effect of technology on resource availability and use. The public interest as a criterion for policy decision derives from the idea that "the state is to protect the broad interests of the many and the community at large against the inconsiderate use of property by the few" (Fernow, 1902). After extensively reviewing the many contributions to the concept of the public interest, Worrell (1970) concluded that it is a peculiar kind of criterion but, in spite of the many disagreements about it, seems useful for policy decisions.

The foregoing discussion has indicated the multiplicity and, often conflicting nature, of criteria for judging policy decisions, some of which

are vague and defy quantification, whereas others are emotional, yet real. What is also clear, is that no single set of criteria is adequate for judging policies, nor will the same criterion be appropriate at all times. In a situation such as that prevailing in the Nigerian forest economy, criteria for evaluating wood products export policies must necessarily encompass the political, social and economic goals of the society. In other words, the policies should be subjected to such tests (or criteria) as are listed below:

1) Efficiency of timber utilization
2) Net contribution to foreign exchange earnings
3) Employment and rural stabilization
4) Income redistribution effects
5) Industrialization and skills development
6) Value-added and capital formation
7) Equity and justice
8) Indigenous participation in ownership and control
9) Resource conservation
10) Economic growth and welfare

These criteria are not necessarily in order of importance. They cover the range of issues which have been raised in Nigeria concerning the use of the country's forest resources and the role of the export trade in wood products.

4.5.3 Constraints

Policy choices are always subject to constraints; that is, those factors which are likely to detract from the full achievement of declared

goals,or which must be satisfied in the pursuit of the aims of policy. Also, constraints take on varying significance depending on the policy choice and their importance may tend to change over time. Adeyoju (1975) has listed the following as the major constraints on Nigerian forest policies:

1. Dual control of management - this has tended to detract from the authority exercised by state forest officers over reserves and prevented a satisfactory flow of funds for development of the sector. In some states (e.g. Western and Mid-Western) dual control of management has been terminated, giving exclusive management functions to state forest authorities. However, the divergence between ownership and management of forests has been unresolved, thus creating other problems of resource use.

2. Dereservation - the increasing demands for forest dereservation constitutes a major threat to the stability of the forest estate and endangers continuity of production and resource development. This is the direct result of the fact that forest land, even though managed by the state, is owned by local communities. Given the prevailing communal land tenure systems in Nigeria, maintenance of the stability of the forest estate will remain extremely difficult unless it can be replaced by public ownership of such lands or the people educated as to the severe consequences of their actions.

3. Illegal timber exploitation - unauthorized felling of timber has always been part of Nigerian forestry practice but in recent years it has approached astronomical proportions which caused undue

hardships for the timber industry and the community as a whole. Political necessity, connivance or collusion by some forestry officials,and understaffing have been the main influences in increased illegal timber exploitation in Nigeria. Its elimination is imperative to ensure the survival of the timber industry and maintenance of forest productivity through proper management.

The constraints on wood products exports in Nigeria extend beyond problems of adequacy and stability of the forest estate. Additional ones relate to the need to promote an efficient and integrated wood products industry, the security of tenure, access to foreign markets for processed wood and secondary timbers, and maintenance of a favourable climate for investment in the sector. Finally, the satisfaction of the future wood needs of Nigerians and the impact of the alternative export policies on their participation in the timber industry should also be considered important constraints on the choices that must be made.

The constraints on wood products export policies should be seen in terms of their economic, political and social consequences for the Nigerian economy. The choice of appropriate policies can eliminate some of these constraints,but others must be taken as given.

4.5.4 Process

Policy process embraces the three elements of formulation, execution and evaluation. Because formulation of forest policy has traditionally been the prerogative of professional foresters, there seems to be a common presumption that wood products export policies appropriately falls under

their responsibility. Obviously, the forestry authorities have, as the state agency charged with the responsibility for managing the forest resources and as a supplier of the most important raw material for wood-based industries, a basic interest in the fortunes of the wood products export trade. The forestry authorities may not have the required knowledge of industry and wood marketing problems. Moreover, the interests of the owning communities should be ascertained and taken into account.

The current approach in Nigeria which places sole responsibility for policy formulation on the forestry authorities is clearly unsatisfactory. A major complaint of the timber industry, which contributed to the failure of policy in the past, is that policy decisions were reached without consultation and thrust upon it as a fait accompli.[26] The result has been a lack of cooperation from the industry in implementing government policies on forest resources. MacGregor (1969) has questioned whether government forestry departments should engage in such consultations, since they might forewarn industry about its moves and preempt its effectiveness. Thus, the question is not whether there should be consultation but rather when it should be done.

Consultation between industry and government is essential in promoting understanding of policy proposals and ensuring their successful implementation. In addition, the formulation of wood products exports policies goes beyond questions of efficient forest management and protection. The need for "an outside viewpoint on forestry problems" which has been stressed by Boateng (1968), is particularly relevant in this case. If poli-

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26 Personal communication from a leading wood products firm in Nigeria.

cies on wood products exports are to be consistent with the national industrialization and trade policies, participation in their formulation should be extended to other interested agencies such as the Ministries of Trade, Industry,and Economic Development.

It is well known that local communities in Nigeria have influenced the export trade in wood products through control of awards of concessions. Mabogunje, et al.(1969) have noted that the choice of concession holders by local councils has been,primarily,motivated by political considerations rather than the capacity of the latter to effectively utilize the resource. Appropriate representation of the resource owners in the policy formulation stages may be instrumental to their understanding of policy objectives and securing their cooperation in its achievement. In short, the formulation of wood products export policies should be carried out through a body representing the forestry department as manager of the resource, the timber industry as wood user, appropriate communities as owners, and other agencies whose technical competence can make a useful contribution to the stated objectives. However, the forestry department should be the sole agency charged with implementation of the agreed policies, but assessment of the effectiveness of the policy should be carried out by the Ministry of Economic Development.

In a federation such as Nigeria, where a multiplicity of forest services with equal powers in their zones of influence exist, the policy process remains the most intractable aspect of a wood products export policy. It needs to be stressed that unless there is cooperation, the sum of the individual gains may be less than the common loss involved in sub-optimal policies. To achieve better results, concessions and compromises may be

necessary, subject to the requirement that, in all cases, the national interest should prevail.

4.6 Appraisal of the policy alternatives

In this section, the broad policy alternatives on wood products exports identified in Section 4.4 are examined with special reference to Nigeria. The optimality and feasibility of each alternative is indicated, using the analytical framework presented above. The implications of each for the policy process will also be appraised.

4.6.1 Laissez-faire policy

A laissez-faire policy which implies complete freedom for private industry in the conduct of the wood products export trade has the advantage (at least in theory) of promoting greater efficiency in the use of forest resources. If the industry is perfectly competitive, the pursuit of maximum profits by individual firms would lead to optimum output and efficient resource use. In addition, a laissez-faire policy would conform with the general philosophy of maintenance of a private enterprise economy.

Efficiency, narrowly defined, is consistent with the national goal of maximizing the rate of growth of income per capita in Nigeria. A basic requirement of such efficiency is that the industry is perfectly competitive, a condition that is hardly encountered in practice. In Nigeria,the export trade in wood products has traditionally been in the hands of private industry made up of a large number of small-scale indigenous businessmen and

a few large expatriate companies.[27] The degree of competition in the trade has generally been low with the dominant share of the exports controlled by very few large expatriate firms. Until recently, one single firm, the African Timber and Plywood Ltd., at Sapele, accounted for about 40% of the log exports, 75% of the sawnwood exports and 100% of the veneer and plywood exports. Concentration and control of the wood products export trade by foreign firms has been facilitated by their larger size and better organization, access to large sources of,capital, and greater knowledge of and well established connections in,foreign markets. These factors are of critical importance for successful participation in the complex and distant foreign markets for wood products. They are generally lacking among the Nigerian businessmen.

The general picture of the export trade controlled by a near monopoly of foreign companies in Nigeria raises the question of the importance of efficiency for policy. There is little doubt that the foreign companies have been relatively more 'efficient' in the utilization of the forest resource than their Nigerian counterparts. Mabogunje, et al. (1969) found that the "African Timber and Plywood Company exports less than 25% of its production in the round and the figure for Omo Sawmills is about 50%".[28] With diminishing timber availability in areas outside reserves, and the rising costs of utilization of timber in remote areas within reserves, in-

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27 The concentration in the export trade is also a reflection of the structure of the industry - a modern sector made up largely of foreign firms in the export trade, and a traditional sector of small-scale indigenous businesses producing for the domestic market.

28 Mabogunje, A.L. et al., 1969. op.cit. p.90. "Efficiency" as defined here is in the technical sense rather than economic efficiency which should take account of distribution.

digenous firms in the industry are facing increasing problems of survival. The result has been a general feeling of alienation and dissatisfaction among these firms with regard to the entrenched position of the foreign enterprises.[29]

It is clear that efficiency alone, may be an insufficient criterion for determination of an appropriate policy for Nigerian wood products exports even though it is likely to promote economic growth, more employment opportunities and other advantages which may be derived from a dynamic and responsive industry. Economists are now generally agreed on the need to take account of redistributional effects and justice in designing policies in underdeveloped countries (Whitby, et al. 1974; Chenery, et al. 1974). Bauer (1954), after noting the cumulative adverse effects, on economic growth and the general economy, of restrictions on the number of participants or volume of economic activity of particular groups in a society, emphasized that:

> "In practical affairs....an increase in national income per head is not a decisive criterion of economic policy. It is possible that the improvement of the economic position of certain groups in a population may take precedence as a goal over the raising of the national income; and as a corollary, measures may be advocated to achieve the former even at the expense of a reduction of the national income".[30]

The implication for policy is that maximization of welfare may not necessarily mean maximization of output (Watson, 1968). Rather, a trade-off between efficiency and distributive justice is involved. In Nigeria, a major

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29 Since 1970, there has been increasing local participation in these foreign enterprises. For example the Omo Sawmills and Nigerian Hardwood Company now have a majority local interest.

30 Bauer, P.T. 1954. op.cit. p.37.

policy goal is to increase control of the economy by Nigerians. A laissez-faire policy towards the wood products export trade, under present conditions, clearly fails to satisfy this goal. Whether this is a sufficient condition for rejecting such a policy, however, depends on a comparison of the benefits or effects of alternative policies. What is being argued in this thesis is not necessarily based on the relative level of participation of Nigerians and non-Nigerians in the trade, but rather the effects of its current degree of concentration on both efficiency and general welfare. Where there is a potential conflict between efficiency and welfare, a modification of the former should be an appropriate focus of policy. In other words, government regulation or restriction of wood products exports in some form may represent alternative policies which merit consideration.

4.6.2 Regulation and control policy

Restriction of wood products exports represents the other extreme of policy. It has the advantage of simplicity and least cost in application to government. It can be justified on grounds of requirements for domestic consumption, increased domestic processing, conservation of a depleting resource or, simply, to deny supplies to particular countries. The effects of export restriction will depend on the form, scope and length of period of its application. In most countries where restrictions on wood products exports exist, they have been applied mainly to log exports with the aim of inducing increased local processing of wood, protection of domestic wood-based industries, and enhancing the benefits from the forest resource use in form of greater foreign exchange earnings, value-added and employment.

It will be assumed in the present study, that control, or restriction

of wood products, exports is to be confined to log exports. It will also be assumed that Nigeria faces a perfectly competitive market for processed wood products exports. Since the country supplies an insignificant proportion of those markets, Nigerian wood products exporters must take the international price as given. They are able to sell all their exportable output at that price. The problem, therefore, is to determine what form of restriction of log exports is optimal under the stated policy criteria.

In considering efficiency, the problem reduces to one of the most profitable allocation of available logs between the domestic and export markets. A simple rule for the optimal allocation is the equality of marginal revenue from a given log in both markets[31] (Dorfman, et al. 1968; Watson, 1968). Determination of the optimal allocation requires information on both log prices and elasticity of demand in the two markets. Unfortunately, data for meaningful analysis of these variables are lacking. From interviews of Nigerian wood products exporters, the impression was gained that they did not adopt a policy of market segmentation. The majority participated in the domestic market[32] to a very limited extent, leaving that function to the small-scale, usually indigenous firms. Moreover, an examination of Nigerian wood products export trends indicated that elasticity of demand for logs is generally lower in the export than in the domestic market. No direct estimates to support this statement have been made, but rising log prices have been cited

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31 This holds on the assumption that segmentation of the markets is feasible and approximates the practices of wood producing firms.

32 Preference for exports was also due to long-term commitments to importers and/or subsidiary status of exporting firms in a multi-national corporation.

as the most serious problem by sawmills, many of which operate as "marginal" concerns but which, nevertheless, found log exports quite attractive. The effect of unrestricted functioning of the timber market, especially in a situation of diminishing timber availability and/or rising stumpage costs, would be an acceleration of log exports to the more profitable export markets, to the detriment of domestic industry. The view is also consistent with that expressed earlier, that the log export trade is not only more profitable, but minimizes the individual producer's risk in investment in processing and distribution.

Scott and Shearer (1975) have recently questioned the policy of log export restrictions in British Columbia on the grounds that it interferes with the free functioning of the market system and involves costs to society in terms of lower economic efficiency. In British Columbia, for example, redistribution and welfare have been major policy considerations and it has been shown that these goals have been largely realized.[33] Thus, market imperfections in the forestry sector may be tolerable where it promotes integration and innovation in industry resulting in greater capacity to utilize the forest resource (Nagle, 1970). In the Nigerian situation, the policy problem is, essentially, how to reconcile the requirements for efficiency in the use of the available timber resources with the interests of indigenous producers engaged primarily in the export of logs. Prohibition or control of logs exports could in the short-run reduce efficiency by diverting logs from their most "profitable" use and may, in fact, represent a subsidy to domestic processing

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33 Haley, D., 1971. Influence of public policies on the development of the forestry sector in the Province of British Columbia. Annual Meeting of the American Agricultural Economics Association, August, 15-18, 1971. Carbondale, Illinois. 10pp.

industries in form of lower log prices. In the long-run, a well-established wood-based industry with assured supply of raw materials is better placed to generate the many potential benefits derivable from the forestry sector. But the first victims of log export restrictions in Nigeria would be those indigenous businessmen who derive their livelihood from this activity. Besides its political and social consequences, restriction of log exports may also run counter to the national policy aim of increasing indigenous participation in and control of the economy.[34]

It is not being advocated here that log exports be perpetuated provided it is carried on by Nigerians rather than expatriate companies. This does not necessarily eliminate the resulting economic losses to society as a whole. Rather, the intention is to emphasize the need for policies which will protect and advance the interests of Nigerians in the industry without doing undue damage to those of established foreign enterprises. Under the present conditions, a realistic wood products export policy for Nigeria should combine some form of restrictive measures with appropriate government incentives which will promote increased efficiency, induce exports of more processed wood products and ensure meaningful participation of Nigerians in the industry.

4.6.3 Incentives policy

The policy of incentives to the private industry presents many dimensions for achieving a more desirable change in the composition and/or level

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[34] This argument was put forward to this writer by the "Nigerian Association of Indigenous Timber Exporters" based in Sapele, Mid-Western State, following the government proposal to prohibit the export of mahogany logs in June, 1974.

of Nigerian wood products exports. The objective is to gradually, but steadily, increase the proportion of total annual exports that comprises of processed products. Sawnwood could be the initial target of such a policy followed by veneer and plywood, board products and manufactured wood products (especially wooden furniture). Emphasis is on a gradual but determined approach consistent with the stage of maturity of the industry and the conditions of raw materials supplies. It should be stressed that a simultaneous effort in all directions is unlikely to yield impressive results. Existing or new industries need to be firmly established in a product line and the adoption of new products or entry into new markets (through vertical and horizontal integration) would follow in the normal course of growth. A restructuring of the entire wood-based industry is thus envisaged. Clearly, incentives alone will not suffice for this purpose without adequate planning. The present analysis will focus on the incentives factor in relation to exports, their potential usefulness and possible methods of application.

The incentives to the private sector fall into two broad classes:

a) Direct price incentives - fiscal and non-fiscal

b) Indirect price incentives

4.6.3.1 Direct price incentives - (fiscal)

Asiodu (1967) has discussed the incentives to industry in Nigeria. The fiscal incentives include exemption, remission or deferred payments of taxes of all kinds such as income, property, export, import and sales taxes. The Federal Government of Nigeria exercises exclusive powers in the fields of company taxation and tariff policy. It offers special incentives to

industrial enterprises which are deemed to qualify and whose operations are in the overall economic interests of the country. Incentives to industrial development are embodied in five acts - the Industrial Development (Income Tax Relief) Act, 1958; the Industrial Development (Import Duties Relief) Act, 1957; the Customs Duties (Dumped and Subsidized Goods) Act, 1958; the Customs (Drawback) Regulations, 1959 and the Income Tax (Amendment) Act, 1959. The aim of these incentives is to encourage and protect new industries to set up operations in the country by providing them necessary assistance during an initial establishment period and to protect them from well-established foreign competitors.

Although, in principle, any industry may qualify for incentives in Nigeria, their application has shown a bias in favour of industries engaged in import-substitution production. Only very few wood-based industries have benefited from the provisions of the various acts,[35] either because they no longer qualify as pioneer industries or their output are not direct import-replacing. Export taxes were first imposed on wood products in 1952 mainly for revenue purposes.[36] They varied between 5% and 10% for logs, and 2½% to 5% for sawnwood, depending on the species. Plywood and wood manufactures were exempt from export taxes, which amounted to an average of 5% of the total value of annual wood products exports. The bulk of the export tax revenue went to the states from which the exports derived.[37]

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35 The Nigerian Paper Mill, Jebba, is one example of such industries.

36 Annual Report of the Forest Administration of Nigeria, 1950/51. p.28.

37 Ibid. p.28. The Western and Mid-Western States received, on average, 69% of the tax revenue between 1954 and 1968.

In recent years there has been an escalation in the rate of export duties on wood products exports. In the 1969 - 70 budget the Federal Government announced increases in export duties on logs, sawnwood and plywood to 60%, 20% and 10%, respectively. The principle on which the relative duties were assessed is not clear. It appears, however, that the duty on logs was intended to restrict exportation, whereas, duties on sawnwood and plywood were related to the market values of the commodities. Following representations to the government by the timber trade the duties on sawnwood and logs were subsequently reduced to 10% and 40%, respectively.[38] The timber trade has continued to press the government to consider further reductions in the duties especially on sawnwood. By 1975 the duties were further reduced to 5% for lumber and 2½% for plywood. It should be noted that this was at a time when export taxes on agricultural products (e.g., cocoa and palm produce) were eliminated by the Federal Government.

The export taxes on Nigerian timber have been levied primarily for government revenue purposes. Rising export taxes have, in general, contributed to raise prices of Nigerian timber in world markets and thus make them less competitive with alternative supply sources. By placing emphasis on the impact of export taxes on company profits, the timber industry has failed to present to government, a convincing case for reducing such taxes which government may regard as an important source of revenue.

It is possible to restructure the taxes on wood products exports so as to encourage increased domestic processing of wood, without any significant losses of government revenue. For example, taxes on processed wood

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38 The government has agreed to consider industry demands for further reductions in these rates.

products exports may be substantially reduced or eliminated, while those on logs are increased to the same degree.[39] Or alternatively, the losses may be recouped from increased corporate profit taxes. In any case, it is felt that the reduction or elimination of taxes on processed wood products exports, which now account for only about .1% of government export tax revenue, would be more than compensated by the additional employment, incomes and value-added, which domestic wood processing would generate.

4.6.3.2 Direct price incentives (non-fiscal)

The non-fiscal incentives include subsidization of inputs through low cost credit, outright subsidies, bonuses, price supports, and export performance awards. Of particular importance, in this respect, is the level of fees and royalties paid for stumpage. The government, as sole supplier of stumpage, could employ this means to encourage industries to process more wood products before export. MacGregor (1959), who examined the status and level of fees and royalties in Western Nigeria, suggested a formula for arriving at appropriate charges, after due consultation between government and industry. It is clear that government has had limited room to manoeuver with regard to fees and royalty charges on timber, the bulk of which is paid to the owning communities. A graduated scale of tariffs on different timber species, with minimal or zero charges on lesser-known timbers but without compensating increases in charges for more valuable woods, would be a workable approach

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39 Mabogunje et al. (1969) suggested a 5% reduction in sawnwood export taxes and increases in log export taxes ranging from 50% to 100% for Western Nigeria.

to applying this incentive. In applying the incentive of subsidized raw material supply, it will be necessary to correlate achieved per cent increase in processed wood export (or output) by a firm, with either a percentage reduction in stumpage charges for specific timbers or increase in concession area over a period of time. In the latter case, an increase in concession area should be subject to the industry's estimated wood input requirement. The writer is not aware of the existence of any significant non-fiscal incentives to the Nigerian timber industry. This is probably due to government view that the timber export trade has been a lucrative business; the protestations of the timber industrialists not withstanding. Studies of the industry (Little, A.D. Inc., 1964; Adeyoju, 1972) indicate that profit rates there compare very favourably with those of other industries in the economy. Moreover, the government view is that, far from being subsidized, the timber industry should be made to contribute (in various charges) to the restoration of a resource which it has wantonly plundered for nearly a century.

4.6.3.3 Indirect price incentives

Government can provide indirect price incentives to private industry through research support, training programs, technical assistance, assistance in finding suitable sites for plant and facilities, marketing services, export promotion and like services. It has been indicated in Chapter 3 of this study that the Nigerian governments, in cooperation with international organizations, have played a vital role in providing technical assistance, manpower training, export promotion and marketing services. In most cases such incentives have been provided by government using its own initiative.

A wide gap still exists between government research effort and industrial application of findings in Nigeria (Enabor, 1972). This has been due to the lack of regular channels of communication between the government and the timber industry. The provision of these indirect price incentives is perhaps the most critical factor for long-run efficiency of the industry and a change in the pattern of wood products exports which is consistent with the national development objectives.

Incentives have potential significance for up-grading wood products exports. In particular, direct incentives can have important immediate and visible effects on the pattern of exports. Direct incentives run into a number of problems. First, they may provoke retaliation by trading partners. Second, they involve problems of determination of their timing and duration. Third, they could induce complacency on the part of the industry if it comes to regard incentives as a permanent element in its operating environment. Fourth, the relative importance of economic efficiency and equity considerations must be stated in deciding the beneficiaries. These are issues which must be resolved by exercising sound judgement and taking into account both political and economic factors of the situation.

4.7 Policy guidelines on Nigerian wood products exports

It was stated above that, in Nigeria, the desired change in the pattern of wood products exports will require a combination of restrictive and incentive measures, or policies. Because policy relates to future outcomes, the precise form or effects of the possible policy combinations cannot be determined in any quantitative sense. It will be necessary to

evaluate the effects of existing policies periodically and to adapt them as conditions may dictate. Given the above qualifications, the following policy guidelines are recommended for consideration by the government, the forest department and the timber industry:

1. It is essential that policy on wood products exports is consistent with the national policy goal of accelerating the rate of economic growth of the country. This requirement should be subject to the constraint of adequate participation of Nigerians in the industry.

2. The proportion of wood products exported in highly processed form should be gradually but steadily increased. An appropriate strategy for implementing this policy would be to concentrate on one specific product at a time. It is proposed that increased processing should immediately be applied to sawnwood exports, with a shift to wood-based panels and wooden manufactures as the industry matures.

3. Efforts at restructuring the timber industry to improve efficiency of operations and quality of products should immediately be stepped up. For this purpose, existing small and inefficent firms should be encouraged to amalgamate into larger units while integration of others is being fostered.

4. A laissez-faire policy on wood products exports is considered inappropriate for Nigeria because it entails considerable losses to society in the form of lower domestic incomes, value-added from timber, and employment. It hinders efficient exploitation of the

timber resource and contributes little to linkages with the rest of the economy. These consequences necessitate government intervention in the timber industry through a combination of incentives and export control measures.

5. The following incentives to the timber industry are recommended:

   a) Elimination of export taxes on all processed wood products, subject to periodic evaluation and review.

   b) Reduction of import duties on wood processing machinery and equipment.

   c) A more flexible and liberal stumpage pricing policy to encourage utilization of lesser-known timbers.

   d) Financial credit on easy terms.

   e) Government cooperation with, and assistance to the industry in research, training, marketing and export promotion.

   f) Government assistance in shipping and wood transportation problems.

   g) Government provision of timber seasoning and grading facilities at minimal cost.

6. The recommended control measures include:

   a) Exports of the most valuable timbers (e.g., mahogany, iroko and guarea) in form of logs should be banned.

   b) Exports of all other timbers in form of logs should be permitted, only where the exporter cannot find a local buyer. Such timber should be sold by competitive tender and appropriately advertised. The forest department should publish

annually a schedule of maximum local selling prices of logs in respect of all timbers.

c) Wood products exporters should be required to own and operate processing mills as a condition for the granting of export licenses.

d) Government should establish a timber inspection service to ensure compliance with regulations governing the quality and type of products exported.

e) A Forestry and Forest Industry Development Council should be established to facilitate communication between the government and the timber industry, and to evaluate the effectiveness of policy measures.

48. Summary

The central theme of the policy analysis in the present study is that the past pattern of wood products exports in Nigeria has not been conducive to maximization of the benefits to society from the forest resource use. The goals of the national economic policy demand a shift towards exports of more processed products through increased efficiency of a restructured wood-based industry. To achieve this objective, a combination of incentives and control measures to guide future wood products export activities is recommended. Successful implementation of the necessary policies is dependent on government understanding and assistance, as well as cooperation of the timber industry. Through appropriate institutions which facilitate communication and consultation, and given the willingness of the parties

concerned to give due consideration to the public interest, the desired change in the pattern of Nigeria's wood products exports, which will enhance forestry's contribution to the national economy, can be readily realized.

CHAPTER FIVE

FOREST DEVELOPMENT POLICY AND PROBLEMS IN NIGERIA

5.1 Introduction

The thesis is primarily concerned with the necessary policies towards wood products exports which will enhance the contribution of the forestry sector to the economy of Nigeria. It is obvious that, though sometimes important, wood products exports need not be the major contribution of forestry to the economy of a country. The Nigerian economy is currently undergoing rapid structural change and development. As incomes and population increase, the pressure of demands on the forest resources can be expected to rise proportionately. Economic development will bring about a greater capacity of the people to consume more,and a wider range of,forest products and services. It has been suggested, for example, that already

Nigeria is an underconsumer of the various wood products in relation to her income (Adeyoju, 1971). In addition, the country's foreign trade in forest products has shown,in recent years, a substantial and increasing annual deficit with the vast expansion of imports of pulp and paper products (Enabor, 1973). Clearly, the forestry and forest industries sector of the Nigerian economy faces a serious challenge and its success will in the future be judged by its ability to meet domestic requirements rather than by the increases or decreases in wood products exports.

It is essential that the forestry and forest industries sector keep pace with the requirements of a changing and dynamic economy such as that of Nigeria. The basis of a Nigerian forest policy was outlined in Chapter Four. The purpose of this chapter is to provide a synthesis of the main elements of a forest development policy that may be considered optimal for the country. The relationships between forest development and national development objectives are examined. Basic considerations in the formulation of a forest policy for Nigeria are discussed. The problems confronting the development of the sector to which policy makers must direct their attention are then reformulated and some approaches to their solution suggested. Finally, the future prospects for Nigerian wood products exports in the light of the policies advocated is reassessed.

5.2 Forest and national development objectives

Essentially, forest policy is a statement of the means of putting the objectives for the forestry sector in effect. Worrell (1970) has stressed the requirement that policies are "agreed courses", otherwise we may merely

have a "paper policy".[1] Moreover, it is assumed that there is a will on the part of the policy-makers to implement declared policies. Leaving aside these considerations, policies in effect, whether declared or implied can be usefully appraised against the declared objectives of national development.

In a developing country such as Nigeria, the declared national development objectives tend to be all-embracing, if not vague. Watt (1973) has suggested that "theoretically, the objectives should be directed toward some improvement in the total welfare of the population to some minimum acceptable level". Total welfare is extremely difficult to translate in practice and defies any quantitative measurement. A more restrictive interpretation of social welfare could be improvement of the material conditions or living standards of the people (Higgins, 1959). Such an interpretation of welfare is particularly relevant to the developing country where the most pressing problems have to do with the elimination of ignorance, poverty and disease.

The objective of economic welfare can be translated to mean the achievement of the highest possible sustainable rate of growth of income per capita. Beazley (1965) stated that "operationally this becomes the goal of maximizing a sustained average rate of increase in utility or satisfactions". Once the development objective is defined in this way, two intractable problems pose serious difficulties for economic analysis and public policy choice. First, how is the utility to be maximized measured and, second, whose utility is to be maximized? The concept of utility occupies the core of welfare theory. A large body of literature on welfare theory has developed since the time of Pigou (1932). A survey of the theory is beyond the scope of this thesis, but

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1 Worrell, A.C., 1970. op.cit. p.130.

contributions by such writers as Little (1950; 1952; 1957), Graaff (1957), Nath (1964; 1969), Hochman and Rogers (1969), Winch (1971), and Stafford (1974) among others, reflect the growing controversy over its assumptions and conclusions. Beazley (1965) has summarized the problem underlying the welfare maximization objective as "the inability to measure utility directly - i.e., to make interpersonal utility comparisons". The Pareto-Kaldor-Hicks formulation of the social welfare function embodies significant restrictive assumptions and value-judgments which limit its usefulness for public policy formulation. Measures of utility must take account of both market and non-market valued goods and services, as well as institutions and values of society. As Robinson (1962) put it, "money measures are insufficient measures, even as proxies, of the flow of utility".

Secondly, utility generation as between the present and the future must be taken into account. This problem is reflected in Drewnowski's (1963) concept of a dual preference system - i.e., a state preference function and a private preference function. The state,or public,preference function is expressed in the actions of government which aims to protect the interests of the community as a whole against the activities of individuals in pursuit of their particular selfish interests (Fernow, 1902). The existence of separate public and private preference functions has important implications for efficient allocation of resources. Beazley (1965) has noted that how to resolve the competing claims of public and private preferences is one of the major problems confronting the less-developed country. Aggregate individual preference functions tend to empahsize the needs for immediate consumption,whereas the state preference function takes a longer-term view and is primarily concerned with investment and economic growth. Drewnowski (1963), in an application

of the concept of dual preference system to the socialist economy,suggested the use of two sets of prices: "state" prices coming from the state or public preference function,and "consumer" prices coming from the aggregation of the preferences of consumers acting as individuals.

Beazley (1965) stressed the need to resolve the "public-private preference question" in a democratically responsive manner, regardless of the degree of governmental control of the economy. This is essential if necessary public preference allocations are to be made and total utility increased at a sustained rate. From this standpoint, an optimal resource allocation may be inhibited by the divergence of prices and time preference for activities and outputs associated with the two preference functions.

The manner of reconciliation of the public and private preference functions depends largely on the country's economic organization and political philosophy. In the developing country, government initiative and intervention in economic affairs has increased and is reflected in national development plans which aim to direct resource allocation in both the private and public sectors of the economy. The implication is that the state preference function should occupy an increasingly dominant position relative to the private preference function. Duerr (1960) has, however, stressed that government decisions may in fact reflect the preferences of some pressure group or what he called "centres of influence". Furthermore, optimality of government policy on resource allocation cannot be assured because of either incomplete information,or the personal preferences of government officials in executing agencies (Stafford, 1974).

National development objectives tend to be imprecise and wide-ranging in nature. Although total welfare appears as the ultimate aim, this can be

interpreted as economic welfare, especially in the less-developed country such as Nigeria. There is no agreement on how economic welfare should be measured or how the inter-temporal distribution of welfare should be accounted for. Thus, utility flows in terms of GNP, or market values of goods and services, are inadequate measures. In particular, growth of aggregate income cannot be taken as a measure of improvement in economic welfare, without reference to the resulting income distribution. It is, therefore, essential that national development objectives and policies take explicit account of income distribution in the allocation of resources to the various sectors of the economy.

Forest development objectives and policies should, of necessity, conform to the objectives of national development. This requirement is based, firstly, on the fact that the forestry and forest industries sector is only one of many sectors making up the national economy, all of which are competing for the available human and material resources. Secondly, and perhaps more important, is the fact that forests frequently constitute one of the major resources of a country, whose utilization can have a significant impact on the prospects for economic growth. Thirdly, the forestry and forest industries sector is important, not only in supplying goods and services which contribute to the social welfare directly, but its characteristics are such that it can very often serve as a basis for rapid industrialization and growth. These characteristics of the forestry and forest industries sector have been well documented by several writers (Westoby, 1962; 1965; 1969; Zivnuska, 1966; Spears, 1966; Watt, 1973) and have been examined in some detail in Chapter Four.

Regarding the national development objective of increased social

welfare, the only other point to be considered here is the impact of forestry on income distribution. Gane (1969) has suggested three ways in which forestry projects influence income distribution. First, government expenditures on forestry can have a distributional impact and be welfare increasing to the extent that government finances derive from income transfers from the private sector through taxation, or there is price inflation attributable to credit creation. Second, the choice of technique in the forestry production process can have a distributional impact, depending on whether more or less labour-intensive methods are employed. In general, the proportion of the cost of forest operations which is attributable to wages is high by comparison with most other industries. Furthermore, labour employed in forestry operations comes predominantly from the rural areas.

It is likely that forestry projects effect a redistribution of income towards the lower-income rural population at the expense of the rest of the economy. Finally, the disposal of the output of forestry production, whether for export or for import-substituting domestic consumption, would substantially benefit wage-earners in the forestry and forest industries sector. Gane (1969) concluded that "the overall effects of forestry projects on income distribution is to increase the amount earned by the lower paid sections of the community, possibly at some cost to the higher income groups....."

The specification of the objectives of forest development exhibit the same attributes as the objectives of national development. They tend to be unclear, or too broad to have much operational significance. For example, the national forest policy statement in the Nigerian Forest Administration Plan, 1946 - 54, stated that "the main objective of the forest policy of the Government of Nigeria is the production of the maximum amount of forest which is

essential for the general well-being of the country".[2] In subsequent statements of the policy aims such terms as "greatest good for the greatest number of people", "best advantage", and "long-term benefits" appear as objectives. Such terms are philosophical, and have political appeal but, in practice, are incapable of quantification or objective evaluation. Mabogunje et al. (1969) attempted a comprehensive definition of the objective of forest development for Western Nigeria when they stated that the object of forest policy should be:

> "the provision of that physical and socio-economic environment which would lead to the attainment of those goals of production, protection and amenity that are within the financial and physical capacity of the Region and necessary for the welfare of its people".

This definition is by no means perfect, but is nevertheless useful, particularly in its explicit recognition of the influence of constraints on the achievement of forest development goals.

The importance of a clear statement of forest development objectives is reflected in the nature of policies adopted for achieving them. Gane (1969) has observed that forest policies are particularly fraught with difficulties arising from the multiplicity, ambiguity and heirachy of aims. In many cases aims and objectives are not ranked, policies are confused with objectives and constraints are not stated separately. As a consequence, the forest manager is usually confronted with conflicting aims and his evaluation of the alternatives, or options, may prove faulty due to uncertainty regarding costs and benefits.

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2 Forest Administration Plan, Nigeria: 1946-1955, Under a Ten-Year Plan of Development for Nigeria. Sessional Paper No.13. Lagos, 1948.

Criticisms of the formulation of forest policies appear in papers by Zivnuska (1966), King (1968; 1972; 1974/75), Nautiyal and Smith (1968), and Muthoo (1970). According to King (1974/75), "past policies were often formulated in the belief that the forests were the most important factor in forest policy formulation". Such an approach does not foster the latent economic benefits from the use of a nation's forest resources. Forest policies should not be formulated in vacuo but should form an integral part of the socio-economic development of any nation. Existing policies should not also be regarded as immutable but should be subject to periodic review and change as "new conditions, new technology and new philosophies warrant".

Three aspects of the current criticisms of forest development policies most relevant to the Nigerian situation are: the concepts of sustained yield, self-sufficiency and conservation. In a categorical rejection of the sustained yield principle as an optimal forest policy, Nautiyal and Smith (1968) stated as follows:

> "If the goal of national policy is to maximize human welfare, then the goal of forest policy must be'maximization of present worth of net benefits from forest land' rather than sustained yield'".

Their argument is reinforced by Duerr (1949) who has suggested that:

> "The object is not necessarily to maximize the net return from forests but to maximize the general net return. Neither is the objective for the community to receive the greatest possible net income from forests but for it to receive the greatest total net income compatible with the welfare of other communities, the forest contributing as it may to this greatest total".

From the growing literature on the subject, the inevitable conclusion on the sustained yield principle is the need to exercise great caution in its

application as a central tenet of forest policy. Forests have significance solely for their economic value and sustained yield, by restricting the maximization of economic benefits or profit from forests could, in fact, inhibit the process of economic development. In the developing country such as Nigeria, where supply of capital is chronically short, a strong case for the rejection of sustained yield forest policy can be made. However, it is of interest to note, that in forestry, theory and practice often diverge and an examination of cutting practices in most countries does not reveal any rigid equality of annual cuts. In this sense, alternatives to sustained yield, such as "sustainable yields" (Davis, 1966), "modulated yield" (Duerr, 1966b), and "balanced forestry" (Gould, 1962; Smith, 1963), are really no more than a conceptual formalization of observed practices. Where sustained yield has found a more faithful adoption, such as in Northern Nigeria, it can be justified on the grounds of prevailing conditions of very low incomes, extreme local wood scarcity and high transport costs.

The policy of self-sufficiency in wood products meets with serious objections not only because it is hardly practicable,but also because of the high economic costs involved. Admittedly, nations, especially newly independent ones, find external dependence politically impalatable and self-sufficiency may be adopted as a policy more for political than for economic reasons. However, self-sufficiency is not an optimal alternative to external dependence. Boulding (1958) has observed that, if each nation pursued a policy of self-sufficiency, the benefits of international contacts and transfers of knowledge on which the progress of civilization rests would be lost. Writing on the same subject, King (1974/75) stated that:

> "It must not be assumed that a national policy of self-sufficiency and economic isolation in wood and wood products is always desirable. Indeed, it is often untenable. Moreover, even if a self-sufficiency policy were considered desirable, the demands of other sectors of the nation's economy might render it unrealistic".

In other words, self-sufficiency is a costly policy in terms of the possible serious misallocation of resources and the benefits foregone in unexploited comparative advantages.

In Nigeria, the influence of the self-sufficiency objective is apparent in many aspects of forest development policies. For example, Mabogunje et al. (1969) recommended that Western Nigeria "should aim at becoming self-sufficient in timber and timber products". Resource allocation policies in the Nigerian forestry sector in recent years have largely concentrated on the establishment of pulpwood plantations for raw material supply to a proposed domestic pulp and paper industry, in order to reduce or eliminate dependence on imports for these products. Yet, it is unlikely that the pulp and paper industry will be viable without a high protective tariff. Unless the technical and market pre-requisites for such a highly sophisticated industry are fully met, the contribution of the resources employed to the total social welfare may not be maximized. Thus, although self-sufficiency is not in itself a bad policy, its appropriateness must be judged according to the significance of the product or service concerned for total national welfare. In any case, it is necessary to know the costs involved in terms of the alternative opportunities foregone.

Conservation is frequently stated as an objective of forest policy. The term has been used in many senses, as the history of the conservation movement in the United States clearly illustrates. It should be emphasized

that conservation does not mean preservation or non-use because, "that portion of the environment so conserved would merely be eliminated from the list of resources". (Ciriancy-Wantrup, 1959). According to this author, conservation policy should aim at maintaining a "safe minimum standard" of resource use - i.e., that level and pattern of resource use which does not lead to "immoderate losses" that threaten the continuing development of society. A safe minimum standard may be achieved by avoiding the critical zone, that is, those physical conditions brought about by human action, which would make it uneconomic to halt and reverse depletion.

The problem of conservation arises because of the divergence between private and social time preference. According to Scott (1955),

> "owners do not conserve resources sufficiently because they must accept the rate of discount on the future, or the marginal rate of time preference, implicit in the market rate or interest on loanable funds. This theory hinges on the hypothesis that there is a social rate by which the state (or society) should discount future gains and losses; and the hypothesis that this social rate is lower than the market rate".

Ciriancy-Wantrup (1959) demonstrated that high interest rates, imperfect capital markets and low incomes are the major influences on the tendency towards depletion and disinvestment in natural resources, especially in the less-developed countries. This tendency may be reinforced by expectations of private resource users regarding future prices (of goods and factors), uncertainty created by prevailing property rights, and the social institutions of land tenure, credit and taxation. Some form of state intervention in resource use may, therefore, be justified to enforce the minimum standards, particularly where behaviour of users is conditioned by ignorance or the force of custom (Bunce, 1940; Scott, 1955). It would appear that the argument about

conversation is not whether to conserve, but how to conserve. Ciriancy-Wantrop's concept of the "social optimum state of conservation" provides a theoretical answer to this question but is not susceptible to any quantification. Because it is virtually impossible to predict the direction of future changes in the economic forces, such as prices, technology, tastes and preferences, which influence conservation decisions, policies on conservation of natural resources must be carefully weighed and judiciously applied. The ultimate success of conservation policies would depend on public awareness of the potential consequences of resource depletion, as well as, on changes in the underlying social institutions in the direction which encourages private resource users to pursue appropriate conservation measures.

Nautiyal and Smith (1968) have argued that "developing countries cannot afford to lock up their resources". They must use most of their resources including forests, now for economic development. The assertion, though valid in general, may not equally hold in specific instances, such as Nigeria, where depletion of the forest resources is fast approaching the "critical zone". Under such conditions, conservation of the forest resource, through public policies, to limit or regulate use, at least, on a temporary basis, is clearly an appropriate policy. It should be stressed that such an objective does not necessarily conflict with maximization of economic value of the forest if conservation is keyed to changes in resource availability and the underlying economic forces.

The foregoing discussion has underlined the crucial importance of a clear definition and thorough understanding of objectives as the basis of an optimal forest development policy. To realize the stated objectives it is necessary to know the extent of demands that will be made on the forest

resources. This aspect, labelled in Section 5.3 as the elements, or considerations, for an optimal forest development policy, will now be examined with reference to Nigeria.

5.3 Considerations for an optimal forest development policy

A unique charactersitic of forests is that they are capable of supplying a wide range of values essential for man's economic well-being. These values may be conveniently divided into two broad groups. One group is comprised of the direct consumption commodities such as wood and wood-based products wildlife, recreation and a large number of minor forest products. In the other, are the indirect benefits of forests such as protection of soil against erosion and flooding, protection of watersheds and amelioration of local climate. These classes of forest values have, conventionally, been described by the terms, market and extra-market values (Gregory, 1955). Extra-market values may sometimes be as important as, or even more important than, the market values depending on the physical and climatic conditions of a given area. However, the difficulty of assigning money values to them has far hindered the development of useful appraisal methods for their evaluation. In contrast, the direct benefits enter the market exchange system in varying degrees, and estimation of requirements for this group of values is much easier. Because the indirect benefits of forests often reveal their effects far beyond their immediate neighbourhood, it is essential that a country adopts necessary policies for their maintenance as may be warranted by physical and/or ecological conditions. The present analysis will be confined to the market-determined values of forests, and specifically, to the requirements for wood products in Nigeria.

It is understood that wildlife and recreational services of forests are important for the Nigerian economy,whose requirements will be accomodated within the framework of an overall national forest development plan.

5.3.1 Demand for wood and wood-based products

Wood products are consumed daily by Nigerians in various forms. The important products include fuelwood (and charcoal), poles and pitprops, sawnwood, wood-based panels (veneer, plywood, particle board, fibreboard, blockboard and insulating board), paper and paperboard products. These products may be distinguished according to the degree of processing of the raw wood material before use. In general, three categories are recognized.[3] The first group is comprised of roundwood such as fuelwood, poles and pitprops, which are used almost in the raw form without further processing. Actually, some fuelwood is "processed" into charcoal before use. Poles and pitprops may be dressed and treated to render them suitable for their respective end-uses. In the second group are sawnwood and sleepers which are semi-processed wood products, and wood-based panels which are still more highly processed. The third group is comprised of paper and paperboard, reconstituted and highly processed wood products which, in their final end-uses, bear little resemblance to the wood raw material from which they are derived.

The differences between the various groups of wood products are significant, not merely because of their varying technical properties and

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[3] The broad categorization of wood products adopted here excludes sawlogs, veneer logs, pulpwood, and woodpulp which are essentially raw material inputs of the forestry sector itself.

their suitability for particular end uses, but also for the implications for consumption patterns. Many studies of wood consumption levels and patterns have clearly established that a close relationship exists between a country's wood consumption pattern and its level of economic development (Westoby, 1962; FAO, 1966; 1967; Leslie, 1971). For example, it is well known that the low-income developing countries account for about 80% of world roundwood consumption, but barely 10% of industrial wood consumption. Consumption of, and trade in industrial wood, on the other hand, is concentrated in the industrially advanced countries. Table 47 provides a comparison of wood consumption trends in selected countries. The proportion of national wood consumption in the form of industrial wood is also much higher in the industrially advanced countries than in the developing countries. For example, pulp, paper and paperboard products account, on average, for over 40% of wood volume consumed in the developed country, while fuelwood may make up anything from 5% to 20%. In the typical less developed country, roundwood may account for as much as 90% of the total annual wood volume consumed.

In general, a dynamic relationship exists between the patterns of wood consumption and levels of per capita income or economic development. According to Leslie (1971), fuelwood consumption per capita is a decreasing function of income. Beyond the lowest levels of income, fuelwood consumption grows at about the same rate as population, thereafter, may remain static or even decline. Sawnwood and wood-based panels consumption is positively correlated with the level of income up to a certain per capita income level. Beyond the medium per capita income range, per capita consumption of these products may stabilize or even decline slightly. Zivnuska (1963) has shown, for example, that between 1920 and 1962, sawnwood consumption per capita in

Table 47. Proportion of Total Wood Consumption in Various Categories in Selected Countries at Different Levels of Economic Development (1960)

Country and Per Capita Income	U.S.A.	Australia	Japan	Malaysia	Gabon	Ghana	Nigeria
Category of Wood Use	Percentage of Total Wood Consumption						
Sawnwood	52.3	55	54	68	28	5	2
Veneer & Plywood	3.7	2	3	..		0.3	
Sleepers	0.5	4	-	..			
Poles and Piling	1.3	1	-	2		0.2	
Fibreboard	2.5	4	1	2			
Newsprint	8.0	4	3	2			
Packaging Papers	6.0			3		0.3	0.2
Writing and Printing Papers	1.5	7	14				
Tissues	1.8						
Fuelwood	16.4	25	25	22	72	92.3	97.6

SOURCE: Leslie, A.J., 1971. Economic problems in tropical forestry, Food and Agriculture Organization of the United Nations, Rome. p.29.

the United States steadily declined. He suggested that wood-based panels consumption would continue to rise for some time but eventually stabilize at a sufficiently high per capita income level. For paper and paperboard products, the conclusions of several studies (notably FAO, 1961) have been distinctly different. There is a very strong and persistent positive correlation between the growth of income and paper and paperboard consumption, except at the highest income levels. Indeed, as Table 48 shows, the highest income elasticity of demand for paper and paperboard occurs at the lowest levels of per capita income.

It should not be assumed that income is the sole factor determining wood consumption. Total consumption is obviously influenced by the size of population and its rate of growth. Wood availability (Gregory, 1966) is

Table 48. Average Income Elasticity of Demand for Various Types of Paper in Relation to Level of Per Capita Income, 1954

Per Capita Income	Up to $100	$100-$500	$500-$1000	$1000-$1500
Type of Paper:				
Newsprint	2.7	1.9	1.2	2.6
Printing & Writing	2.5	1.8	1.2	0.7
Wrapping	2.3	1.8	1.1	0.7
Paperboard	2.7	2.2	1.7	1.1

SOURCE: FAO, 1961. World demand for paper to 1975. Food and Agriculture Organization of the United Nations, Rome. p.160.

another factor. In regions where local wood supplies are deficient, and transportation is either limited or costly, wood consumption may be restricted and artificially low. The influences of wood prices and substitute products must also be taken into account. Zaremba (1958) has argued, for example, that sawnwood was losing place to substitutes in the United States because the industry was inefficient and sawnwood prices are uncompetitive. Where wood prices are high, relative to either the general price level or prices of substitute products, consumption will tend to be depressed (Zivnuska, 1963; Adeyoju, 1973). Other influences on wood consumption include business cycles and fluctuations of economic activity (Zivnuska, 1952), technology (Clark, 1971), the state of forest industries development and consumer tastes and preferences. These are essentially exogenous variables whose effects may be favourable or unfavourable to wood consumption.[4] It

4 See for example, Runeberg, L., 1969. "Plastics in competition and cooperation with wood products", in Svendoud, A.(Ed.). Readings in forest economics. Universitetsforlaget.

may be noted that increases in consumption of some wood products may be mainly at the expense of other wood products, such as the displacement of sawnwood in many uses by wood-based panels and the new competition between plywood and board products (Leslie, 1971; FAO, 1966).

An understanding of the dynamics of wood consumption patterns and the forces underlying them is of special importance for the design of optimal forest development programs in developing countries. Leslie (1971) has questioned whether the observed patterns based on observations in the developed countries, necessarily implies identical experience by the current developing countries. The qualification has some merit. Nevertheless, the important lesson for developing countries concerned with economic development is that they must plan the development of their forestry and forest industries sector for the supply of the highly processed wood products such as paper and paperboard, which will be required in rapidly increasing quantities in the course of economic growth. An attempt is made in the following section to examine wood consumption trends in Nigeria. Estimates of the potential future requirements are provided in Section 5.4.

5.3.2 Wood consumption trends in Nigeria

Data for a rational evaluation of wood consumption trends in Nigeria are either not available or are, in general, unreliable (Wellwood, 1966). Rough magnitudes have been indicated in a number of studies for the main products. Keay (1961) estimated that in 1960, per capita consumption was 0.4 ft^3 for sawnwood and 20.0 ft^3 for fuelwood. Okigbo (1964) estimated the per capita consumption of sawnwood for the whole country to be 9.23 million

ft^3 annually, or about 0.22 ft^3 per capita (assuming a population of 50 million) in 1960. According to Little (1965), total sawnwood consumption (from pitsawing and commercial sawmilling) in 1960 was 17.7 million ft^3 or about 0.3 ft^3 per capita per annum. Estimates by the FAO (1967) suggest consumption per 1000 capita of 7.4 m^3 for sawnwood in 1962 - 63, 0.51 m^3 for wood-based panels in 1959 - 61, 0.78 tons of paper and paperboard in 1960 and 0.02 m^3 for roundwood in 1960. These figures compare with the West African average of 11.2 m^3, 0.59 m^3, 0.81 tons and 0.05 m^3 for the respective products. Enabor (1971) estimated total wood consumption in Nigeria in 1966 to be 1,797 million ft^3, or 50.9 million m^3 (roundwood equivalent). This is approximately, 30 ft^3 per capita, assuming a population of 60 million in that year. Fuelwood made up 95% of the total volume. If one considered only industrial roundwood and processed wood, per capita consumption in 1966 was around 0.6 ft^3. A more recent estimate (World Wood, 1975) puts annual wood consumption per capita in Nigeria at 38 ft^3.

The foregoing estimates are, admittedly, rough and too highly aggregated to be of much use for planning purposes. They indicate neither the contribution of individual products nor the temporal change in each case. Moreover, the significantly wide disparities in inter-regional wood consumption levels in the country are obscured. It is well known, for example, that consumption of almost all categories of wood products are higher in the southern region,where the forests and forest industries are concentrated, per capita incomes are higher, and urbanization and literacy are more advanced,than in the northern savanna region (Thulin, 1966; Ntima, 1967). The striking effect of per capita income levels on wood consumption is clearly illustrated by a comparison of Lagos and Western States, with

the former having a per capita consumption of industrial wood three times that of the latter, (Mabogunje et al., 1969).

On the basis of the rough estimates indicated, per capita total consumption[5] of wood in Nigeria rose from 0.57 m^3 in 1961 to 1.08 m^3 in 1973, representing an annual compound rate of growth of 5.5%, which approximates the average annual rate of growth of GDP over the same period. The result obviously reflects the heavy weight of fuelwood in the total consumption; probably higher rates of growth occurred in respect of the processed products. It is, however, clear that in Nigeria, wood consumption levels are still low and the pattern heavily biased towards roundwood because the country is at a low level of economic development. With economic growth, substantial increases in consumption, especially of the processed wood products should, therefore, be expected. Before the future requirements are assessed, the trends for the main products, covering fuelwood, industrial roundwood (poles and pitpropts), sawnwood, wood-based panels, paper and paperboard, are next examined separately.

5.3.2.1 Fuelwood

Of all wood products, estimates of fuelwood are the most unreliable, especially in a developing country where the bulk of fuelwood is consumed in

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5 "Consumption" is defined for this purpose, as apparent rather than actual consumption. Apparent consumption is domestic production plus imports minus exports. The estimates are obviously crude since no allowance was made for inventories held by producers and possible errors in reported data. All data were calculated from FAO, Yearbook of Forest Products Statistics (Review), 1972 and 1973. Rome, and adjusted as necessary using local statistical sources.

rural areas and mostly collected freely from nearby bush or forest. The indicated fuelwood consumption levels are, therefore, likely to be underestimates. Consumption data of fuelwood in Nigeria between 1961 and 1973 are given in Appendix 6. They suggest a slow but steady increase from 41.5 million m^3 in 1961 to about 57 million m^3 in 1973. This represents an increase of 36.8%, or an annual compound rate of growth of 2.6%. It may be noted that this rate of fuelwood consumption growth in Nigeria approximates the average estimated annual rate of growth of the population (CPO, 1973), a relationship suggested in some other studies (FAO, 1967; Arnold, 1968).

Fuelwood is a bulky, low-valued forest product whose consumption is greatly influenced by local availability. In Nigeria, it is used primarily for domestic cooking and heating. Significant quantities are also used by commercial and industrial enterprises such as for tobacco curing, in bakeries, smitheries, educational institutions and commercial eating places (Edokpayi, 1963). Fuelwood consumption per capita in the forest-rich southern region probably exceeds the national average, although there are pockets of wood-shortage, especially in the large urban centres such as Ibadan, Enugu and Port Harcourt, where a bundle of fuelwood may fetch a price as high as 50c. In these urban centres fuelwood consumers are able to supplement supplies by using sawmill wood residues and sawdust, which are often freely available. In the northern savanna states, fuelwood supply is a serious general problem. In cities such as Jos, Kano and Sokoto, many consumers resort to burning agricultural residues and cow dung as substitutes. The need to maintain essential fuelwood supplies and minimize depletion of agricultural soils remains a most important task of forestry development in the Northern States of Nigeria with nearly 60% of the country's population.

5.3.2.2 Industrial roundwood

Industrial roundwood includes poles and pitprops. Estimated consumption of this product class is not much more reliable than that for fuelwood because a large proportion of production is unrecorded. The consumption trend for industrial roundwood in Nigeria, from 1961 to 1973 is indicated in Appendix 6. Estimated consumption rose from 1.6 million m^3 in 1961 to 2.8 million m^3 in 1973, or by 75%. The average annual rate of growth over the period was 4.3%. Industrial roundwood in the form of poles is extensively used in Nigerian rural areas, particularly in the wood-deficient northern states, for building construction purposes where it competes with sawnwood. The Electricity Corporation of Nigeria, and the Posts and Telegraphs Department, have in recent years become major users of Nigerian poles after much persuasion to substitute these for imported poles. Other important uses of poles are for scaffolding, fences, yam sticks, farm barns and market stalls. The use of pitprops has been primarily in the coalmines at Enugu and at oil drilling sites in the Niger Delta area.

Industrial roundwood supplies in Nigeria come mainly from nearby bush or forests where it is collected freely by local people. Poles for commercial uses in power and telecommunications lines, scaffolding, and pitprops may be obtained from plantation thinnings or forest areas outside reserve, after due payment for a permit. Finally, industrial roundwood in the form of hewn or split borassus or mangrove palm,is widely used in the Northern and Eastern States for housebuilding purposes (mainly as rafters, beams and internal mudwall supports).

5.3.2.3 Sawnwood

Accurate estimates of sawnwood consumption in Nigeria are difficult to obtain for such reasons as, poor recording by sawmilling enterprises, unrecorded production from pitsawing and widespread illegal felling of logs, especially in the Western and Mid-Western States. Ouput and consumption data are therefore likely to understate the true position. Estimated apparent consumption of sawnwood in Nigeria for the years 1961 to 1973 are given in Appendix 6. Total sawnwood consumption rose from 305,000 m^3 in 1961 to just over half a million m^3 in 1973 or by 86%. The annual rate of growth achieved by sawnwood over the period was approximately 4.7%. On a per capita basis, assuming population was 52 million in 1961 and 73 million in 1973, the sawnwood consumption increase was from 0.005 m^3 to 0.007 m^3. The rate of growth (compound) of per capita consumption was only 2.8% per year. It may be concluded that sawnwood consumption in Nigeria has generally lagged behind both income and population growth in the country.

A further examination of Appendix 6 also reveals that sawnwood consumption in Nigeria was declining between 1961 and 1966, but rose steadily thereafter. A possible explanation of this trend is the diversion of the larger output to export markets before 1967. The difficulties posed by the Civil War for export activities and the general boom in the domestic economy after the war, aided by rising petroleum exports, served to redirect an increasing proportion of the output to the domestic market after 1967. For example, the share of domestic consumption in total production in 1973 was 93% compared to 83% in 1961. Increased domestic consumption of sawnwood in Nigeria over this period was, therefore, achieved more at the expense of exports than as a result of increased production.

The major user of sawnwood in Nigeria is the construction and building industry. The FAO (1967) estimated that, in 1960, 80% of the total output was directed at this sub-sector. The other important use of sawnwood is in furniture manufacture which, on average, accounts for about 15% of the total. The remaining 5% goes into such uses as boat-building, commerical vehicle bodies, packaging and crating, coffins, and miscellaneous turned and carved wood products.

The problem of improving sawnwood consumption in Nigeria has been discussed by various writers (Wellwood, 1966; Enabor, 1971; Adeyoju, 1971). Competitive species preferences of domestic and export markets, poor quality of products sold on the domestic market, unfavourable relative prices of wood, and difficulties of transportation to remote areas are cited as possible barriers. Significantly, low purchasing power of consumers has not been mentioned. In other words, the latent demand is there, but is unexploited due to technical and commerical shortcomings on the production side.

5.3.2.4 Wood-based panels

Apparent consumption of wood-based panels in Nigeria is more reliably estimated because, until 1970, all domestic production came from one mill. Additional requirements were filled by imports. In Appendix 6 is shown the consumption trend for wood-based panels which includes veneer, plywood, particle board, fibreboard and hardboard. Total consumption of these products rose from 13,000 m^3 in 1961 to 27,000 m^3 in 1973,or by 108%. This represents an annual compound rate of growth of 6.4%. Veneer and plywood have, on

average, made up about 75% of the annual consumption of wood-based panels, whereas the share of particle board and fibreboard, which are entirely imported, has tended to increase since 1968. Imports account for about 25% of annual consumption of veneer and plywood in Nigeria. About 50% of domestic production of veneer and plywood is consumed internally. The growth of wood-based panels consumption since 1970 has been particularly influenced by the increase in the number of ply-mills, from 1 to 4 in the 1970's. Compared to the growth of world consumption of wood-based panels at 12% per annum (FAO, 1974) in the 1960's, consumption of these products in Nigeria may be judged to have been rather slow.

The pattern of wood-based panels consumption in Nigeria is difficult to establish. Furniture manufacture accounts for about 50% of the total annual consumption, 40% is used in interior paneling, boat-building, and prefabricated houses, while the remaining 10% goes into packaging, crating, interior car panels and toys (Enabor, 1972). Distribution of the respective products between end uses is not proportional. For example, particle board and fibreboard are primarily used in interior panels, ceilings and light duty packaging. Veneer is, almost entirely, used in furniture manufacture, whereas an increasing proportion of plywood consumption is for packaging.

5.3.2.5. Paper and paperboard

Estimates of paper and paperboard consumption in Nigeria are more reliable than those for other wood products because the country has relied almost entirely on imports for supplies. Domestic production of paper and paperboard began in 1968. The contribution to total consumption from this source is around 11%. Minor quantities of paper and paperboard are re-

exported to neighbouring countries of West Africa. With due allowance for these, estimates of apparent consumption can be accepted as approximating actual consumption. The estimated consumption of all paper and paperboard products during 1961 to 1973 is given in Appendix 8. It shows a fivefold increase over the period, with the annual compound rate of growth at 14.5%. A further examination of the data reveals the very rapid growth which took place between 1967 and 1973. Annual rate of growth over this period was 18.6%, compared with 10.6% between 1961 and 1967. Assuming a GDP growth rate of about 9% per annum (CPO, 1973) between 1967 and 1973, the indicated income elasticity of demand for this class of wood-based products is approximately 2.1. The rapid expansion of paper and paperboard consumption since 1967 may be considered as surprising in view of the Civil War. However, reliance on imports, creation of new states and administrations, (in 1967), the Universal Primary Education Scheme, increase in the number of Universities, as well as the general industrial and economic growth, have combined to sustain the accelerated increase of consumption.

The composition of paper and paperboard consumption in Nigeria is shown in Table 49. These are based on imports data only, but inclusion of domestic supplies does not alter the relationships materially. Average shares of the component products in total consumption were 22.0% for newsprint, 35% for printing and writing papers,and 43% for paper and paperboard. Data in Table 49 also show the changes in the relative importance of these products. The most rapid expansion has been in respect of other paper and board, which increased its share almost fourfold. In contrast, the share of writing and printing papers declined by 50%. The share of newsprint showed no appreciable change but annual consumption fluctuated considerably.

Table 49. Composition of Paper and Paperboard Consumption in Nigeria, 1961 - 1973 [1] (Percentages)

Year	Newsprint	Printing and Writing Paper	Other Paper and Paperboard	Total
1961	27.8	61.1	11.1	100
1962	35.3	47.0	17.7	100
1963	23.8	42.9	33.3	100
1964	21.7	30.4	47.9	100
1965	17.7	29.4	52.9	100
1966	24.3	24.3	51.4	100
1967	15.2	27.3	57.5	100
1968	13.5	35.1	51.4	100
1969	14.3	34.7	51.0	100
1970	23.2	30.5	46.3	100
1971*	23.2	30.5	46.3	100
1972*	23.2	30.5	46.3	100
1973*	23.2	30.5	46.3	100
Average	22.0	35.0	43.0	100

SOURCE: Calculated from FAO, Yearbook of Forest Products Statistics, (Review), 1972 and 1973. Rome.

1. Based on imports data only.

* FAO Secretariat Estimates.

In quantitative terms, consumption increased substantially for all the products. The data clearly show that paper and paperboard consumption in Nigeria has been largely for industrial purposes where it is used for wrapping and packaging, especially in the cement and beer industries. Increased economic growth and literacy should lead to continuing expansion of consumption of newsprint, printing and writing papers, long after industrial paper consumption has stabilized.

5.4 Forecast of wood consumption requirements in Nigeria

In the preceding section consumption trends for wood and wood-based

products in Nigeria have been examined. It was shown that demand and consumption of all wood products increased substantially in quantitative terms. The rate of growth of industrial wood consumption was much higher than that of roundwood, but among the former, paper and paperboard showed the highest rate of growth. Sawnwood and wood-based panels consumption rates were found to be unexpectedly low. Interpretation of these trends are subject to the limitations and reliability of available data. How will future demand (or consumption) develop?

Forecasting demand for wood and wood-based products is a particularly hazardous exercise (Arnold, 1968; Leslie, 1971, King, 1974/75), in view of the many forces and dynamic relationships which must be considered. For this purpose, past consumption trends indicate an ex-post evaluation and are not very useful for appraisal of future evolution of demand. However, Mabogunje et al. (1969) stressed that, in spite of the associated shortcomings, forecasts of future wood consumption are essential in view of the very long production period involved in timber production forestry, and to provide a basis for rational planning. Policy makers should see the results of such forecasts as broad guides to current action, rather than as prophecies of "demand".

Demand for wood and wood-based products is influenced by such factors as income, population, price, availability and price of substitutes, wood availability, technology, and consumer tastes and preferences. Current forecasting methodology has, in general, faced the problem of how to account for future changes in wood prices, technology, and consumer tastes and preferences. The problem is resolved by assuming that relative wood prices will be "stable", and that consumer tastes and preferences, as well as technology will be constant or neutral (Hair, 1963; USDA, 1973; FAO, 1966; 1967).

The forecast of demand or consumption is, therefore, based on income and population variables. Vaux (1949) and Gregory (1955a) have noted that the extent and quality of the basic data on income and population may be inadequate for meaningful forecasts, an observation of direct relevance to the Nigerian situation. Any reliable forecast of future wood consumption must be based on comprehensive information regarding supply, demand and price, and the interrelationship between them. The use of income and population variables alone, for wood consumption forecasts is convenient, but the results must be accepted as no more than tentative in nature. Leslie (1971) has suggested the possibility of explicitly taking account of expected future changes in wood prices, but the assumed price changes may not necessarily yield accurate forecasts and certainly complicate the analysis.

Potential consumption requirements for Nigerian wood and wood-based products by 1985 and 2000 A.D., are estimated. The base year for the forecast is 1971, the most current year for which more reliable data are available. Each sub-period of the forecast covers 15 years, a period corresponding to the average length of the business cycle and perspective planning. The analysis closely follows Enabor's (1971) earlier study in which income and population were assumed to be the operating variables. The forecasts are done separately for domestic consumption and for exports. These are then recombined to obtain a consolidated forecast for 1985 and 2000 A.D.

5.4.1 Domestic consumption

It has been stressed in several places in the thesis that both income and population statistics for Nigeria are unreliable. Growth of national

income (GDP) in Nigeria in the 1960's averaged 5.5% per annum. Official estimates put population growth at 2.5% per annum (Federation of Nigeria: Second National Development Plan, 1970-74. p.77). Available evidence suggests that national income in Nigeria, though growing, has in the past fluctuated widely. The Second National Development Plan (1970-74) adopted a 6.6% per annum target growth rate for GDP. Recent evaluations indicate that average growth rate of GDP between 1970 and 1973 was about 10% (Central Planning Office, 1973). In view of the current intensive national development planning effort, and the crucial role of petroleum in the economy, it may be assumed that a long-term GDP growth rate of at least 8% per annum, can be maintained. Population growth rate defies estimation. The rejected 1973 national census gave a population estimate of 79.6 million and represented a growth rate of 3.7% per annum. It should be emphasized that actual demand for wood products in Nigeria will depend on the realized population and income growth as well as the direction of change in the other influences noted above.

The following underlying assumptions are made for the purpose of the present study:

1) Political and social stability will be maintained up to 2000 A.D.
2) Wood supplies (from domestic production and/or imports) are not limiting.
3) There is no run-away inflation or major depression in the economy.
4) Gross national income per capita will grow, on average, at 8% per annum up to 1985 and at 6% per annum between 1985 and 2000 A.D.

5) Population growth: a low of 2% per annum, medium of 3% and high of 4% up to 1985; a low of 1.5%, a medium of 2.5% and a high of 3% between 1985 and 2000 A.D.

6) Per capita real income growth (from 4 and 5 above): a low of 4%, medium of 5% and high of 6% per annum up to 1985; a low of 3%, medium of 3.5% and high of 4.5% between 1985 and 2000 A.D.[6]

7) Wood products prices, relative to both the general price level and prices of competing substitutes, will be stable.

8) Technological developments have no negative net effects on wood consumption and consumer tastes and preferences will remain stable.

Three alternative levels of demand are projected ("A" for low, "B" for medium and "C" for high) according to the rate of per capita real income or population growth selected. The medium level forecast is chosen as indicating probable consumption level but the actual outcome may lie anywhere within the low and high forecast consumption.

5.4.1.1 Fuelwood

Past trends of fuelwood consumption in Nigeria indicate a close positive correlation with population. This relationship is assumed to continue in the future, though a slower rate of fuelwood consumption growth can be expected after 1985. It is assumed that fuelwood consumption will grow at

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6 These derived per capita real income growth rates appear too high, but are realistic in view of recent experience. For international comparisons of income growth rates, see for example, Kuznets, S., Economic Growth of Nations. The Norton Library, New York, 1968, 122pp.

Table 50. Consumption of Fuelwood in Nigeria, 1971, 1985 and 2000 A.D. (million m^3 (r))

	ALTERNATIVE		
	A	B	C
1971	55.4	55.4	55.4
1985	73.0	83.5	95.9
2000	84.2	110.5	135.5

a rate 0.5% lower than population after 1985. This assumption is supported by the generally observed trends in other countries (FAO, 1966). Also, in Nigeria, urbanization is fast reducing sources of cheap or free supplies of firewood, while increasing income is bringing substitute fuels (e.g., kerosene, cooking gas and electricity) within the reach of the general population. Development of the proposed petrochemical industry in Nigeria in the 1970's should accelerate this trend. Accordingly, the forecast consumption of fuelwood in Nigeria is shown in Table 50.

5.4.1.2 Industrial roundwood

Future consumption of industrial roundwood will depend on availability of substitutes, such as concrete and steel, used in power transmission, and substitution by sawnwood in most construction work as incomes rise, especially in rural areas. The major expected use of industrial roundwood in Nigeria will be as poles, and pitprops consumption is expected to decline as mining operations are being reduced due to slack demand for coal. In particular, electrification and telecommunications projects now underway in all parts of the country under the Third National Development Plan, and the changing attitudes

Table 51. Industrial Roundwood Consumption in Nigeria, 1971, 1985 and 2000 A.D. (million m^3 (r))

	ALTERNATIVE		
	A	B	C
1971	2.7	2.7	2.7
1985	4.7	5.3	6.1
2000	8.5	11.1	12.8

of the major users as quality of domestic supplies improve, should ensure increasing consumption of poles. A negative impact of income growth, reinforced by availability of substitutes, especially cement, on poles consumption seems inevitable. Accordingly, it is assumed that, to 1985, industrial roundwood consumption will grow at the same rate as real per capita income. Thereafter it would decline to about 60% of real per capita income growth rate. The projected industrial roundwood consumption under these assumptions is shown in Table 51.

5.4.1.3 Sawnwood

Forecast of sawnwood consumption requires great caution. Not only is sawnwood consumption heavily dependent on the fortunes of the building and construction industry (and, therefore, on cyclical fluctuations of the economy), but the product faces the most intense competition from other wood and non-wood substitutes. However, it has been indicated (Chapter Three), that Nigeria is an under-consumer of sawnwood. Also, the large-scale public and private housing programs now under way, as well as the continued high population growth rate, should induce a higher future consumption. Increases in wood

Table 52. Sawnwood Consumption in Nigeria, 1971, 1985 and 2000 A.D. (million m^3 (r))*

	ALTERNATIVE		
	A	B	C
1971	1.05	1.05	1.05
1985	1.83	2.09	2.38
2000	3.62	4.72	5.04

* Roundwood equivalent volume of sawnwood consumption was calculated by assuming a conversion coefficient of .50.

supplies from plantations and possible relaxation of the ban on wood imports could reduce prices to a sufficiently low level to activate the latent demands. It is, therefore, assumed that up to 1985, sawnwood consumption would grow at the same rate as real per capita income. After 1985 it would achieve a growth rate 1% above real per capita income growth. These assumptions appear contrary to the universally established trends for sawnwood consumption per capita to decline beyond medium per capita income levels. Their realism lies on Nigeria's current underconsumption status and the substantial improvement in supplies expected after 1985. The forecast consumption levels are indicated in Table 52.

5.4.1.4 Wood-based panels

It would be useful to provide separate consumption forecasts for the different wood-based panels products - i.e., veneer, plywood, particle board, firbreboard and insulating board. Although useable data were available, this has not been done, since the interest is centred on indicating general orders

of magnitude, rather than detailed evaluation of specific projects. This shortcoming should be easily rectified by other studies.

Consumption of wood-based panels is closely and positively correlated with income growth, as the 6.4% per annum growth rate estimated from past trends for Nigeria indicates. It was suggested that consumption could have even been higher if the local plywood mills were less export-oriented; domestic wood-panels prices were lower and more competitive; and if there had been wider adoption of wood-panels products in all potential end-uses.

My survey of Nigerian plywood mills (in 1974) revealed that they were disposing of up to 50% of total output on the domestic market, and plywood prices had generally not increased as fast as sawnwood prices. The efforts of the African Timber and Plywood Company at Sapele, to publicise the use of wood-based panels, especially in prefabricated house construction, has been largely instrumental to the growing acceptance of these products in the building and construction industries. Mabogunje et al. (1969) assumed a growth rate of 3% per annum in their projections of future wood-based panels consumption in Western Nigeria. But, the FAO (1966) expected consumption in Northern Nigeria to be negligible up to 1985. This view can hardly be accepted when it is considered that plywood and other panels are relatively easier and cheaper to transport than sawnwood, and are probably more suited to the various warmer Northern States. A study of plywood consumption in some Northern cities by Badejo (1973) suggested intensive use over a wide area. The major problem which confronts wood-based panels production in Nigeria is likely to be availability of suitable log supplies (in size, species and quality). Possible substitution of plywood by the various board products, using lesser-known timbers, could alleviate this problem in the short-term.

Table 53. Wood-based Panels Consumption in Nigeria, 1971, 1985 and 2000 A.D. (000 m^3 (r))*

	ALTERNATIVE		
	A	B	C
1971	45	45	45
1985	102	116	132
2000	231	280	363

* Roundwood equivalent volume estimated using a recovery coefficient of .60.

Projected consumption of wood-based panels in Nigeria is shown in Table 53. The estimates are based on the assumption that wood-panels consumption growth rate will be 2% higher than real per capita income growth rate up to 1985, but 3% higher thereafter.

5.4.1.5 Paper and paperboard

Trends in the general level and pattern of paper and paperboard consumption established elsewhere indicate strong positive correlation with per capita income growth (FAO, 1961; 1967). Of course, other variables, which are indirect measures of living standards and economic development, such as literacy, health and public sanitation standards, as well as cultural factors, influence consumption of paper and paperboard consumption strongly. However, the FAO studies suggest income as clearly the most important variable, although the relationship between the two is not a linear one.[7] Paper and

7 The FAO (1961; 1967), has applied an exponential equation of the form $y = a.x^b$ to approximate the relationship.

paperboard consumption grows at a much higher rate than per capita real income at low income levels, approaches the latter at high income levels, and stabilizes at very high income levels (Leslie, 1971). The FAO (1966) estimated a growth rate of 8.5% per annum for paper and paperboard consumption in West Africa. This rate has been employed by Mabogunje et al. (1969) to project consumption for Western Nigeria. Enabor's (1971) earlier study applied modal growth rates of 9.5% and 8.5%, respectively.

The concept of income elasticity of demand is applied here in making the projections of paper and paperboard consumption for Nigeria. Income elasticity of demand is defined as the percentage change in demand, or consumption of a product resulting from a 1% change in income. Its value may be positive and greater than 1, negative, or unity, but never zero. Average income elasticity of demand for various types of paper in relation to level of per capita income in 1954 were estimated by the FAO (1961). For a country in the $100 - $500 per capita income level, such as Nigeria, demand elasticity ranged from 1.8 for printing and writing paper to 2.2 for paperboard. Our analysis of the past consumption trends indicated an aggregate income elasticity of demand for these products as 2.0. It should be stressed that such estimates, being point elasticities, are not as useful for forecasting as the more sophisticated methods. The approach is adopted here for simplicity, using the estimated value of 2.0 from past trends for the projection of consumption to 1985, and an assumed value of 1.5 for the period 1985 to 2000. The results of the projections are shown in Table 54.

The forecast total domestic wood consumption in Nigeria is presented in Table 55.

Table 54. Paper and Paperboard Consumption in Nigeria, 1971, 1985 and 2000 A.D. (million m^3 (r))*

	ALTERNATIVE		
	A	B	C
1971	.28	.28	.28
1985	0.81	1.05	1.35
2000	1.50	2.15	3.37

* Paper and paperboard consumption in roundwood equivalent volume calculated by assuming an average conversion factor of 1 metric ton equals 3.0 m^3. The average was derived by applying weights based on individual product shares in total consumption (imports) in 1971 to FAO's conversion factors. (See, FAO Yearbook of Forest Products Statistics, 1970).

Table 55. Total Wood Consumption in Nigeria, 1971, 1985 and 2000 A.D. (million m^3 (r))

	1971	1985 ALTERNATIVE			2000 ALTERNATIVE		
		A	B	C	A	B	C
Fuelwood	55.4	73.0	83.8	95.9	84.2	110.5	135.5
Industrial Roundwood	2.7	4.7	5.3	6.1	8.5	11.1	12.8
Sawnwood	1.05	1.83	2.09	2.38	3.62	4.72	5.04
Wood-based Panels	.05	0.10	0.12	0.13	0.23	0.28	0.36
Paper & Paperboard	.28	0.81	1.05	1.35	1.50	2.15	3.37
Total	59.5	80.4	92.4	105.9	98.1	128.8	157.1

5.4.2 Export requirements

It is extremely difficult to forecast the future development of Nigerian wood products exports, in view of the wide variation in general economic and wood utilization conditions in the various markets over which Nigerian producers have no control. Furthermore, the expected rapid increases in domestic wood consumption could severely limit the available export quantities in the absense of a significant improvement in available wood supplies. Although such factors as rising domestic consumption, low frequency of economic species and low product quality have affected development of the export trade adversely, the crisis of confidence between government and the timber industry, arising from the forest policies adopted, has been a fundamental influence.

Recent trends of the wood products export trade of Nigeria would suggest its possible extinction before the end of this century. Whether this outcome will actually materialize will depend on the possibilities of utilization of the lesser-known timbers in production of advanced processed wood products, importation of logs, and the extent of supplies from plantations now being developed. In addition, a more aggressive wood products marketing program will be required. According to the FAO (1965), Nigerian exports of wood products could reach 1.88 million m^3 roundwood equivalent in 1979/80. A forecast by Enabor (1971) put the volume of wood exports[8] at 1.2 million m^3 in 1985 and 1.78 million m^3 in 2000 A.D., assuming average annual growth rates of 3% between 1966 and 1985, and 4% from 1985 to 2000 A.D. Actual exports

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8 For logs, sawnwood, veneer and plywood only.

since 1970 have been far below what would be expected on the basis of these forecasts. For example, in 1973, the best export year since 1970, total volume of exports of sawlogs, sawnwood, veneer and plywood was 395,000 m^3, as against 658,000 m^3 indicated by Enabor's (1971) forecast. The possibility of Nigeria becoming an exporter of pulp, paper and paperboard products before 2000 A.D. cannot be ruled out, but there are no past trends to be used to evaluate their future levels.

A highly tentative forecast of wood products exports is presented in Table 56, on the following assumptions:

1) Up to 1985, exports of sawnwood, veneer and plywood will grow at the same rate as their domestic production. Log exports will achieve a low growth rate of 1% per annum, in view of the expected expansion of domestic wood processing.

2) Between 1985 and 2000 A.D. exports of sawnwood, veneer and plywood will grow at the same rate as real income per capita, (the assumed medium rate of growth of real income per capita is 3.5% per annum).

3) For paper and paperboard, exports in 1985 is arbitrarily assumed to be 10% of domestic consumption, growing thereafter, at the same rate as real income per capita (3.5% per annum).

In Table 56 are shown projected exports of Nigerian wood products to 1985 and 2000. The indication is a more than doubling of the total volume by 2000, compared to 1973. The estimates appear highly optimistic, but are realistic in view of the expected future developments in world wood trade and consumption (Pringle, 1973). Also, wood supplies in Nigeria should increase

Table 56. Projected Exports of Nigerian Wood Products, 1985 and 2000 A.D. (000 m^3 (r))

	1973	1985	2000
Sawlogs & Veneer Logs	335	424	487
Sawnwood	78	120	194
Wood-based Panels	35	62	99
Pulp, Paper & Paperboard	-	110	180
Total	448	716	960

substantially after 1985 as wood of merchantable quality becomes available from plantations.

5.4.3 Summary of projected total wood consumption requirements

In Table 57 are shown projected consumption requirements for Nigerian wood and wood-based products to 1985 and 2000. The indication is that gross requirements could rise from about 60 million m^3 (roundwood equivalent) in 1971 to 93 million m^3 in 1985 and 130 million m^3 in 2000 A.D. In other words, Nigeria should be prepared to supply a total wood volume, in 2000 A.D., equivalent to more than twice that of 1971. These estimates may be considered useful broad guides to forest development policy for the country. They are, however, not a substitute for a detailed and comprehensive survey of consumption trends for the whole country. It cannot be over-stressed that, without reliable and up-to-date statistics of wood consumption, forest development planning becomes a blind and fruitless exercise. Urgent steps should, therefore, be taken to collect the vital wood consumption statistics for the country, not only to avoid a possible future timber famine, but also

Table 57. Projected Total Wood Consumption Requirements in Nigeria, 1985 and 2000 A.D. (million m^3 (r))

	1971	1985 ALTERNATIVE			2000 ALTERNATIVE		
		A	B	C	A	B	C
Domestic Consumption	59.5	80.4	92.4	105.9	98.1	128.8	157.1
Exports	0.4*	0.7	0.7	0.7	1.0	1.0	1.0
Total	59.9	81.1	93.1	106.6	99.1	129.8	158.1

* 1973 exports.

to reduce possibilities of over-investment in timber production and the consequent misallocation of the economy's scarce resources (Gregory, 1955b). Assuming that knowledge of the wood requirements for Nigeria are available, other fundamental problems facing the forestry sector need to be resolved. These problems will now be examined.

5.5 Problems of forest development in Nigeria

The main problems of forest development in Nigeria fall into six distinct areas. These are listed as follows and examined briefly in turn:

1. Land Use and Land Tenure
2. Productivity and Utilization of the Forest Resource
3. Development of Forest Industries
4. Investment and Financing
5. Education and Research
6. Planning

5.5.1 Land use and land tenure

Land use and land tenure fundamentally affect forest development, not only in regard to the amount of land available to forestry, but also through the influence of ownership rights and control. Forest development usually requires extensive areas of land (for timber production and protective services of forests) and because of the unusually long production period involved, security of tenure is essential if investments already made are not to be lost. In Nigeria, forestry and agriculture are the major users and are competitors for land. In Table 58 is shown the land use situation for the country. The area under forest is 31.6 million hectares (or 34%) of the total land area. How significant is this forest land's share of total land area of 34%?

A comparison of forest land areas of selected African countries is given in Table 59. The data clearly show that with the exception of Kenya, Nigeria has the lowest forest land area, both as a proportion of total land area and on a per capita basis. The latter represents a better measure of forestry potential and, in this respect, Nigeria's position is most unfavourable. Proportion of forest land area is, however, a deceptive measure in the case of Nigeria. Total forest land is divided into areas within reserves and areas outside reserves. In 1970, forests within reserves covered 11.7 million hectares or about 12% of total land area, while forests outside reserves covered 19.9 million hectares or 22% of the total land area (Persson, 1975). Forest reserves made up 37% of the total forest land area. This distinction is a most important one. Forest lands outside reserves have actually been recognized under existing policy as agricultural lands.

Table 58. Land Use Pattern in Nigeria*

Land Use	Area (000 hectares)	Share (%)
Forest & other Wooded Areas	31,592	34
Arable Land & Land Under Permanent Crops	21,795	24
Permanent Meadows & Pastures	25,800	28
Other Lands	13,190	14
Total	92,377	100

SOURCE: FAO, Production Yearbook, 1971. Rome.

* Based on information from 1961.

Table 59. Comparative Statistics of Forest Land Area in Selected African Countries in 1970

Country	Forest as Percent of Total Land Area (%)	Forest Land Area Per Capita (hectares)
Nigeria	34	0.5
Ghana	52	1.5
Ivory Coast	38	2.6
Gabon	75	41.7
Kenya	4	0.2
Zaire	57	7.7
Cameroun	52	4.3
Dahomey	38	1.6
Angola	58	13.4

SOURCE: FAO, Yearbook of forest products statistics, 1969/70. Rome.

Consequently, the forest resources of this area have been decimated by accelerated salvage logging, shifting cultivation, uncontrolled grazing and wild fires. The impact of shifting cultivation has been most devastating in Nigeria and other parts of West Africa. The FAO (1967) summed up the situation in the following terms:

> "Throughout the sub-region, and particularly in the more densely populated areas, the forests are subject to destructive drain due to shifting cultivation, uncontrolled grazing and other factors. The present area of the closed high forest in West Africa is probably no more than 60% of the original area of these forests, a diminution that must be ascribed mainly to cultivation in the form of bush fallow".

In Nigeria, unreserved forests is clearly a vanishing resource, and the forest reserves constitute the effective source of future supplies of wood products. These supplies will come, almost entirely, from the reserved closed or high forest, the savanna forests being capable of providing only fuelwood and polewood material (Wellwood, 1966). The distribution of the forest reserves between the main forest types is shown in Table 60. From this table it can be seen that in Nigeria productive high forest accounts for 20% of total forest reserve area, but only 2% of total land area of the country. Productive high forest area in Nigeria is extremely small in relation to her population (over 70 million in 1973), when compared to 58% for Ghana, 59% for Gabon and 10% for Cameroun. Further examination of the data in Table 60 also reveals the great disparity in the regional distribution of productive high forest. Three States, the Western, Mid-Western and South-Eastern, with 28% of the total population (in 1963) account for 91% of the total productive high forest area. The six Northern States with 54% of the population (in 1963) contrast sharply with only 7% of the high forest area.

Table 60. Distribution of Forest Reserves in Nigeria, 1968
(Km^2)

Territorial Unit	Forest Types			Total Forest Reserves	Total Land Area (000 Km^2)	High Forest as %		Share of High Forest by States %
	Mangrove	High Forest	Savanna			Forest Reserve	Land Area	
Benue-Plateau State	-	139.9	4006.7	4146.6	101538	3.4	0.1	0.7
East-Central "	-	367.8	36.3	404.1	29909	91.0	1.2	1.9
Kano "	-	-	1278.2	2178.2	43072	0.0	0.0	0.0
Kwara "	-	945.4	10041.4	10986.8	74260	8.6	1.3	5.0
Lagos "	5.2	15.5	-	20.7	3577	74.8	4.3	.1
Mid-West "	20.7	5029.8	676.0	5726.5	38648	87.8	13.0	26.7
North-Central "	-	114.0	9484.6	9598.5	70210	1.2	0.2	0.6
North-East "	-	80.3	16063.2	16143.5	272015	0.5	0.03	0.4
North-West "	-	64.7	24053.3	14118.0	168720	0.3	0.04	0.3
Rivers "	-	-	-	-	18091	0.0	0.0	0.0
South-East "	116.5	6156.4	139.9	6412.8	28363	96.0	21.7	32.7
West "	-	5946.6	7057.7	13004.4	75369	45.7	7.9	31.6
Nigeria	142.4	18864.0	73737.3	92740.0	923772	20.3	2.0	100.0

SOURCE: 1. Adeyoju, S.K., Forestry and the Nigerian economy. Ibadan University Press, Ibadan, 1975. (Table 2.3. p.29).

2. Federal Office of Statistics, Digest of statistics, Vol.18. No.1. January, 1969.

Kano and Rivers States have no productive high forests at all.

The fundamental question which arises from the above analysis is whether Nigeria's forest estate is adequate in size to meet her future forest products needs. The situation has been examined by King (1968) and Okigbo (1964). Okigbo (1964) concluded as follows:

> "It cannot be over emphasized that the area of our forests can hardly sustain even a few of the possible timber industries and still maintain Nigeria's present level of exports. In fact, all available evidence points to the disturbing situation in which Nigeria must have to import timber for her local needs in the not too distant future".

It must be stressed that there is nothing "disturbing" in Nigeria importing timber products. The real question is what, and how much she should import. It was indicated (Chapter Four) that the allocation of land to forestry in Nigeria has been an unsettled issue since the inception of organized forestry in 1899. The early foresters adopted a target of 25% of the total area as the rational forest reservation area. The target was based on purported statistics from other countries. The 25% target was never approached in Nigeria because it was applied on a communal, rather than national basis. Consequently, the "deficits" in reservation in hostile communities were not made up by increasing the reserved area in communities, such as in Western Nigeria, which were favourably disposed to, and cooperated in forest land reservation. Mabogunje et al. (1969), rejected the notion of a fixed proportion of reserved forest lands as arbitrary, baseless and unrealistic. The reserved forest area of each country should be based, partly, on requirements for forest products and services and, partly, on the demands of other land users. King (1965) emphasized that most forest lands are likely

to be suitable for other uses and the conflicting demands must be resolved using economic criteria. Ideally, the resolution should be supported by a comprehensive land use and capability classification for the country. As a result, some lands now under forests may be transferred to other uses, while some lands not currently under forests may be returned to that use (MacGregor, 1959).

The feasibility of resolving conflicting demands for land in Nigeria, using economic criteria, is rendered difficult by the institution of land tenure and the inability of foresters to present a convincing case on that ground. The institutional framework of land use in Nigeria is communal tenure. The basic unit of land ownership is the family and every member, as long as he observes the communal duties and obligations, is entitled to a free piece of land for his and his family's use (Adegboye, 1967). Transfer,or alienation, of communal land by sale or lease, even by the local chief, is forbidden (Oluwasanmi, 1966). In short, land is valued not merely for economic, but also for political, psychological and religious reasons (Leslie, 1971). Communal property rights, tenure and usages in land, pose the most serious threat to the stability and continuity of rational forest management in Nigeria. Government intervention to stabilize forest management is precluded for political reasons. As Webb (1966) observed, poor performance and the absence of an impact on local communities are the main explanations for the wanton destruction of forests by shifting cultivators and the demands for forest dereservation.

I do not foresee a clearcut or early solution to the land use and land tenure problems in relation to forestry in Nigeria. It may be assumed that with economic development, improved agricultural practices and education,

attitudes to forest land reservation and use should change. However, the benefits of forests must be clearly communicated to the population. In the short-term, agriculturists and foresters need to cooperate more closely in evolving a plan for the use of Nigeria's land resources which maximizes total national welfare.

5.5.2 Productivity and utilization of the forest resources

Given the available forest land area, the prospects of meeting forest products needs is influenced by the productivity of the forest estate and the patterns of utilization. Productivity, in the physical sense, is primarily a function of climatic and soil conditions, as well as the management systems adopted. Plumptre (1974) has cited some evidence to show that tropical high forests have one of the greatest biomass production accumulation rates in the world. Total biomass production, as a measure of productivity, is of limited value. The appropriate measure should be economic productivity in terms of composition and merchantibility of the crop, accessibility, location, as well as the total environment of timber extraction and utilization.

If the discussion is confined to physical growth and productivity, with reference to trees of actual or potential commercial value, the conclusions from various studies (Dawkins, 1958; FAO, 1967) are not very encouraging. In an extensive investigation of natural tropical high forest in Uganda and some other tropical countries, Dawkins (1958) concluded that productivity in all cases was higher under a mono-cyclic than a poly-cyclic management system. According to him, valuable timber trees of the tropical high forest are incapable of reaching 6 feet girth in less than 60 years,

or 8 feet girth in less than 80 years, even under a mono-cyclic system. Under the best management, annual sawtimber yield per acre is unlikely to exceed 1.69 m^3, and could be as low as 0.8 m^3 per annum. Total productivity per acre in plantations in tropical lowland rainforest, was no higher than 9.6 m^3 per annum, with a 60% (average of 5.6 m^3) "useable timber" volume.[9] The FAO (1967) put the average productivity of tropical high forest in Africa at between 1.4 m^3 and 2.8 m^3 per acre per year. The indications from these studies are that merchantable productivity of tropical high forests in Africa are by all standards very low. How does Nigeria rate in this general picture?

There has been no detailed assessment of the productivity of Nigerian tropical high forests. Some estimates may be made from timber production in a given area, but these are generally unreliable, due to frequent false declarations of production under the Outurn Volume (OTV) system, illegal timber exploitation, and variations in the efficiency and conditions of logging. Estimates have ranged from .14 m^3 to 2.8 m^3 per acre per year, whereas Ntima (1967) reported claims of 7 m^3 to 34 m^3 per acre per year in Western Nigeria. Dawkins (1964), in a study of Triplochiton scleroxylon (obeche), a prime Nigerian timber species, reported that in Western Nigeria, productivity was unlikely to exceed 3.96 m^3 per acre. Selective investigation of productivity and increment of tropical high forest in some parts of Western Nigeria have been made by Mervart (1970a; 1970b) for commercial timber above a minimum of 0.6 metres in girth. His results showed that, according to the girth class and period of growth considered, rate of increment per tree ranged from 5% per annum to under 1% per annum; actual increment was of the order of 1.25 cm

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9 Dawkins, H.C., 1964. The productivity of lowland tropical forest and some comparisons with its competitor . Oxford Forestry Journal, 1964.

to 3.25 cm per year.

The growth, productivity, and increment of Nigeria's natural forests and the underlying dynamics definitely require more detailed investigation. Estimates in pulpwood plantations suggest annual volume growth per acre of more than 18 m^3.[10] This figure is very tentative because the plantations are, in general, too young (under 5 years) and measurements were taken in isolated areas on the best sites. For planning purposes, it is necessary to know the standing volume of timber, their growth and increment. Little (1965) estimated the standing merchantable timber for the whole country in 1964 to be 70.8 million m^3, of which 59 million m^3 was within reserves. The total standing commerical timber volume in 1973 has been put at 504 million m^3 (World Wood, 1975). These estimates clearly show that no one really knows the volume of timber growing stock for Nigeria. A detailed comprehensive inventory of the whole forest area is, therefore, urgently required giving, among other things, total volume, size and species distribution, location, growth and increment, as well as accessibility.[11]

It may be concluded that the productivity of the Nigerian natural tropical high forest is extremely low and, on average, is no more than 1 m^3 per acre per year. The problem is, essentially, not one of soil and climate, at least in the rainforest zone. For example, the soil survey by the FAO

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10 Figure supplied orally by forestry officials in South-Eastern Nigeria.

11 An inventory of the Uwet-Odot-Ekinta River and Oban Group, forest reserves in the South-East State was carried out in 1965-67, covering 400,000 hectares and 150 species. A comprehensive inventory of the total high forest area is planned for 1971-1985 under the FAO/UNDP program, "Forest Industries Development in the South-West of Nigeria". See Preliminary Report, January 1971. This program is now underway.

(1965) found that "on the whole they are slightly better than those experimentally determined for some Western European countries". Solution to the problem rests in replacing the slow-growing natural forests with plantations of fast-growing species (domestic and exotic) where there will be higher concentration of biomass production in the useable forms and utilization improved. The current policy, which places emphasis on plantation development is, therefore, a positive step. Area under plantations of various species has grown from 7,500 hectares in 1950 to 51,560 hectares in 1969 (see Appendix 9), while in 1970 - 74, the goal of 56,500 hectares was planned. Total area of plantations in 1973 was 93,342 hectares (World Wood, 1975). The species composition of plantations in 1967 is given in Table 61. Although plantations are attractive for the higher volume and shorter period of production, they are also very capital intensive. This raises serious problems of rational investment and scarce resource allocation decisions discussed in Section 5.5.4.

The influence of variables in an economic interpretation of productivity is clearly reflected in the trends of utilization of the tropical high forest. According to Plumptre (1974), "the utilization of the above ground biomass for sawlogs is in the region of 10% or lower for all commercial operations" in the tropical natural high forest. This compares with an average of 55% for temperate hardwoods. In a study of timber utilization trends in Nigeria, GATT (1966) stated that:

> "It is doubtful if more than 10% of all the timbers which could be sold, if adequate processing and marketing facilities were present, is actually removed from the areas of exportation".

Timber utilization in Nigeria faces similar problems as in other tropical developing countries. It is well known that the tropical natural

Table 61. Nigeria's Plantation Area by Species, 1967
(Hectares)

Species	Area
Pines	12
Other Coniferous species	10
Eucalyptus	3480
Teak	7490
Other Broadleaved species	24600
Total	35600

SOURCE: Persson, R. Forest Resources of Africa. Skogshogskolan, Royal College of Forestry, Stockholm, NR 18. 1975. (p.173).

high forest is characterized by a multiplicity of species, very few of which are well known and find regular markets. This problem is accentuated where exploitation is in the hands of a timber industry engaged in the creaming of the forests for luxury timbers destined for export markets. It has been argued by many (Spears, 1966; Arnold, 1968; Mervart, 1968) that the demand for wood is derived and, consequently, market conditions must dictate utilization. Boateng (1968) has, however, observed that multiplicity of species is neither peculiar to tropical forest nor an inevitable hindrance. Multiplicity and merchantibility (or saleability) may constitute a hindrance to utilization under fixed technological conditions, but the latter cannot be assumed. In this case, the problem turns on accessibility. Where mobility of industry is either slow or impossible, this can become a serious obstacle especially in a developing country where transportation and communications are limited and costly. Also, wood-based industries will successively become more reluctant to invest in roads and infrastructure in order to remove uncertain volumes of timber from distant areas. Thus, the total

operating environment, including political crises, labour unrest, timber allocation and pricing policies, can all combine to discourage utilization of wood.

A detailed analysis of the impact of these forces cannot be provided in this thesis. They serve to show the wide range of influences on tropical forest utilization. The main prospects for increasing the utilization of lesser-known timbers of tropical forests does not, in this writer's opinion, lie merely in manipulating consumer preferences.[12] A recent report of the Agency for International Development,[13] was unequivocal in stating that the main problem is that of research and technology. It recommended inter alia, that the need was to:

> "Develop a model plan for conducting needed research.... Provide assistance in improving processing technology, and application of wood-based products within the developing countries through technology transfer".

The relative costs and benefits of export promotion of lesser-known timbers from Nigeria must be carefully weighed against those associated with research and technology for development of advanced wood products such as particle board, fibreboard, pulp, paper and paperboard, which will likely find expanding outlets in domestic markets. For example, Vakomies (1973)

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12 Koeppen, R.C., and S.B. Hutchison (1973) in their study of the situation in Nigeria and Ghana, hold a different view, emphasizing marketing problems. See, "The problem of unbalanced species utilization in the forests of Ghana and Nigeria as it relates to the need for assistance in determining the properties of lesser-used and unused species". Report to AID (PASA Control No. TA (AJ) 2-73).

13 Freas, A.D., and S.B. Hutchison, Factors influencing the utilization of tropical wood species. Final Report, prepared for the AID, U.S. Department of State, Washington, D.C. November, 1973. 29pp.

suggested that the possibilities of using tropical hardwoods for pulp and paper are now well established on the technical side. The problem may be one of poor economy and quantitative supply considerations.

The problems of rationalizing the utilization of Nigeria's timber resources are numerous. The view taken in this thesis is that the results will depend on government initiative in providing guidance, encouragement and support to industry through appropriate policies.

5.5.3 Development of forest industries

Forest industries constitute the vital link in transforming the forest products and services into utility-generating entities. Timber standing in the forest has no value. Yet, in the developing tropical countries, the industry is very little understood, and its development organized as an afterthought. The forest services see their function as that of growing trees and the timber industry as a customer, no more, no less. As a consequence, the essential integration of forestry and forestry industries as a single sector is neglected. This may be a problem of inadequate planning, but it also reflects the traditionalist forestry attitudes of concern with the trees, rather than the forest values and welfare (King, 1968).[14] Nigeria is no exception to this behaviour pattern. This section examines the main charactersitics of Nigerian forest industries and the problems of their development.

Development of Nigerian forest industries has been well documented

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14 King, N.J.,"Can cows eat wood?" Wood, May, 1969.

in several studies (Okigbo, 1964; A.D. Little Inc., 1965a; 1965b; FAO, 1965; Wellwood, 1966; Scherpe, 1968; Adeyoju, 1966; FAO/ECA, 1966; Enabor, et al. 1971; Sanwo, 1971). The main forest industries include logging, pitsawing and sawmilling, veneer and plywood (including blockboard), pulp and paper. There is a large number of minor wood-based industries, such as charcoal manufacture, match manufacture, and processing of gum arabic. These, together with the secondary wood-based industries, such as boat-building, wooden furniture manufacture, prefabricated wood housing construction, joinery, wood carving, and paper conversion, are not considered for the sake of brevity. Their importance and integral relationship to the utilization of the primary product, wood, should, however, be recognized. Also, the logging industry assumed importance in recent years as more wood processing mills are relying on independent wood suppliers. Due to lack of data for a meaningful analysis, the logging industry is also not considered separately, but should prove of interest to future researchers.

The pattern of Nigerian wood-based industries is shown in Table 62. The number of sawmills doubled between 1964 and 1970. It more than doubled again between 1970 and 1973. Veneer mills increased from one in 1964 to two in 1973, while plywood mills rose from one to four. In 1973, one blockboard mill was in operation. A pulp and paper mill was started in 1968. The statistics show an apparent vast expansion in Nigerian forest industries, particularly in the sawmilling sector. What has been the impact of this numerical increase in strength? Features of the main wood-using industries are examined below.

Table 62. Forest Industries in Nigeria, 1964, 1970, 1973

Establishment	Year		
	1964	1970	1973
Sawmills	80	164	379
Veneer Mills	1	1	2
Plywood Mills	1	2	4
Particle Board	-	-	-
Fibreboard	-	-	-
Hardboard	-	-	1
Pulp and Paper	-	1	1

SOURCE:
1. Okigbo, L.C., 1964. Sawmill industry in Nigeria. Federal Department of Forest Research, Ibadan.
2. Adeyoju, S.K., 1972. The prospects of Nigerian wood-based industries . Nigerian Journal of Forestry, Vol.2, No.2. July, 1972. pp.67-75.
3. 1975 World Wood Review. Vol.16, No.8. July, 1975.

5.5.3.1 Pitsawing

Pitsawing is the oldest and most crude form of wood conversion. Its output is directed mainly to the domestic market, although some pitsawn lumber is known to have been exported during the timber boom of the 1950's. Little (1965) estimated that, in 1960, pitsawn lumber output was about 450,000 m^3 or 93.5% of total domestic consumption. The number and output of pitsawing operations in Nigeria is actually unknown (Okigbo, 1964). Their frequency varies from State to State, but they are believed to be significant in the East-Central and South-Eastern States (Ntima, 1967). The advantage of pitsawing is the minimal capital investment and high mobility. Pitsawing is a highly wasteful process, (Okigbo (1964) estimated a conversion factor of 30%),which produces very low quality products in limited sizes

for domestic use. Pitsawing operations are fast declining in Nigeria because they face stiff competition from more modern sawmills and are confined to areas outside reserves where suitable logs are virtually exhausted. It will, therefore, not be discussed further.

5.5.3.2 Sawmilling industry

Sawmilling represents the oldest and largest segment of the Nigerian forest industries sub-sector. The first sawmill was set up by the colonial government at Etchetem in the Delta Province in 1907 (Sanwo, 1971). The first private sawmill was established by Miller Brothers at Koko in the Mid-West State in 1909. The mill was purchased in 1925 by the United Africa Company, which later moved it to Sapele where the modern African Timber and Plywood Company was established in 1935 (Adeyoju, 1966). The sawmilling industry has expanded rapidly over the years in response to the rising overseas and domestic demand for wood, as well as political pressure from government. In 1946, the Nigerian Hardwood Company sawmill was established in Obiaruku, in the Mid-West State to exploit the rich Sapoba forest reserve for export.[15] The Omo Sawmill in Ijebu Province, began operation in 1950 to exploit the Ijebu forests for export. Finch and Company sawmill, a European firm, was established in Ifon, Western State in 1950.

In the 1930's the sawmilling industry expanded greatly in response to growth of the timber export trade. At this time many Nigerians were

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15 This mill was originally operated by Mr. James Latham, as a logging company, who himself bought it from two Dutch brothers called Kirtens. (I am grateful to the Manager of the Nigerian Hardwood Company, Obiaruku, for this information).

making their presence felt in the industry. For example, Honourable G. Obaseki, James Thomas and I.T. Palmer, all Nigerians,were operating viable sawmill enterprises by 1950.[16] The Obasuyi and Sons Ltd., sawmill in Benin City, began operations with pitsawing and log sales in 1949, but is today the largest, most efficient and successful indigenous sawmill in Nigeria. Since 1960,and particularly in the 1970's, there has been a proliferation of sawmills in Nigeria due,mainly,to the rising domestic demand; government ban on sawnwood imports in 1968 which raised profits in the industry; violation of timber allocation rules for political reasons and large-scale illegal felling of timber often condoned by some forestry officials.[17] This expansion in number of sawmills was particularly noticeable in the Western State which had 9 sawmills in 1957, 36 in 1962, 79 in 1969 and over 200 in 1973.[18] The development of the sawmill industry has been concentrated in the forest-rich Western and Mid-Western States. Northern Nigeria had only 3 sawmills in 1970.

The impact of the sawmill industry development can be inferred from Table 63. The data clearly show the continuing decline of the average firm size in the industry by nearly 50% in the period 1964 to 1973. It reflects the most important current characteristic of the industry. This may be

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16 Nigeria, Annual report of the forest administration of Nigeria, 1949/50. p.28.

17 The impact of these factors on the Western State resource is fully analyzed in Mabogunje et al.(1969). op.cit. (Appendix 1). As a further example, Lagos State without productive reserves had 39 sawmills in 1970, subsisting mainly on illegally felled timber from Western and Mid-Western States.

18 Information obtained from Haley, D., "Notes on Nigerian forestry", 1973. Unpublished.

Table 63. Production Trends in the Nigerian Sawmilling Industry, 1964, 1970 and 1973

Year	No. of Mills	Total Production (000 m^3(s))	Average Production Per Unit (000 m^3(s))
1964	80	320	4
1970	164	566	3.4
1973	379	800	2.1

described by the term "dualism", i.e., the industry is made up of very few large modern firms producing mainly for export, and a large number of small mills producing low quality output for the domestic market. For example, in 1973, six mills accounted for 75% of the total sawnwood output. In 1974, 10% of the mills consumed one-third of the total log input.[19]

The size distribution of Nigerian sawmills in 1974 is shown in Table 64. Nearly ninety % were in the small and very small category, while 4.8% were medium and 5.4% were large. The size classes shown in Table 64 are probably too broad and could be further refined. For example, assuming a conversion coefficient of 0.40, it would be implied that a hypothetical mill having an annual log input of 4,500 m^3, equivalent to 1,800 m^3 annual output is small. Such a classification may not be valid in a developing country such as Nigeria. However, small and very small units clearly dominate the Nigerian sawmilling industry.[20] This tendency to fragmentation of the

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19 Huuhtanen, H.J.I., Interim report: Sawmilling industry in Nigeria. High Forest Development Project, Federal Department of Forestry, Ibadan. 1974. Unpublished. 6pp.

20 Ibid.

Table 64. Distribution of Nigerian Sawmills by Size, 1974

Size Class	Annual Log Input (m^3 (r))	No. of Mills
Large and Very Large	10,000 and over	18
Medium	5,000 - 10,000	16
Small and Very Small	Under 5,000	301

SOURCE: Huuhtanen, H.J.I. Interim report: Sawmilling industry in Nigeria. High Forest Development Project, Federal Department of Forestry, Ibadan. 1974. Unpublished. 6pp.

industry has probably increased when it is considered, for example, that Okigbo's (1964) classification suggests that 9% of the 80 mills in 1964 were in the small and very small size category.

The trend of development of the Nigerian sawmilling industry raises important questions about the efficiency of utilization of the timber resource. The current structure would suggest a highly competitive industry, in which individual firms enjoy relative freedom of entry and exit (Rola, 1974). Under such conditions, in theory, each firm must accept market prices of wood as given and equilibrium is established where each is producing at the lowest point on its average total cost curve. At that point, marginal cost, marginal revenue, and price are all equal. Efficient use of the timber resource would be ensured under the above theoretical conditions.

There are many reasons to believe that the above theoretical conditions for efficiency, are not met by the actual situation in Nigeria. Firstly, fragmentation of the industry is partly a result of the concentration of the large and more efficient firms on export markets. Secondly, available

evidence[21] indicates that, in the larger mills, excess capacity is 40 to 45%, whereas in the small mills, it is 70%. For very small mills Harris and Rowe (1966), estimated excess capacity around 80 - 90%. Thirdly, many small mills have been set up as part-time operations by their owners to handle custom-sawing of logs, or as a camouflage for obtaining forest concessions, which are in due course, leased to larger firms for exploitation. Finally, increased domestic demand for, and the ban on, sawnwood imports has raised prices so high that even the least efficient firms can cover, at least, their fixed costs and leave a surplus sufficient to meet current operating costs. A detailed study of the competitive relations in the Nigerian sawmilling industry and its impact on the resource use is urgently required as a basis for their rationalization.

The main problems which currently face the industry include inadequate raw material supplies, poor equipment and utilization standards, poor product quality, inadequate capital and lack of trained manpower. Inadequate timber supplies has the greatest effect on the very small sawmills which have no access to concessions in forest reserves and depend on illegal fellings or individual tree purchases outside reserves. These small mills could possibly utilize some of the secondary timbers in forest reserves neglected by the timber exporting firms which dominate concessions. The government should examine the possibility of either issuing direct permits to qualified small mills to exploit such useable timbers within reserves, or specific contracts for such fellings could be arranged with concession holders.

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21 Huuthanen, H.J.I., 1974. op.cit.

Poor equipment and utilization standards are inter-related. The 1974 survey of sawmills shows that 91% of the 466 breakdown units, installed in 335 sawmills, were horizontal bandmills (mostly CD-4 type head rigs). Efficiency of sawing and recovery is generally low with horizontal bandmills, e.g., 66% of what can be achieved with vertical band mills and less than 50% that of gangsaws (Sanwo, 1971). Okigbo (1964) estimated a recovery of only 40% for Nigerian sawmills. The majority of the mills installed used equipment originally designed for use in European countries to handle temperate zone hardwoods. The decreasing average size of logs from Nigerian forests is also creating serious problems for many sawmills and a considerable amount of waste has occurred in milling operations. According to a report of the Western State Forestry Advisory Commission (1973), a survey of sawmills in Ibadan, showed that total waste due to log size and poor conversion equipment, ranged from 11.5% in straight and large logs, to 48.2% in crooked logs. Avoidable waste, due to bad sawing and poor maintenance of equipment, made up 60% to 72% of the total waste in straight logs.

A consequence of poor equipment for wood utilization in Nigerian sawmills is the very low product quality. It is reported that in the Western State, "most of the lumbers coming out of the circular resaws are substandard with only 75% usable wood".[22] Only the largest sawmills possess kiln-drying facilities. In small mills lumber is air-dried, there is no grading of output, or proper stacking and storage facilities. The lumber

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22 Western State Forestry Advisory Commission, "A report on the assessment and evaluation of wood waste owing to bad sawing and poor saw doctoring". Ibadan, 1973. p.1.

produced is frequently left scattered about in the mill yard where it is susceptible to stains and other sources of deterioration. It is essential to improve product quality if Nigerian timber is to find acceptance and compete effectively, both in domestic and export markets. Government assistance in providing kiln-drying facilities to small mills at minimal cost in central locations, would be useful, but sawmillers could also independently install necessary facilities by forming cooperatives.

In a developing country such as Nigeria, capital is generally short in supply and this affects the sawmilling industry. The average investment in Nigerian sawmills is put at $15,000 (Sanwo, 1971; NISER, 1973). Many sawmillers have obtained capital from past savings and loans from friends or relatives. Access to conventional sources of capital is restricted by very high interest rates and lack of required collateral. The government should provide assistance to deserving mills in form of loans on liberal terms, and duty concessions on imports of sawmill equipment. Finally, there is the problem of lack of trained manpower, both at the managerial and operator levels. The Western State Forestry Advisory Commission Report revealed that the main cause of avoidable waste in sawmills is the lack of maintenance of equipment for circular saw machines.[23] The training of efficient saw-doctors is a long and costly process which most small sawmillers cannot afford. The establishment of a Sawmill Technician Training School in Benin City, Mid-Western State, by the Federal Government in 1974 is, therefore, a forward step filling this need. To ensure effective use of the facility, the government should subsidize the training of qualified sawmill technicians.

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23 Ibid. p.4.

The foregoing has been an extensive analysis of the Nigerian sawmilling industry, at present the most important section of the wood-based industries. Other measures which have been advocated to make the industry more efficient include placing a ban on the establishment of new sawmills, amalgamation of small mills into larger units, and the tying of concessions to wood-processing mills. These are very general measures which, past experience shows, are very difficult to implement. In my view, the relevant problems require systematic, rather than, wholesale solutions. In the long-run, competition and attrition in the industry should eliminate the inefficient operators.

5.3.3.3 Wood-based panels industry

The first veneer mill in Nigeria was established in 1946 as part of the African Timber and Plywood Company sawmill at Sapele, to supply the export market. The second veneer mill started operation in Calabar, South-Eastern State, in 1966 to supply green veneers to the U.S. market, but was temporarily closed (1967 - 1971) due to the civil war. It is at present being reorganized. The other plywood mills are located at Sapele (1948) and Ologbo (1971) both in the Mid-Western State, and at Epe (1968) in the Western State. The plywood mill at Sapele is the oldest and largest, and forms part of the African Timber and Plywood Company. Production from this mill still goes largely to the export market (mainly U.K.), but output from the other two mills is directed, primarily, to the domestic market. The hardboard mill forms part of the African Timber and Plywood Company, at Sapele and has been producing a limited quantity of output since 1973. Nigeria has no fibreboard industry. A particle

board mill is under construction at Sapele.

The growth of output of the Nigerian wood-based panels industry has already been examined. The industry has the major advantages of changing consumer preferences in favour of wood-based panels products, in place of sawnwood in many uses and the product diversity which offers greater scope for flexibility is production (FAO, 1966). Its primary disadvantage is the moderately greater capital investment and skills requirements. Veneer and plywood manufacture is also highly demanding in wood raw material requirements - usually wood input is of large size and well shaped timber of valuable species with distinctive appearance characteristics, at least for face veneers.[24] Particle board and fibreboard manufacture are much more tolerant in wood requirements (Noack, 1967). It was stated above that the wood-based panels industry in Nigeria does not have significant demand problems, especially if it can adapt its output for domestic use at reasonable prices. Also capital availability is not considered a major constraint.[25] For particle board and firbreboard, import figures for 1961 - 1973 suggest stagnating consumption at a level too low to justify a local mill. The hardboard mill is one example of the effort to utilize more of the lesser-known timbers through local research and development, and market promotion, but its acceptance on the domestic market is not yet well established.

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24 The African Timber and Plywood mill is utilizing a large number of lesser-known timbers as core for plywood, and uses the more valuable mahoganies for manufacture of decorative veneers.

25 See for example, Little, A.D. Inc., (1965). The feasibility of expanding the production of plywood in Nigeria . Federal Ministry of Commerce and Industry, Lagos.

The wood-based panels industry could be developed in Nigeria as the core of carefully located wood-based industry complexes, adequately integrated and linked with the sawmilling and secondary wood-using industries. Two such complexes have been planned in the Western and South-Eastern States, but political considerations seem to be hampering their development. For example, in the Western State, the Forestry Advisory Commission has expressed the fear that establishment of such a wood-based industry complex would starve existing mills of wood supplies.[26] The prospects of the Nigerian wood-based panels industry is judged to be generally good. As plantations, now being established, mature in the next twenty years the raw material constraint should ease but, in the meantime, Nigeria might consider negotiating with some of her West African neighbours for suitable log supplies.[27]

5.5.3.4 Pulp and paper industry

The pulp and paper industry in Nigeria is of very recent origin. There is only one paper mill, the Jebba Paper Mill Ltd., in Kwara State. The mill was established in 1968, at a cost of $9 million, in a partnership of the Federal and Northern Regional governments. The mill has an installed capacity of 12,000 metric tons per year and produces kraft paper for the cement industry, wrapping paper,and some printing and writing paper. The mill relies entirely on imports for pulp supplies and more than 90% of its

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26 Forestry Advisory Commission, Annual report, 1973. Ibadan.

27 The negotiation could be carried out within the framework of the African Wood Organization (AWO), or the Economic Community of West African States (ECOWAS), or bilaterally.

management staff are non-Nigerians.

The Nigerian paper industry supplies just under 10% of total domestic consumption. With a population of over 70 million, or over 50% of the West African total, Nigeria represents the best prospects for establishing a domestic pulp and paper industry in Africa (FAO, 1967; Mabogunje et al. 1969). The FAO (1968) assessed the situation and made specific recommendations for the expansion of the industry to meet rising demand. Besides expansion of pulpwood plantations (using the tested Gmelina spp.), two kraft pulp mills were to be established in the Western and South-Eastern States, while a newsprint mill would be subsequently established in Lagos.[28] Much political jerry-mandering has developed around the development of the industry. Some state governments have commissioned their own feasibility reports, while others have planned extensive pulpwood plantations without even a feasibility report. The pulp and paper industry is considered strategic and, like the iron and steel industry in Nigeria, political considerations seem to have outweighed the economic, with consequent delay of action.

Under the Third National Development Plan (1975 - 1980), the Federal Government has allocated $180 million to the pulp and paper industry with the policy objective of becoming self-sufficient in these products.[29] This industry is the most sophisticated and capital intensive of all wood-based industries. Because the industry is characterized by high capital intensity

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28 See, Scherpe, F.H.H. Feasibility of a pulp and paper industry in Nigeria. FAO, Rome, 1968. This report constitutes the basis of action by government towards the industry since 1968.

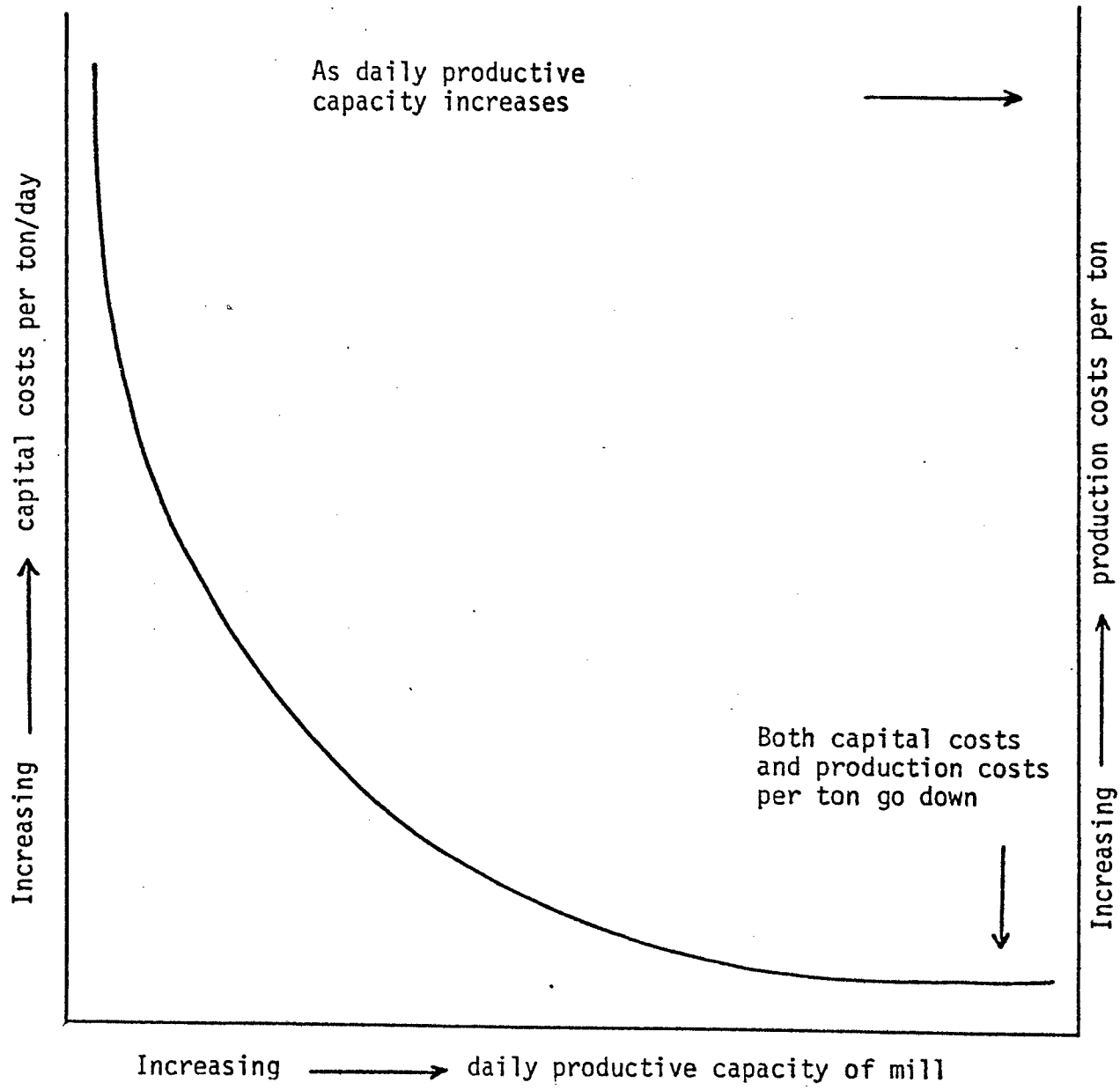
29 See, Federation of Nigeria. Fourteenth independence anniversary broadcast of the Head of State. October, 1974, Lagos. Unpublished.

and decreasing costs, it exhibits significant economies of scale (Guthrie, 1972; Wayman, 1973). The relationship between capital costs and mill size in the pulp and paper industry is illustrated by Fig. 5. Thus, pulp and paper mills tend to be large in size. Wayman (1973) estimated that for a bleached sulphate pulp mill with a daily rated capacity of 200 tons, the total capital requirement is $29 million. If the daily rated capacity of the mill is increased to 600 tons, total capital requirement increases to $54 million. In other words, the larger mill, although costing less than twice the small, produces three times as much.

In addition to capital costs and economies of scale considerations, pulp and paper mills demand adequate and concentrated wood supplies, which accounts for up to 50% of total production costs. Highly skilled personnel make up to 60% of total manpower requirements. There must be adequate and reliable supplies of energy, chemicals and water (for processes and effluent disposal), depending on the process involved (Noack, 1967). For example, Wayman (1973) estimated that a bleached sulphate pulp mill producing 500 tons per day will require about 100,000 m^3 of water per day. It is also very important to ensure the market is sufficiently large to absorb the mill output.

The introduction of the pulp and paper industry should, therefore, not be taken lightly. It must be preceded by detailed feasibility studies and surveys to determine the optimum size mill. Not all pulp and paper mills are large. This is due, primarily, to the "availability factor" (Wayman, 1973). Adequate fibre resources may not be available. Capital may not be available to finance the project. The market may be too small to absorb the output at economic selling prices. Pulp and paper mills must,

FIG. 5. GENERAL RELATIONSHIP BETWEEN MILL SIZE AND CAPITAL AND PRODUCTION COSTS IN THE PULP AND PAPER INDUSTRY.



SOURCE: Wayman, M.,(Ed.),1973. Guide for planning pulp and paper enterprises. Food and Agriculture Organization of the United Nations, Rome. p.2.

therefore, be planned to attain the highest level of capacity consistent with resource availability and market conditions.

If the planned plantation schedules are met, raw material supply should not constitute a major constraint to establishment of a Nigerian pulp and paper industry. There is the possibility of utilizing hardwoods from the natural tropical high forest for pulping. Current government attitudes indicate that the necessary capital will be forthcoming and the Kainji hydroelectric dam is a reliable source of energy. The domestic market is large and there is the possibility of exports to other African countries. The potential constraints lie in supply of skilled personnel, water and chemicals. The latter two are important where the chemical pulping process is adopted. It is essential to train local personnel as a reliable source of skilled manpower. Fiscal protection for the industry may also be necessary at the early establishment stages. Nigeria possesses most of the prerequisites for successful establishment of a local pulp and paper industry. The advantages of the industry have been demonstrated (Chapter One), but the problems must not be underrated.

5.5.4 Investment and financing

Investment and financing represent special problems in forestry and forest industries development. Because of the very long production period involved, and the attitudes of some governments, forests are treated as a "free loan" resource (von Hegel, 1967). Private investors are generally reluctant to invest in forest development because of the high uncertainties attaching to long-deferred payments (Vakomies, 1966). The forest industries

tend to demand unrealistic concession tenure terms, as a condition for making investments in forests, while foreign capital may view investments in all natural resources as hazardous (Morse, 1964).

Investment in forestry development, thus, devolves on the government or other public agencies. In a developing country, the forestry sector must compete with other sectors for the economy's scarce capital resources; profitability has become the primary criterion for resource allocation. Foresters have for long, disputed the use of the profitability criterion, claiming special treatment via low interest application to forestry investments, on grounds of unusual features and the protective services of forests (Petrini, 1953). The argument is unconvincing and untenable (Haley and Smith, 1971). The FAO (1965)[30] has provided a succinct summary of the issue:

> "If governments or other organizations are to be persuaded to invest money in quick growing plantations, they must be shown that such plantations are profitable and, in many cases, that they are more profitable than alternative forms of land use. In relation to the economy of the country as a whole, plantations may also give important gains from savings on imports and freights, from earnings of foreign currency and from the creation of new possibilities for employment".

King (1974/75) has observed that a comprehensive evaluation of the economic benefits from forest development would show that "foresters need not fear that if such criteria are employed, they will come out second best".

The techniques for evaluating forestry investments are now well established under cost-benefit analysis (Pearce, 1970). The technique, originally borrowed from the water resources evaluation field (Hirschleifer, 1960), has generally run into difficulties in the application to forestry,

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30 FAO, 1965. Fast growing tree species for industrial plantations in developing countries. Unasylva, 4(4): 166.

especially with respect to the extra-market values and externalities (Williams, 1972). Further discussion of cost-benefit analysis techniques is not necessary; it suffices to note that, the two competing approaches in the forestry field have been the Discounted Net Present Value and the Internal Rate of Return. The former uses the minimum rate of return that can be earned from an alternative use of capital to evaluate the forestry investment, whereas the latter, selects forestry projects on the basis of the maximum rate of return each activity can earn. The NPV criterion has received support of such writers as Hirschleifer (1958), Turvey (1963), Fleming and Feldstein (1964a; 1964b), Dryden (1964), Beazley (1960) and Gaffney (1960). The IRR criterion is judged to be superior by Gane (1969), McKean (1958) and Merrett and Sykes (1963). Where forestry investments are undertaken by the government, they may be classed as public goods (Beazley, 1965) and the social time preference rate is an appropriate guide to the allocation of resources to the sector (Feldstein, 1964; Marglin, 1963). In other words, forestry investments should be evaluated to reflect the social opportunity costs of capital - i.e., a discount rate approximating the rate at which government can borrow (Leslie, 1971). In Nigeria, the social discount rate has been put at 6%.[31] How do the returns from forestry investments in the country compare to this?

In a study of costs and returns under the Tropical Shelterwood System (TSS), Ntima (1967) found that "in order to earn 3% rate of return on a 100 year rotation on the present average price (royalty) of seven pence per cubic foot, the present level of volume production will have to be increased seven times ..... If the present rotation of 100 years is re-

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31 Federation of Nigeria: second National Development Plan (1970-74), Lagos. p.40.

duced to half, that is from 100 to 50 years and at the present level of production, the present level of prices (royalty) will have to be increased 3 times in order to earn 4% interest". In an evaluation of the investment in Ibadan fuel plantations, using production data from 1912 - 1962, King (1966) found that annual per acre profit was only 5 shillings. The plantation could only make a profit if the costs and revenues were discounted at an interest rate lower than 3%. That writer, therefore, concluded that investment in fuelwood plantations was an unwise financial proposition.

Estimates of the return on invested capital in plantations of such species as teak and obeche have also been made by Ntima (1967), MacGregor (1959) and Leslie (1971). The results of these studies suggest that the financial yield of teak plantations for sawtimber on a 50 years rotation, is around 6%. The results of more recent evaluations of the profitability of teak and gmelina plantations in Western Nigeria are shown in Table 65 and in Fig. 6.[32]

The indicated financial yield is approximately 8.4% for teak and 9.9% per acre for gmelina. For teak, a final rotation length of 55 years was assumed, with one non-economic thinning at 10 years and one commerical thinning at 30 years. Product prices of 15 cents per ft^3 for thinnings and 22.5 cents per ft^3 for the final yield were also assumed. For gmelina, a rotation of 7 years for pulpwood was assumed. There is no thinning, and delivered price of pulpwood is 7.5 cents per ft^3. The schedule of costs for both woods is given in Appendix 7.

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32 Data of Table 65 are based on a detailed survey in the Western State in 1973 by Mr. J. Andrews, Forest Economist, and were obtained from Haley, D. "Nigerian notes". Ibadan, 1974. Unpublished.

Table 65. Profitability of Teak and Gmelina Plantations in Western Nigeria

Discount Rate (%)	Net Present Value ($ Per Acre) Gmelina	Teak
6	127.38	298.32
8	48.96	50.33
9	24.83	- 16.49
10	- 2.42	- 28.32
12	- 24.89	- 53.48
16	- 65.99	

One may conclude from the above results that investments in Nigerian plantations provide an attractive return and meet the minimum stipulated by the social discount rate. This interpretation is subject to many qualifications. First, data on plantation costs are not completely reliable and trends of future prices are uncertain. Plantation costs are greatly influenced by silvicultural practices such as spacing and thinning schedules, species, and planting method, the productivity of labour, overheads and supervision, as well as, fire control and the incidence of diseases and pests. The average cost of plantation establishment, including nursery and post-planting treatment up to the second year following planting, in Western State was $124.00 per acre in 1973, of which $40,or 32%, was in overheads. This relatively high plantation establishment cost may be attributed to low labour productivity, poor supervision and other factors. Increase in productivity of a better trained labour force could lower future costs, but such gains may be offset by rising wages. It is essential to keep accurate records of silvicultural management costs and to monitor these periodically for areas of inefficient operations.

On the revenue side, returns depend on volume production and prices.

FIG. 6. FINANCIAL YIELD OF TEAK AND GMELINA PLANTATIONS IN WESTERN NIGERIA, 1973

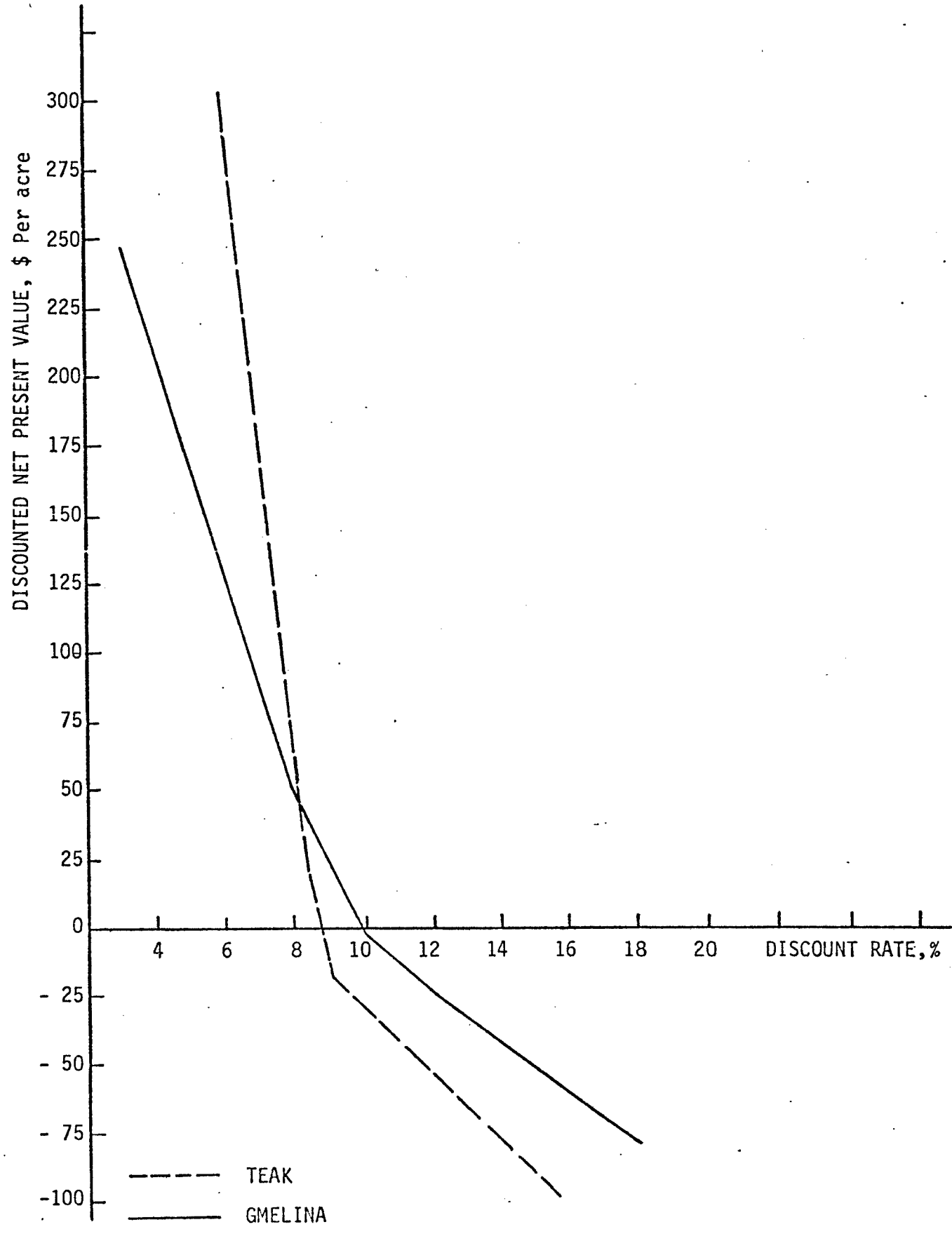

Table 66. Profitability of Gmelina Plantations in Western Nigeria Under Alternative Product Price Assumptions

Prices (cents per ft^3) Discount Rate (%)	Discounted Net Present Values ($ Per Acre) 7.5	8.25	15.0
6	127.38	168.96	525.21
8	48.96	77.85	337.92
9	24.83	49.76	274.12
10	- 2.42	19.47	216.59
12	- 24.89	- 7.61	197.76
16	- 65.99	- 53.49	49.74
20	-	-	- 7.55

SOURCE: Haley, D. "Nigerian notes", Ibadan, 1974. Unpublished. The data show that a 10% increase in product price increases financial yield from 9.9% to nearly 12% per acre per annum. A 100% increase in product price raises the financial yield from 9.9% to nearly 20%. Possible increases in costs were not taken into account.

The indicated yields from plantations range from 3000 to 5000 ft^3 per acre for teak on a 55 years rotation, and 400 to 700 ft^3 for gmelina pulpwood at final rotation age of 7 years. The estimates were obtained from Site Quality Class 1 and, are by no means, representative of all potential plantation areas. The trend of prices, however, points towards future increases, expecially for teak. The impact of price increases on profitability can be seen from the data in Table 66.

The foregoing analysis has shown that an assessment of the profitability of plantations in Nigeria is fraught with dangers of oversimplification. Assuming that estimated rate of return from investment in plantations equals, or exceeds the ruling social discount rate, it does not necessarily follow that all potentail qualifying projects will automatically be funded. First, there is the limitation of the budget in relation to overall needs.

Take, for example, the Western State's planned annual planting target of 22 square miles (approximately 15,000 acres) and assuming average establishment costs of $100.00 per acre,[33] financing requirements in absolute terms amount to $1.5 million. This represents a heavy burden on limited resources. It is, therefore, not surprising that shortage of funds and institutional arrangements (e.g., financing through the Treasury) have been major constraints on forestry investments in Nigeria. Foresters must design their projects in realistic proportions in view of the above factors, if they are to receive attention from the government. It is essential that financial arrangements should be taken out of the straight jacket of Treasury red tape (Adeyoju, 1971) to ensure that budgeted funds are available when required. A rationalization of forest development policy should involve the Federal government more in financing forestry investments, while foreign assistance could be secured if projects are clearly profitable and well designed.

5.5.5 Education and research

The movement towards intensive afforestation and forest management points to the importance of education and research. Roche (1975) has reviewed the forestry education trends in Nigeria. It is essential to train necessary manpower at the professional, technician, and auxilliary staff levels. The problems of forestry education in Africa have been examined by Richardson (1971) and Wyatt-Smith (1966; 1969). These authors have recommended stepping up training of intermediate manpower, while professional manpower

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33 The establishment cost may be reduced by as much as 75% where the taungya system is feasible. The experiment in the South-Eastern State is worth noting.

in the wood-science disciplines, may be trained overseas. The essential point is to match manpower with level of operation. Where funds are available, local training of all staff would be preferred, but overseas training could broaden their experiences, apart from being a valuable form of aid.

Research at all levels must be stepped up. Areas such as productivity of the forests, diseases and pests, wood consumption trends and product development should be given urgent attention. It has already been stessed that in many of these areas cooperation between government and industry is feasible and necessary. It is essential that a National Forest Products Laboratory, as an autonomous body, and strong enough to cooperate effectively with its counterparts in other countries, should be set up to direct all matters relating to research and product development. Industry, professional wood users, and consumers, should be represented on its governing board, with the Director of the Forest Research Institute as its chairman.

5.5.6 Planning

The study has indicated the many problems confronting forestry and forest industry development in Nigeria. Planning constitutes an effective means of achieving integrated development of the sector in the future (Eklund, 1972). There are two aspects of planning - long-term and short-term. The latter deals with choice of projects and is essentially a technical matter (Watt, 1973). The former aims to reduce the uncertainties of outcome of measures adopted to achieve the objectives of policy. The problem in planning is not so much its design, as the value of the contents, executive capacity and the existence of a body which will take responsibility for the outcomes.

The essential ingredients, therefore, are information, personnel and organization (Beazley, 1965).

It is essential to collect the necessary data on all the various aspects of forestry and forest industries development for planning purposes. Also, personnel should be trained, not merely in basic forestry disciplines, but in the planning function. Excellent facilities for such training are available at the Centre for Development Studies in Bradford, England. The problem of organization is probably the most intractable of all. The suggestion of a unified national forest service (Adeyoju,1975) is ideal, but its political feasibility is doubtful. As an alternative, increased inter-state contacts has been suggested. Effective planning cannot be based on mere cooperation between the state forest services. Moreover, state forest services must realize that failure to put their houses in order, ruins chances of their projects' success at the national planning level. The National Forest Development Committee has done no more than exhort. The Federal Department of Forestry is placed in the difficult position of responsibility for planning and policy, without a forest estate under its own management. A National Forestry and Forest Industries Development Council that includes industry representatives, has been recommended (Chapter Four), to formulate and interprete policy. There is no reason why this body cannot be made responsible for national forest development planning, provided it has sufficient legal and administrative powers to discharge its functions.

5.6 Summary

The need for consistency between forest and national development

objectives has been stressed. The case for forestry and forest industries development can be strengthened by emphasizing the sector's income redistributional impact. Forest policy should take full account of both direct and indirect benefits. It is estimated that wood consumption requirements in Nigeria are likely to increase from about 81 million m^3 (r) in 1971 to nearly 130 million m^3 (r) in 2000. Plans must be made to meet the prospective demand, subject to the constraints of relative profitability and overall resource availability.

The major problems of forest development in Nigeria include land use and land tenure; forest productivity and utilization; forest industries development; investment and financing; education and research; and planning. Some approaches to resolution of these problems are indicated. The crucial role of integrated planning in the forestry and forest industries sector, to enhance its contribution to national economic development, is emphasized.

CHAPTER SIX

SUMMARY AND RECOMMENDATIONS

6.1 Summary

Rational use of Nigeria's forest resources is analyzed with the objective of identifying policies towards wood products exports,which should enhance the contribution of the forestry and forest industries sector to national welfare. Features of the Nigerian economy indicate that, in spite of the laudable progress made in recent years, the country is still very much economically underdeveloped. The need for a more rapid rate of economic development is clearly underlined by the higher than average rate of population growth. From a review of the literature of international trade, it is concluded that the 'classical' view of foreign trade as an "engine of growth" is not borne out by the experience of present-day underdeveloped countries. Although foreign trade has been a major element in Nigerian

economic development, it is argued that its full impact has not been realized, due to political and institutional obstacles.

The case for expansion of wood products exports by tropical developing countries, especially as presented in studies by the FAO, is examined. Tropical hardwood exports have expanded considerably in the last fifteen years. The development patterns show excessive concentration on logs and narrow markets. Such export patterns, primarily, benefit the importing countries. It is stressed that, if tropical developing countries wish to maximize the benefits from their forest resources, they must take urgent steps to increase domestic processing of wood into more advanced products before export. The alternative of playing the role of log suppliers to industrially advanced countries should be discouraged. Examination of the problems of expanding wood products exports of tropical developing countries, suggests an international approach to their solution.

Development patterns of the Nigerian wood products export trade reveal a striking similarity to those of other tropical developing countries. Past colonial political and economic ties, trade preferences, transportation costs, restricted access to some markets, as well as a weak domestic wood-based industry, help explain the patterns. The exports trends show a continuing decline of both annual volume and value since 1965. The civil war (1967 - 1970), and poor data, do not permit precise conclusions about the causes of the export decline. It is proposed that resource deficiency and unsettled policies, rather than insufficiency of external demand, are the major contributing factors.

The past patterns of Nigerian wood products exports have clearly not been optimal for the country. Wood products exports based on logs

involve huge losses in terms of foregone value added, employment opportunities, development of local skills and linkage effects. The export trade has had a devastating effect on continuity of the resource and has caused a decline of the contribution of the forestry sector to the national economy. The need for properly oriented policies towards the wood products export trade is stressed. These should aim to increase substantially the proportion of processed wood and the number of timbers exported.

Three alternative policies are examined. These are:

1. Laissez-faire (or "do nothing") policy
2. Incentives to private industry
3. Government regulation and control of the wood products trade.

Appraisal of the alternative policies on the basis of goals of national policy in Nigeria, relevant criteria and possible constraints, leads to a rejection of laissez-faire policy. Private industry, motivated, primarily, by the desire for profits, cannot be expected to voluntarily adopt measures which will bring about the desired change in wood products export patterns. Instead, a combination of incentives and control measures, to stimulate increased exports of processed wood products, and improve Nigeria's competitive position in export markets, is recommended. Incentives to private industry, which the government should consider, include reduction or elimination of export taxes on wood products, lower fees and royalties on lesser-known timbers, duty concessions on imports of machinery and parts.

Government should also assist industry in negotiating shipping space and freight, provision of wood seasoning and treatment facilities at minimal cost, and export promotion. There should be closer cooperation

between government and the wood-based industry in research and product development. It is stressed that incentives should be provided to industry only when justified, in order not to perpetuate inefficiency and misallocate the economy's scarce resources.

Government regulation and control of wood products exports is accepted with caution. A total ban on log exports may be premature and not optimal for the country. It is indicated that indigenous wood products exporters would be the greatest losers under such a policy. As an alternative, a ban should be placed on exports of premium timbers, such as mahogany, iroko and guarea, in log form. Other timbers may be exported in form of logs where the forest department has certified that there is no local buyer. Local sales of exportable timbers must be by tender.

Organization of wood products export marketing under a statutory timber marketing board is rejected. The Ghanaian experience is cited to illustrate the difficulties involved in such arrangements. Government intervention may be effectively introduced by setting compulsory grading standards, and establishment of a wood products inspection service. Exporters found guilty of dishonest practices may have their export licenses suspended. Alternatively, the Nigerian Timber Association should be given greater powers and all wood products exporters should become members.

It should not be automatically assumed that Nigeria needs to expand wood products exports. Expansion of exports can stimulate economic development, or hinder it. In Chapter Five, an optimal forest development policy for the country is synthesized. Optimality is defined as that pattern of the resource use which ensures that the economic contributions of the sector are not only maximized but are, as far as possible, retained for the benefit

of Nigerians. To attain that end, it is emphasized that forest development objectives need to be consistent with national development objectives. Difficulties in the specification of forestry objectives derive, partly from the nature of the sector and, partly from the frequently imprecise and diverse character of national objectives. It is argued that, if maximum economic welfare is the national objective and is defined so as to include growth and distribution of income, the forestry sector should be highly ranked in national development programs.

The issues pertinent to forest development policy in Nigeria are the sector objectives of sustained yield, self-sufficiency in wood-based products, and conservation of forest resources. Sustained yield is inconsistent with the objective of accelerated economic growth. It should be replaced by the objective of maximization of the present economic worth of forest values. Exceptions to this rule may be justified, for example, in the savanna region, where wood supplies in certain forms (e.g. fuelwood), is essential to economic well-being of the population. The need to maintain a safe minimum standard in the use of the forest resources is stressed. Rationality of the self-sufficiency objectives is questioned in view of the demands of other sectors on scarce resources of capital and labour, as well as the neglect of comparative advantage which it entails.

The considerations which should influence future forest development policy embraces the need to supply those products required for domestic consumption and for export, while maintaining the essential protective functions of forests. Consumption of wood and wood-based products in Nigeria is increasing rapidly. An increase in potential requirements from 60 million $m^3(r)$ in 1971 to 93 million $m^3(r)$ in 1985,and 130 million $m^3(r)$ by 2000 is

forecast. The estimates are subject to the assumptions made but, they suggest the need for early plans to supply a vast expansion of wood products within the economically feasible limits.

The major problems of forest development are identified and analyzed. These include:

a) Land use and land tenure.

b) Productivity and utilization of the forest resources.

c) Development of forest industries.

d) Investment and financing.

e) Research and education.

f) Planning.

It is stressed that a planned approach to forestry and forest industries as one integrated sector is imperative. Without planning, forestry and forest industries development in Nigeria will continue to regress.

6.2 Recommendations

Of the many recommendations made in the body of the thesis, only those considered most important are summarized here. They are divided into two parts: those concerned specifically with wood products exports, and those dealing with the forestry and forest industries sector in general. The necessary overlapping of some should be recognized.

6.2.1 Wood products exports

In order to enhance the contribution of wood products exports to

the economy it is recommended that:

1. Nigeria should resolutely strive for an increase in the proportion of wood products processed before export.

2. Expansion of processed wood products exports should be initiated immediately in respect of sawnwood, more advanced products being added as the economy advances and the timber industry gains more experience.

3. The markets for Nigerian wood products exports should be progressively diversified through more intensive marketing and export promotion efforts, to familiarize foreign consumers with the potentials of Nigerian timbers.

4. To encourage the timber industry to export processed products, there should be a careful application of incentives. Specifically, export taxes on all processed wood products exports should be removed, and taxes on logs increased by 100%. Royalties and fees on secondary timbers should be decreased in the same proportion as the percentage increase in exports of processed products for exporting firms.

5. The government should provide assistance to the timber industry in securing shipping space and negotiating freight rates with the conference lines and other carriers.

6. The government should promote development of wood products exports by establishing compulsory grading standards, setting up a wood products exports inspection service, and financing promotion

of wood exports in foreign markets.

7. The export of logs should be subject to the inability of the exporter to find a buyer in Nigeria, to be certified by the Forestry Department.

8. Nigeria should cooperate with other tropical wood producers, in seeking access to foreign markets for wood, on better terms.

9. Membership of Nigerian Timber Association should be made compulsory for all wood exporters and the Federal Government should contribute part of the Secretariat expenses of the Association.

10. In applying policies on wood products exports, the interests of indigenous enterprises should be safeguarded. They should be assisted to up-grade their products through modernization of mills and production methods.

6.2.2 Forestry and forest industries development

In view of the potential role of forestry and forest industries in advancing economic development, and the anticipated large increases in the future forest products demands in Nigeria, it is recommended that:

1. There should be a clearer definition of forest development objectives, stressing the redistribution impact.

2. The security and continuity of the forest estate should be scrupulously guarded against the uninformed, but destructive activities of shifting cultivators. The forest department should be given greater powers to protect the forests outside reserves.

3. The development of forest industries should be carefully scrutinized. In particular, the sawmilling sub-sector should be put on a rational basis through measures to improve installed equipment, as well as, better training of personnel and sawing methods and equipment maintenance.

4. To improve product quality, the government should consider installation of kiln-drying facilities in central locations and provide a product grading service in respect of all processed products.

5. The productivity of the forest resources should be improved by expanding the area of plantations of fast-growing species. The selection of species should be based, not only on growth rates and profitability, but also on susceptibility to diseases and pests.

6. Investment in timber production forestry should be evaluated on the same basis as other productive activities using the same resources and should only be made where additional net benefits cannot be obtained from some alternative use of these resources.

7. Funds allocated to forestry and forest industries development should be operated under a separate account to which the forestry department has direct access. Accountability, for the use of such funds,should follow the normal governmental procedures.

8. Education and research in all aspects of Nigerian forestry should be stepped up. A National Forest Products Research Laboratory should be set up as an autonomous body with a governing board, including government, industry, and user representatives, to direct

all matters relating toward products research and development. The chairman of the board should be the Director, Forest Research Institute.

9. A National Forestry and Forest Industries Development Council should be established, including government and industry representatives to be responsible for systematic planning of the sector and interpretation of policy.

Successful implementation of the above recommendations could bring about significant structural shifts and improved performance of the sector. This would depend on close cooperation between government and the wood-based industry. The inherent difficulties in any policy analysis may point up certain shortcomings of this study. It is hoped that future studies will rectify these deficiencies with improved data availability and analytical tools. The main contribution of the study has been to focus the attention of tropical developing countries on the requirements for optimum utilization of their forest resources. Two of these stand out. First, economic development does not depend solely on foreign trade and expansion of exports. Second, the use of forest resources must be dictated by national goals.

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APPENDIX 1

VALUE OF NIGERIAN EXPORTS BY MAJOR COMMODITIES, 1958 - 1973.
(U.S. $ million F.O.B.)

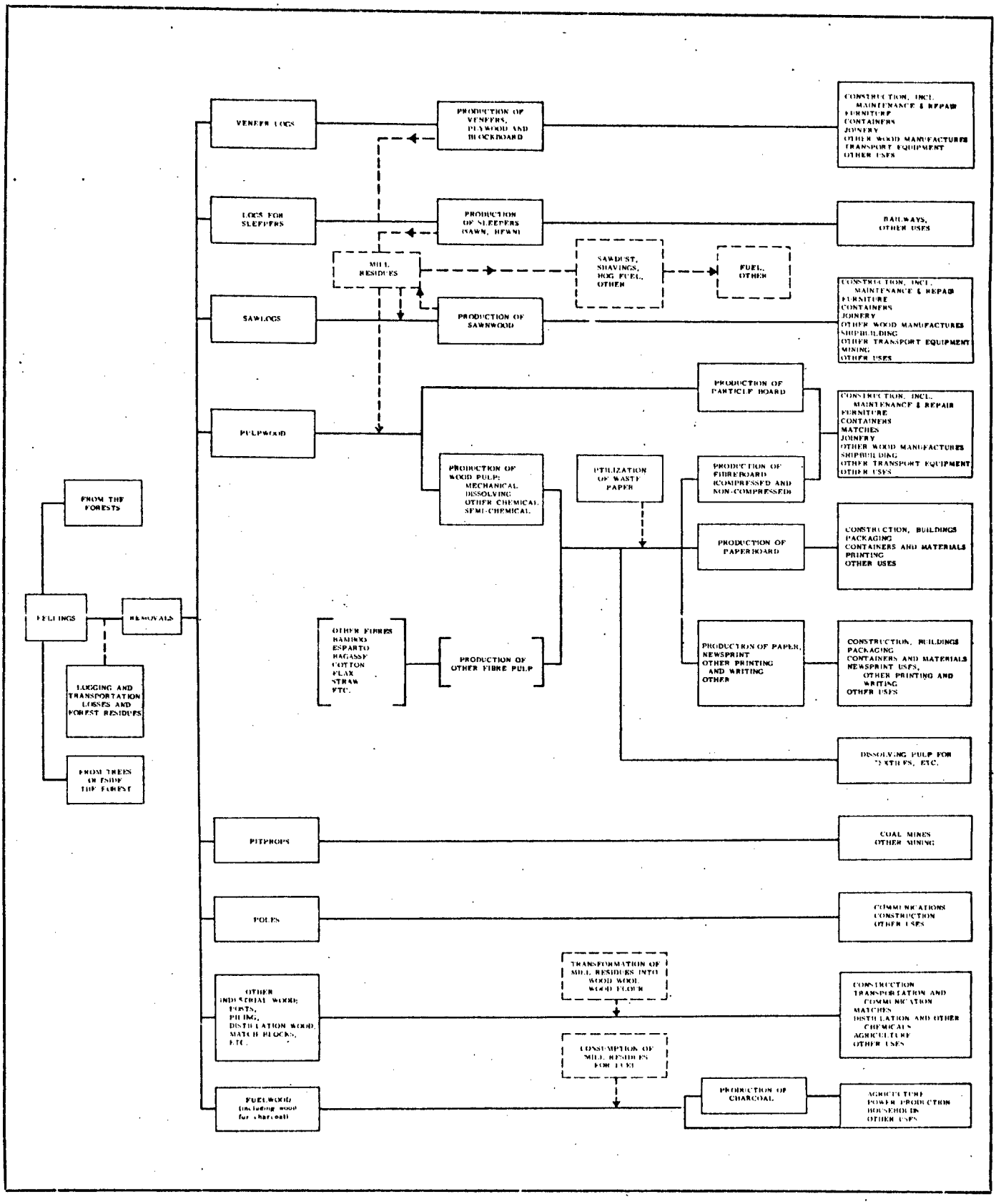
Commodity	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Groundnuts	75.60	63.00	64.12	90.16	90.72	102.48	96.04	105.84	114.24	99.12	106.40	100.24	60.76	33.88	26.74	63.56
Groundnut oil	10.36	12.88	14.84	14.00	17.36	18.20	22.68	28.00	28.00	20.16	26.60	30.52	32.48	17.92	15.26	32.76
Groundnut cake	3.36	4.76	4.48	5.32	7.00	7.56	12.88	14.84	13.16	11.76	13.72	14.00	15.40	9.52	8.26	25.06
Cocoa	74.76	107.24	103.04	94.36	93.52	90.72	112.28	118.44	79.24	153.16	144.20	147.28	186.20	200.48	158.62	186.20
Petroleum crude oil	2.80	7.56	12.32	32.20	46.76	56.56	89.88	190.68	257.60	201.88	103.60	366.52	713.72	1,334. 2	1,646.68	2,650.90
Palm kernels	57.40	72.80	73.08	55.72	47.32	58.24	58.80	74.20	62.72	21.84	28.56	27.44	30.52	36.40	23.52	28.42
Rubber	21.28	32.48	39.76	30.80	31.92	33.04	34.16	30.80	32.20	17.64	17.64	26.88	24.64	17.36	10.36	27.16
Raw cotton	21.84	20.44	17.36	31.08	16.52	26.60	17.08	9.24	14.56	18.20	9.24	9.52	18.48	15.40	4.62	7.56
Hides and skins	7.28	12.04	12.60	11.48	10.64	11.76	12.88	12.88	16.24	12.32	11.20	11.76	8.12	6.72	9.52	17.50
Palm oil	35.56	38.64	39.20	36.96	24.92	26.32	30.24	38.08	30.80	3.64	0.28	1.12	1.68	4.76	0.28	..
Tin metal	-	-	-	-	-	-	-	-	43.12	36.40	38.36	38.92	46.48	34.72	26.74	21.00
Timber and plywood	17.64	20.72	23.24	22.12	19.60	22.40	23.80	20.16	19.04	12.04	12.04	14.56	11.20	9.80	11.34	20.44
Other exports	43.96	57.12	59.64	52.08	52.92	63.84	78.68	93.80	69.44	58.52	66.36	92.12	78.12	71.96	48.58	96.60
Total exports	371.84	449.40	463.68	476.28	459.20	517.72	589.40	736.96	780.36	666.68	578.20	880.88	1,227.80	1,793.12	1,990.52	3,177.16

SOURCE: 1) International Bank for Reconstruction and Development, 1974. Nigeria: Options for Longterm Development. Johns Hopkins Press, Baltimore.

2) Federal Office of Statistics, Review of External Trade, Nigeria, 1973. Lagos. p.13.

Note: ₤1 N = U.S. $2.80; ₰1 = U.S. $1.40

APPENDIX 2.



Forest Products Flow Chart

SOURCE: Westoby, J.C., 1962. Forest industries in the attack on economic underdevelopment. Unasylva, 16(4): 169.

APPENDIX 3. DEGREE OF INTERDEPENDENCE IN NIGERIAN ECONOMY, 1959 - 1960

Sector	Backward Linkage [a]	Forward Linkage [a]
	(Percentages)	
Agriculture	0	7
Livestock, fishing & forestry	1	14
Agricultural processing	58	19
Textiles	42	99
Clothing	33	1
Drink and tobacco	8	0
Food	54	0
Metal mining	10	2
Non-metal mining	8	64
Chemicals	37	24
Transport	12	21
Utilities	28	45
Trade	7	20
Construction	35	3
Service	7	10
Transport & equipment	14	76
Non-metallic minerals	34	98
Metal manufacturing	18	25
Wood, leather, etc.	37	23
Miscellaneous manufacturing	17	63

SOURCE: Carter, N.G., 1966. An input-output analysis of the Nigerian economy, 1959-60. In Stolper, W., 1966. Planning without facts. Michigan State University Press, East Lansing, Mich. 323 pp.

a. Backward linkage is defined as the ratio of inputs from other industries to total output of the sector. Forward linkage is the ratio of sales to other industries to total sales.

Appendix 4. TRADE and TRADE PROSPECTS IN TROPICAL BROADLEAVED WOODS

	LOGS millions of m3 (r)				SAWNWOOD millions of m3 (s)				VENEER and PLYWOOD millions of m3 (s)				TOTAL LOG EQUIVALENT millions of m3 (r)			
IMPORTS OF	1965	1971	1980	1990	1965	1971	1980	1990	1965	1971	1980	1990	1965	1971	1980	1990
(a) Consumer Areas	6.2	7.6	8.8	8.1	2.2	3.1	4.2	5.0	1.7	3.0	5.1	7.8	14.7	20.2	27.9	33.9
North America	0.2	0.1	0.1	0.1	0.4	0.5	0.8	1.0	1.5	2.3	3.5	5.0	4.8	6.3	9.0	12.1
Europe	5.4	6.8	7.5	6.0	1.1	1.6	2.0	2.4	0.2	0.5	1.0	1.5	8.1	10.7	13.5	13.8
Other temperate 1/	0.3	0.4	0.7	1.4	0.5	0.6	0.8	0.8	-	0.2	0.4	1.0	1.3	2.0	3.1	5.0
Wood importing areas of:																
Latin America 2/	0.2	0.2	0.4	0.5	-	0.2	0.4	0.6	-	0.05	0.1	0.2	0.2	0.6	1.4	2.1
Africa 3/	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	-	0.05	0.1	0.1	0.5	0.6	0.9	0.9
(b) Consumer-Processor Exporter Areas	12.1	30.3	41.3	52.4	0.2	0.6	1.5	4.0	-	0.3	1.2	2.7	12.5	31.9	47.1	65.8
Japan	9.3	21.3	26.0	26.0	-	0.3	1.0	2.0	-	0.2	0.8	2.0	9.3	22.2	30.0	34.0
Other East Asia 4/	1.2	5.6	10.0	18.0	-	-	-	-	-	-	-	-	1.2	5.6	10.0	18.0
Near East 5/	0.1	0.2	0.3	0.4	-	-	-	-	-	-	0.1	0.2	0.1	0.2	0.5	0.8
Tropical Asia 6/	1.5	3.2	5.0	8.0	0.2	0.3	0.5	2.0	-	0.2	0.3	0.5	1.9	3.9	6.6	13.0
TOTAL IMPORTS	18.3	37.9	50.1	60.5	2.4	3.7	5.7	9.0	1.7	3.3	6.3	10.5	27.2	52.1	75.2	99.7
EXPORTS OF																
(a) Consumer-Processor Exporter Areas	0.1	-	-	-	0.7	0.8	1.2	1.5	0.9	2.4	3.7	4.0	3.7	6.8	9.8	11.0
Japan	-	-	-	-	0.3	0.1	-	-	0.4	0.3	-	-	1.6	1.0	-	-
Other East Asia 4/	-	-	-	-	-	-	-	-	0.4	1.7	3.2	3.0	1.0	4.0	6.4	6.0
Near East 5/	-	-	-	-	-	-	-	-	0.1	0.1	-	-	0.2	0.1	-	-
Tropical Asia 6/	0.1	-	-	-	0.4	0.7	1.2	1.5	-	0.3	0.5	1.0	0.9	1.7	3.4	5.0
(b) Primary Tropical producers	19.1	37.7	50.3	60.5	2.1	2.9	4.5	7.5	0.8	1.1	2.6	6.2	24.9	45.1	64.5	87.9
Latin America	0.5	0.3	0.3	0.5	0.3	0.5	1.0	2.5	0.03	0.2	0.5	1.5	1.2	1.4	3.3	8.5
Africa	5.2	7.0	5.0	4.0	0.7	0.6	1.0	2.0	0.1	0.3	0.8	1.5	6.8	8.7	8.6	11.0
Asia-Pacific	13.3	30.4	45.0	56.0	1.1	1.8	2.5	3.0	0.7	0.6	1.3	3.5	16.9	35.0	52.6	69.0
TOTAL EXPORTS	19.2	37.7	50.3	60.5	2.9	3.7	5.7	9.0	1.7	3.5	6.3	10.5	28.6	51.9	74.3	99.5

1/ South Africa, Australia, New Zealand, North Africa, Near East, USSR
2/ Mainly Argentina, Uruguay and Cuba
3/ Mainly East Africa
4/ China and Korea Rp
5/ Israel
6/ Singapore and Hong Kong

SOURCE: Pringle, S.L., 1973. Tropical hardwoods: World summary of trends and prospects in demand, supply and trade. Proceedings, Conference on the 'Properties, Uses and Marketing of Tropical Timber'. Berlin-Tegel. p.88.

APPENDIX 5.

Tariff Rates on Selected Forest Products in Japan

	B.T.N.[1]	Item	Ad Valorem Rates
1.	44.03	Logs	free
2.	44.04	Sawnwood	
		Dipterocarpacea	10%
		other hardwoods	free
3.	44.14	Veneer sheets	
		tropical hardwoods (except teak)	15%
		Teak	free
4.	44.15	Plywood	
		hardwood	20%
		softwood	17%
5.	44.18	Reconstituted wood	15-20%

[1]Here and elsewhere, Brussells Tariffs Classification

Source: Brussels International Customs Tariffs Bureau [4; no. 28], pp. 107-17.

EEC Common Tariffs on Selected Forest Products

B.T.N.		Percentage 1968	1971	1972
4403 4404 4405	1. Wood in the Rough Logs or Sawn	Free	Free	Free
4413	2. Prepared Wood Planed and Grooved	8	6	5
4414	3. Veneer Sheets	8	7.2	7
4415	4. Plywood, Blockboard, and Laminboard (Wood plus Bonding only)	13.6	13.2	13
4418	5. (Particle Board, etc.) Reconstituted Wood	12.6	12.2	12

Source: Brussels International Customs Tariffs Bureau [4; no. 14], pp. 173-74.

Annex Table 2.2: U.S. Tariff Rates on Selected Forest Products
(percent ad valorem or equivalent)

	Item	Before 1968	After 1972
1.	Logs	free	free
2.	Sawn hardwood	0.8—1.1	0[1]
3.	Veneer		
	Southeast Asian species[2]	10	10
4.	Softwood plywood		
	Parana pine	40	20
	other species	20	20
5.	Hardwood plywood		
	Southeast Asian species[2]	20	20
	Spanish cedar	40	12.5
	others	15-20	7.5-10
6.	Particleboard	12-20	6-10

[1]Excluding Philippine mahogany, boxwood, Japanese maple, and Japanese white oak
[2]Lauans, bagtikan, meranti, red seraya, and white seraya

Source: U.S. Tariff Commission [55], pp. 89-103.

Annex Table 2.4: U.K. External Tariffs[1] on Selected Forest Products, Prior to Joining the EEC

B.T.N.		Percentage 1969	1971	1972
4403 4404 4405	1. Wood in the Rough Logs or Sawn	Free	Free	Free
4413	2. Prepared Wood Planed and Grooved but not further manufactured	8	7	5
4414	3. Veneer	8	7	5
4415	4. Plywood (Wood plus Bonding only)	8	7	5
4418	5. Reconstituted Board	19	18	15

[1]Applicable to countries other than the members of EFTA and the Commonwealth

Source: Brussels International Customs Tariffs Bureau [4; no. 2], pp. 185-90.

SOURCE: Takeuchi, K., 1974. Tropical hardwood trade in the Asia-Pacific region. Occasional Staff Paper No.17, World Bank. Johns Hopkins Press, Baltimore and London. pp. 66-67.

APPENDIX 6

APPARENT WOOD CONSUMPTION IN NIGERIA, 1961 - 1973

Year	Fuelwood mill.m^3(r)	Industrial Roundwood mill.m^3(r)	Sawn-wood 000m^3(s)	Wood-based Panels 000m^3	Paper and Paperboard 000m.t.
1961	41.5	1.6	305	13	18
1962	42.8	1.8	140	13	17
1963	44.1	1.8	243	13	21
1964	45.4	1.8	233	22	23
1965	46.8	2.0	211	17	34
1966	48.2	2.1	246	11	37
1967	49.6	2.4	287	14	33
1968	51.1	2.1	365	10	40
1969	52.6	2.4	440	24	57
1970	54.0	2.7	519	15	92
1971	55.4	2.7	527	27	92
1972	56.8	2.7	538	26	92*
1973	56.8*	2.8*	527*	27*	92*

SOURCE:
1. FAO, 1973. Yearbook of Forest Products Statistics, 1972. Rome.
2. ___, 1974. Yearbook of Forest Products Statistics, (Review), 1973. Rome.
3. Federal Office of Statistics, Nigeria Trade Summary, 1972. Lagos.

* FAO's estimates.

APPENDIX 7. SCHEDULE OF PLANTATION COSTS FOR TEAK AND GMELINA IN WESTERN NIGERIA, 1973

Operation	Cost ($ Per Acre) Gmelina	Teak	Year
Site preparation	83.25	83.25	- 1
Road construction	27.18	27.18	- 1
Buildings	6.51	6.51	- 1
Materials	3.39	3.39	- 1
Transportation:			
Initial purchase	3.12	3.12	- 1
Maintenance	2.04	2.04	- 1
Supervision	11.43	11.43	- 1
Auxilliary staff	2.34	2.34	- 1
Nursery	12.00**	18.00*	- 1
Planting	15.75	22.50	0
Weeding (x2)	36.00	36.00	0
Beating up	1.80	1.80	0
Transportation maintenance	1.50	1.50	0
Supervision	1.80	1.80	0
Auxilliary staff	0.36	0.36	0
Cleaning:			
1st	18.00	18.00	1
2nd	-	13.50	1
1st	18.00	18.00	2
2nd	-	13.50	2
Supervision	0.72	0.72	½
Auxilliary staff	0.15	0.15	½
Transport maintenance	0.12	0.12	½
Road maintenance	3.00	3.00	0/2
Fire protection	2.61	2.61	0/8
		1.11	0/9(R)
Road maintenance	1.50	1.50	3(R)
Buildings maintenance	0.21	0.21	0(Rtn)

* Spacing at 10ft x 10ft.

** Spacing at 8ft x 8ft.

Precommerical thinning of teak at age 10 years at a cost of $25.5 per acre.

APPENDIX 8

TABLE 1

NIGERIAN LOG EXPORTS, BY SPECIES AND DESTINATION, 1950. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		FRANCE		BELGIUM-LUXEMBOURG		NORWAY		SWEDEN		DENMARK		ISRAEL		SOUTH AFRICA		OTHER COUNTRIES		TOTAL		EXPORT DUTY
SPECIES	VOL.	VAL.	VOL.	VOL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL	VOL.	VAL.	VOL.	VAL.	VOL.	VAL	VOL.	VAL.	VAL.
ABURA	64020.6	1704.6	92.6	3.1	-	-	-	-	14.4	0.4	-	-	-	-	-	-	-	-	-	-	115.7	2.9	-	-	-	-	64244.3	1711.0	-
AFARA	6629.1	168.0	219.6	7.0	37.7	1.7	5.5	0.2	45.1	1.2	-	-	8.0	0.3	-	-	-	-	-	-	335.7	8.3	-	-	-	-	7280.7	186.7	-
AFRICAN MAHOGANY	19710.9	489.9	933.1	28.9	-	-	-	-	2489.4	110.4	-	-	51.3	1.4	-	-	171.3	5.0	-	-	118.3	3.8	-	-	-	-	23474.3	639.5	-
AFZELIA	72.6	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	244.4	9.7	-	-	317.0	12.2	-
AGBA	25754.8	476.1	75.2	2.1	-	-	-	-	5.8	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25835.8	478.4	-
ANTIARIS	4617.9	97.5	23.1	0.5	53.8	1.3	-	-	64.2	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4759.0	100.8	-
AYAN	684.8	16.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	684.8	16.4	-
CANARIUM	958.7	22.2	100.4	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1059.1	24.7	-
DANTA	681.5	23.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	681.5	23.4	-
EBONY	5.2	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	1.4	-
EKHIMI	2084.7	616.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2084.7	616.1	-
EKKI	24.4	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.4	1.0	-
GEDUNOHOR	2583.4	57.3	-	-	-	-	-	-	-	-	-	-	15.3	0.5	-	-	-	-	-	-	-	-	-	-	-	-	2598.7	57.8	-
GUAREA	2771.3	69.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2771.3	69.5	-
IDIGBO	2210.2	55.3	-	-	-	-	1.4	..	-	-	-	-	6.4	0.2	-	-	-	-	-	-	-	-	-	-	-	-	2218.0	55.5	-
IROKO	2796.4	101.7	308.0	13.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3104.4	114.7	-
MAKORE	148.3	4.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	148.3	4.3	-
MANSONIA	4029.0	116.7	5.3	0.2	-	-	-	-	-	-	-	-	1.9	0.1	-	-	-	-	86.5	2.4	20.2	0.6	-	-	-	-	4143.0	120.0	-
OBECHE	65136.0	1285.4	15973.0	403.2	2065.1	49.0	-	-	507.7	12.1	-	-	-	-	158.2	2.1	642.9	16.8	1510.7	27.5	178.7	4.4	-	-	1189.4	32.3	87361.6	1832.7	-
OMU	258.9	7.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	258.9	7.2	-
OPEPE	2751.3	106.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7	0.2	2757.0	107.1	-
SAPELI MAHOGANY	5198.0	112.5	2083.6	60.6	335.2	13.4	678.6	23.9	356.3	13.5	13.3	0.5	-	-	-	-	375.9	10.0	-	-	-	-	-	-	-	-	9040.9	234.4	-
UTILE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WALNUT	3385.4	75.7	306.1	8.6	-	-	4.6	0.1	2.3	0.1	-	-	-	-	-	-	-	-	-	-	-	-	35.9	1.0	-	-	3734.4	85.5	-
CURLS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OTHERS	11911.0	273.3	159.6	5.3	47.6	1.7	47.4	1.4	3.4	0.1	-	-	-	-	-	-	-	-	-	-	22.9	0.6	268.6	7.0	-	-	12460.4	289.2	-
TOTAL	228424.4	5884.9	20279.6	535.0	2539.4	67.1	737.5	25.6	3488.6	139.6	13.3	0.5	82.9	2.5	158.2	2.1	1190.1	31.8	1597.2	29.9	791.5	20.6	548.9	17.7	1195.1	32.5	261047.6	6789.7	-

SOURCE: Federal Office of Statistics, Nigeria Trade Report, 1950. Lagos. Note: .. = negligible (less than 0.1); - = NIL; Totals may not add up due to rounding errors.

TABLE 2

NIGERIAN LOG EXPORTS, BY SPECIES AND DESTINATION, 1953. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		SOUTH AFRICA		FRANCE		BELGIUM-LUXEMBOURG		NORWAY		SWEDEN		DENMARK		ISRAEL		OTHER COUNTRIES		TOTAL		EXPORT DUTY
SPECIES	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VAL.
ABURA	67000.4	1356.0	262.8	6.5	343.6	7.7	-	-	2.8	..	-	-	-	-	-	-	-	-	1.4	..	-	-	134.1	2.5	36.7	0.8	67781.8	1373.5	84.0
AFARA	338.1	6.6	-	-	-	-	-	-	29.7	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	0.1	371.3	7.5	0.4
AFIELIA	163.5	6.2	7.8	0.3	-	-	-	-	-	-	11.8	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183.1	6.9	0.1
AGBA	21702.4	553.7	140.5	4.6	-	-	13.8	0.4	-	-	43.0	1.1	-	-	-	-	-	-	-	-	-	-	243.5	6.2	-	-	22143.2	566.0	26.8
ANTIARIS	50.8	1.4	-	-	-	-	-	-	44.5	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95.3	2.7	..
AYAN	53.1	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	53.1	2.2	..
CANARIUM	11.8	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.8	0.3	..
DANTA	314.0	10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	314.0	10.0	0.2
EBONY	32.6	3.7	50.6	10.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	83.2	14.1	..
EKHIMI	292.5	10.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	292.5	10.4	0.1
EKKI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GEDUNOHOR	871.2	24.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	871.2	24.6	1.1
GUAREA	2867.6	94.0	42.6	1.5	85.2	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46.9	1.6	-	-	3042.3	99.7	3.8
IDIGBO	5867.1	140.9	-	-	71.0	2.3	-	-	54.1	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5992.2	145.0	2.7
IROKO	6622.1	342.2	236.5	12.4	96.8	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	64.6	2.7	-	-	160.5	9.2	7180.5	371.7	8.9
AFRICAN MAHOGANY	25512.8	696.7	227.9	7.3	617.1	18.9	273.5	10.0	721.0	30.7	-	-	6.4	1.0	58.0	2.1	165.9	6.6	10.5	0.4	162.1	4.9	1787.9	58.4	391.1	14.0	29934.2	851.0	37.1
MAKORE	49.5	1.5	48.1	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97.6	3.1	..
MANSONIA	1634.5	50.7	81.6	3.0	46.1	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1762.2	55.3	2.4
OBECHE	135304.5	3598.6	14576.4	417.0	4349.2	129.8	21.3	1.0	1206.1	36.0	127.4	3.7	-	-	-	-	122.7	3.6	3889.2	108.5	2535.5	67.6	7074.8	197.8	152.4	4.2	169659.5	4567.8	211.4
OMU	14.4	..	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34.2	1.2	48.6	1.2	..
OPEPE	524.2	22.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34.2	1.2	-	-	558.4	23.6	0.7
SAPELE MAHOGANY	4491.7	161.0	2816.4	110.5	225.9	9.0	7015.0	300.9	82.1	3.6	-	-	58.5	2.8	-	-	-	-	729.0	26.6	642.1	22.9	76.5	5.1	-	-	16137.2	642.4	20.0
UTILE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WALNUT	3939.1	111.9	123.9	3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.2	0.3	-	-	-	-	4071.2	115.9	5.0
OTHERS	399.2	10.0	57.2	1.9	-	-	-	-	0.4	..	731.0	21.3	-	-	-	-	-	-	-	-	-	-	7.3	0.2	2947.3	95.4	4142.4	128.8	0.6
TOTAL	278030.0	7204.9	18972.3	581.2	5834.9	177.0	7323.6	312.3	2140.8	74.3	913.2	26.6	64.9	3.8	58.0	2.1	288.6	10.2	4630.1	135.5	3412.5	98.4	9405.2	273.0	3721.8	124.8	334795.9	9024.1	405.4

SOURCE: Federal Office of Statistics, Nigeria Trade Report, 1953. Lagos. Note: .. = negligible (less than 0.1); - = NIL; Totals may not add up due to rounding errors.

TABLE 3

NIGERIAN LOG EXPORTS, BY SPECIES AND DESTINATION, 1957. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		BELGIUM-LUXEMBOURG		FRANCE		NORWAY		SWEDEN		DENMARK		ISRAEL		OTHER COUNTRIES		TOTAL		EXPORT DUTY
SPECIES	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VAL.
ABURA	45125.2	781.4	12229.4	210.1	3824.1	71.1	3630.2	66.0	-	-	-	-	-	-	-	-	-	-	-	-	431.0	11.2	12.4	0.3	65252.1	1140.1	28.2
AFARA	149.5	6.7	9.1	0.2	55.9	1.8	-	-	-	-	-	-	-	-	-	-	2.7	..	-	-	-	-	-	-	217.2	8.7	0.3
AFRICAN MAHOGANY	8742.3	240.9	71.8	2.0	164.8	5.3	-	-	638.4	17.2	-	-	-	-	-	-	107.3	3.2	60.0	2.3	52.8	2.2	53.8	1.9	9891.2	275.0	12.2
AFZELIA	989.2	30.7	310.0	9.7	99.2	2.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1398.4	43.3	0.6
AGBA	8769.1	245.5	2482.4	54.6	801.6	19.6	101.8	1.7	-	-	26.5	0.7	-	-	-	-	2.9	..	-	-	-	-	189.1	5.3	12373.4	327.4	15.7
ANTIARIS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AYAN	36.1	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36.1	3.4	..
CANARIUM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DANTA	152.1	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	152.1	4.0	0.1
EBONY	5.1	0.4	2.1	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	0.1	10.7	0.6	..
EKHIMI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EKKI	-	-	4.3	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3	0.1	..
GEDUNOHOR	642.5	15.2	9.8	0.2	269.2	7.5	95.7	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1017.2	25.2	1.2
GUAREA	6587.9	163.0	46.8	1.3	101.9	3.7	339.6	8.6	-	-	-	-	-	-	31.2	0.8	-	-	57.4	2.0	-	-	-	-	7164.8	179.4	8.9
IDIGBO	1610.6	38.6	13.5	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1624.1	38.9	0.8
IROKO	7690.7	313.6	84.4	4.0	97.9	5.2	-	-	-	-	86.0	4.3	-	-	-	-	24.6	1.0	-	-	-	-	3.6	0.1	7987.1	328.2	9.9
MAKORE	-	-	-	-	-	-	26.2	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.2	0.7	..
MANSONIA	985.5	30.6	776.0	23.5	278.3	8.2	1839.2	64.2	13.9	0.6	-	-	-	-	145.2	3.7	8.9	0.2	-	-	-	-	72.2	2.4	4119.2	133.4	5.2
OBECHE	71816.5	1922.5	92276.8	2281.4	39246.4	987.4	7047.0	187.5	62.8	4.3	106.4	2.9	113.9	2.8	432.5	9.0	8415.8	206.0	5980.2	157.8	2436.2	62.9	5790.3	157.4	233724.8	5981.9	290.4
OMU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OPEPE	489.2	13.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	489.2	13.2	0.6
SAPELE MAHOGANY	5696.3	215.3	1248.4	52.9	1288.4	51.6	4934.9	171.3	9.3	0.3	231.4	9.7	-	-	66.2	2.5	636.8	21.5	1467.2	60.8	-	-	1119.2	45.3	16698.1	631.2	20.6
UTILE	361.8	10.5	139.9	3.9	95.4	2.6	-	-	-	-	-	-	-	-	-	-	-	-	85.8	2.9	-	-	20.2	0.6	703.1	20.5	0.8
WALNUT	3770.3	138.9	-	-	-	-	-	-	43.7	1.1	-	-	-	-	-	-	101.4	3.6	4.2	0.1	-	-	..	..	3919.6	143.7	4.8
CURLS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OTHERS	242.8	6.6	87.2	4.6	142.3	2.7	-	-	-	-	-	-	-	-	-	-	4.8	0.1	-	-	-	-	3.5	0.1	480.6	14.1	0.3
TOTAL	163862.6	4180.7	109791.9	2649.1	46465.4	1169.6	18014.6	502.4	768.0	23.5	450.3	17.6	113.9	2.8	675.1	16.0	9305.3	235.7	7654.8	225.9	2920.1	76.3	7268.0	213.5	367290.0	9313.1	400.5

SOURCE: Federal Office of Statistics, Nigeria Trade Report, 1957. Lagos. Note: .. = negligible (less than 0.1); - = NIL; Totals may not add up due to rounding errors.

TABLE 4

NIGERIAN LOG EXPORTS, BY SPECIES AND DESTINATION, 1960. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		FRANCE		BELGIUM-LUXEMBOURG		SWEDEN		DENMARK		NORWAY		ISRAEL		OTHER COUNTRIES		TOTAL		EXPORT DUTY
SPECIES	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VAL.
ABURA	53232.3	844.3	7511.2	110.8	6607.2	116.0	3303.7	57.5	-	-	32.9	0.9	101.1	1.7	-	-	227.4	2.8	45.1	1.1	66.6	1.7	-	-	71127.7	1136.8	29.8
AFARA	578.0	16.8	3641.6	107.7	4478.4	132.0	332.1	9.9	243.6	8.4	-	-	-	-	-	-	23.8	0.7	-	-	-	-	88.9	2.5	9386.4	277.9	11.4
AFRICAN MAHOGANY	10484.2	318.9	364.8	13.0	503.9	16.0	1197.5	435.1	702.8	19.5	195.5	8.6	8.1	0.4	291.4	10.4	25.9	0.9	-	-	112.8	3.8	34.6	1.3	13921.5	435.9	17.3
AFZELIA	1697.3	62.2	4957.6	182.9	1209.9	36.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	258.1	10.3	8122.9	291.5	3.8
AGBA	13409.1	365.7	4150.4	117.1	6297.1	165.4	275.3	24.5	-	-	-	-	984.0	28.6	-	-	-	-	-	-	-	-	-	-	25115.9	701.4	31.1
ANTIARIS	345.7	8.2	392.7	12.1	493.1	14.6	2568.0	75.1	-	-	-	-	-	-	-	-	-	-	-	-	28.9	0.9	-	-	3828.4	110.8	1.8
AYAN	137.2	4.6	23.6	0.8	26.7	0.9	23.3	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	210.7	7.0	0.1
CANARIUM	-	-	-	-	48.7	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48.7	0.7	..
DANTA	374.0	12.4	286.3	6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	660.3	18.4	0.6
EBONY	-	-	19.9	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19.9	2.8	..
EKHIMI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EKKI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41.9	1.8	41.9	1.8	..
GEDUNOHOR	1640.4	47.8	260.4	7.3	145.9	4.2	207.3	4.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2254.0	64.2	2.8
GUAREA	5584.6	180.2	11.2	0.4	48.5	1.8	298.9	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5943.2	192.4	7.5
IDIGBO	3568.0	103.5	71.6	2.1	106.7	3.3	113.7	3.1	-	-	147.4	4.6	-	-	-	-	-	-	-	-	-	-	-	-	4007.4	116.6	2.1
IROKO	5888.6	249.4	1685.1	94.2	1168.5	48.2	247.9	11.8	-	-	51.0	2.5	68.0	2.9	-	-	-	-	-	-	-	-	1503.9	63.3	10613.0	472.2	13.0
MAKORE	343.4	8.9	196.7	5.7	102.4	3.9	525.0	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	116.7	4.1	1284.2	40.4	0.5
MANSONIA	101.9	3.0	1616.3	51.0	651.0	21.9	6602.9	219.8	28.8	1.0	48.2	1.9	-	-	-	-	-	-	-	-	14.9	0.4	96.1	3.9	9160.1	302.9	11.3
OBECHE	68282.4	1774.8	162635.9	4176.3	109890.6	2894.5	32927.5	886.9	719.7	15.5	728.2	23.4	2859.4	74.5	2435.3	69.5	11591.1	326.5	4751.3	136.2	1928.8	45.2	3020.9	71.0	401771.3	10494.4	514.4
OMU	4.6	0.1	204.4	7.6	-	-	31.3	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240.2	8.7	0.2
OPEPE	877.8	20.3	-	-	-	-	134.2	3.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1002.0	24.1	1.2
SAPELE MAHOGANY	6359.4	213.5	2858.4	109.6	860.6	33.5	10945.2	419.6	-	-	-	-	-	-	45.3	1.9	3300.9	137.4	262.0	10.5	124.7	3.7	579.4	21.2	25335.9	950.9	31.4
UTILE	4093.4	126.1	258.5	7.6	229.6	8.8	47.0	1.9	-	-	516.8	14.7	-	-	-	-	522.1	18.8	-	-	-	-	-	-	5667.5	180.6	6.8
WALNUT	6335.1	234.5	70.5	2.3	50.8	1.1	49.2	1.7	-	-	-	-	-	-	55.9	1.8	165.6	5.6	-	-	-	-	-	-	6727.2	246.9	8.3
OTHERS	5269.6	116.2	3574.2	83.9	3468.7	78.9	9867.3	233.1	35.5	1.0	11.0	0.4	-	-	-	-	20.5	0.6	85.2	2.1	-	-	216.1	5.3	22548.1	518.8	9.2
TOTAL	188607.1	4711.4	194791.5	5101.1	136388.2	3581.9	69697.3	2025.8	1730.4	45.5	1731.0	57.0	4020.6	108.1	2828.0	83.6	15877.2	493.2	5143.6	149.9	2276.6	55.7	5956.6	184.7	629039.8	16598.1	707.4

SOURCE: Federal Office of Statistics, Nigeria Trade Report, 1960. Lagos. Note: .. = negligible (less than 0.1); - = NIL; Totals may not add up due to rounding errors.

TABLE 5

NIGERIAN LOG EXPORTS, BY SPECIES AND DESTINATION, 1963. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		FRANCE		BELGIUM-LUXEMBOURG		SWEDEN		DENMARK		NORWAY		SPAIN		POLAND		OTHER COUNTRIES		TOTAL		EXPORT DUTY
SPECIES	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VAL.
ABURA	35357.4	425.8	7944.5	102.7	4265.0	54.0	1405.1	20.0	-	-	154.5	7.0	86.7	0.9	-	-	67.4	1.1	-	-	47.6	1.1	-	-	-	-	49328.2	612.6	20.5
AFARA	104.3	1.5	463.3	20.0	-	-	97.0	3.5	-	-	-	-	112.5	1.5	-	-	20.1	0.7	-	-	-	-	-	-	143.5	1.5	940.8	28.7	1.0
AFRICAN MAHOGANY	17569.3	587.9	1422.2	52.0	647.7	22.3	7473.0	305.2	116.9	6.6	222.4	17.4	-	-	-	-	-	-	-	-	32.6	1.3	774.3	27.6	186.5	6.8	28144.9	1027.1	46.5
AFZELIA	2865.7	107.0	1924.7	79.2	584.1	24.4	127.8	5.8	-	-	101.6	3.5	83.5	3.3	35.6	1.2	-	-	-	-	132.7	5.1	-	-	-	-	5655.8	229.5	2.6
AGBA	9878.6	294.1	923.8	25.9	3571.6	109.3	68.2	2.2	-	-	-	-	451.1	12.0	11.2	0.3	4.4	0.1	-	-	-	-	-	-	-	-	14908.9	443.8	24.5
ANTIARIS	73.2	1.6	1040.5	28.6	181.4	5.0	2025.5	69.8	-	-	37.0	1.1	-	-	152.8	3.2	-	-	-	-	261.0	7.7	-	-	-	-	3771.4	117.1	1.9
AYAN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CEIBA	2377.0	46.1	646.0	8.0	97.6	2.7	546.6	5.1	-	-	36.7	1.0	2781.8	30.1	-	-	-	-	-	-	3.3	0.1	-	-	-	-	6489.1	93.0	2.7
GEDUNOHOR	694.4	20.8	13.2	0.4	4.0	0.1	715.6	24.7	-	-	96.2	3.5	-	-	74.9	2.6	-	-	-	-	13.1	0.5	168.4	6.2	-	-	1779.9	58.7	2.9
GUAREA	3709.0	105.1	175.2	6.1	1166.2	28.8	136.6	4.0	-	-	1098.5	32.7	-	-	-	-	35.9	1.3	-	-	-	-	-	-	-	-	6321.5	178.1	10.6
IDIGBO	1700.9	47.4	356.8	10.6	-	-	396.4	12.1	185.6	5.9	20.2	0.6	-	-	-	-	6.4	0.2	-	-	-	-	-	-	-	-	2666.2	76.7	1.4
ILOMBA	39.0	0.7	210.5	3.0	-	-	270.6	3.8	-	-	-	-	186.6	3.0	-	-	-	-	-	-	-	-	-	-	-	-	706.6	10.5	0.3
IROKO	3520.8	127.4	73.2	2.6	623.5	19.6	33.0	2.0	-	-	-	-	-	-	-	-	-	-	-	-	185.6	7.5	-	-	-	-	4412.1	159.0	7.1
MAKORE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MANSONIA	408.0	13.7	2073.0	85.4	2939.0	104.4	10139.6	399.9	-	-	368.9	15.7	135.7	4.9	726.9	10.1	88.0	3.5	-	-	22.0	0.8	-	-	9.1	0.2	16910.2	638.5	27.1
MOABI	-	-	12.3	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.3	0.5	..
OBECHE	49975.6	1431.9	112558.6	3130.8	111028.6	3179.7	42059.4	1259.3	35.2	0.8	284.7	9.3	5913.0	182.9	7688.9	271.8	8407.5	258.3	1527.3	48.1	1391.4	37.3	-	-	2794.7	76.9	343664.9	9886.9	563.5
OKU	297.9	10.1	127.9	5.1	90.1	3.0	1693.3	55.2	-	-	21.2	1.0	-	-	-	-	-	-	-	-	-	-	223.1	9.7	-	-	2453.5	84.2	4.0
OPEPE	1924.0	55.3	-	-	-	-	125.0	3.3	-	-	-	-	-	-	68.5	1.9	-	-	-	-	-	-	-	-	-	-	2126.8	60.8	3.2
PTERYGOTA	381.5	15.8	511.5	17.9	3.8	..	109.5	3.6	-	-	-	-	7.3	0.1	-	-	15.0	0.4	-	-	17.0	0.5	97.8	3.1	-	-	1143.3	41.6	1.0
SAPELE MAHOGANY	5932.8	211.8	2687.3	137.2	435.4	22.6	6679.8	330.7	-	-	217.6	11.8	64.8	3.8	-	-	688.7	29.9	-	-	159.8	6.2	686.4	31.4	922.4	49.4	18474.9	834.7	30.2
UTILE	3366.2	114.0	268.0	10.1	660.7	21.7	1034.7	36.2	-	-	50.8	1.4	28.3	0.9	-	-	54.1	2.9	-	-	-	-	226.7	9.1	-	-	5689.5	196.3	7.6
WALNUT	6015.0	232.4	248.3	7.5	88.7	2.5	127.2	5.5	-	-	39.1	1.1	-	-	-	-	147.1	6.2	-	-	399.7	12.1	77.3	2.5	-	-	7142.4	269.9	11.8
OTHERS	1356.8	42.0	686.9	32.7	1050.4	35.4	838.8	27.8	-	-	188.0	8.4	679.4	24.7	39.7	1.3	171.5	11.1	-	-	138.0	4.0	177.4	6.8	-	-	5185.5	186.4	4.0
TOTAL	147549.8	3892.4	134343.9	3766.3	127437.9	3635.2	76102.7	2579.9	337.6	13.3	2937.2	115.6	10530.8	267.9	8798.5	292.4	9712.7	316.6	1527.3	48.1	2803.7	84.1	2431.4	96.4	4065.5	135.2	528576.7	15243.4	774.4

SOURCE: Federal Office of Statistics, Nigeria Trade Report, 1963. Lagos. Note: .. = negligible (less than 0.1); - = NIL; Totals may not add up due to rounding errors.

TABLE 6

NIGERIAN LOG EXPORTS, BY SPECIES AND DESTINATION, 1967. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		FRANCE		BELGIUM-LUXEMBOURG		SWEDEN		DENMARK		NORWAY		SPAIN		POLAND		OTHER COUNTRIES		TOTAL		EXPORT DUTY
SPECIES	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VAL.
ABURA	9663.5	122.6	3612.3	45.2	1073.7	13.5	1686.6	28.0	-	-	-	-	18.3	0.3	-	-	38.8	0.5	-	-	446.0	5.7	-	-	-	-	16539.1	215.7	N.A.
AFARA	-	-	109.9	2.6	-	-	884.8	25.9	23.9	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	602.4	9.8	1621.1	38.9	"
AFRICAN CELTIS	91.0	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	91.0	5.2	"
AFRICAN MAHOGANY	9743.3	283.7	445.1	13.0	1652.1	41.3	993.6	41.2	336.6	18.0	1166.3	41.2	46.6	1.2	-	-	423.8	13.6	-	-	-	-	-	-	281.8	11.6	15089.2	464.8	"
AFZELIA	674.9	28.9	2092.3	91.4	1203.2	56.7	118.3	6.2	-	-	18.0	1.6	826.3	36.5	-	-	-	-	6.9	0.5	66.2	3.1	-	-	-	-	5006.0	225.1	"
AGBA	8782.2	220.0	1555.5	45.3	2060.2	62.0	3751.3	103.9	-	-	-	-	613.5	18.7	-	-	1184.3	30.6	-	-	140.4	4.1	-	-	57.7	1.7	18145.1	486.3	"
ANTIARIS	96.7	2.9	-	-	59.2	2.3	472.6	10.6	26.2	0.8	-	-	-	-	-	-	-	-	-	-	331.5	9.6	-	-	-	-	986.2	26.1	"
CEIBA	188.1	2.0	30.5	1.9	1075.8	19.6	-	-	-	-	-	-	319.5	4.6	-	-	-	-	-	-	20.4	0.3	-	-	-	-	1634.4	28.8	"
DANTA	211.8	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	302.9	9.3	514.6	15.8	"
EBONY	17.0	2.2	472.9	45.4	-	-	-	-	9.1	1.2	-	-	-	-	-	-	-	-	-	-	15.7	1.8	-	-	156.9	3.1	671.6	53.8	"
GEDUNOHOR	67.8	1.9	-	-	-	-	431.3	13.9	-	-	-	-	-	-	-	-	-	-	-	-	200.7	5.8	2.0	0.1	511.6	19.9	1213.4	41.5	"
GUAREA	573.6	15.9	15.2	0.5	76.0	2.4	202.1	5.2	8.9	0.4	301.8	9.6	-	-	-	-	265.6	6.7	-	-	-	-	1.7	..	-	-	1444.9	40.8	"
IDIGBO	558.1	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	558.1	14.4	"
ILOMBA	120.8	3.0	218.6	4.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5718.9	128.4	-	-	-	-	6058.3	136.3	"
IROKO	700.8	24.9	115.2	5.0	79.8	2.9	98.2	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93.9	4.2	1088.0	43.3	"
MANSONIA	73.2	2.4	331.3	12.3	1046.1	34.1	11945.3	415.5	28.1	2.0	141.8	4.5	54.7	2.0	-	-	-	-	-	-	299.3	9.6	-	-	75.7	3.0	13995.6	485.4	"
OBECHE	22759.8	588.9	35226.3	881.6	50780.1	1352.9	26193.6	771.1	-	-	358.1	10.1	4760.2	124.8	4908.5	175.5	3471.3	107.9	-	-	3256.8	80.1	-	-	2256.4	67.6	153971.0	4186.5	"
OMU	173.5	5.8	-	-	-	-	349.9	15.3	-	-	46.5	2.1	91.8	2.3	-	-	-	-	-	-	78.4	3.1	5.8	0.1	-	-	745.9	28.6	"
OPEPE	163.0	4.8	225.3	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	388.3	14.6	"
PTERYGOTA	-	-	115.2	3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97.6	3.0	-	-	-	-	202.7	6.6	"
SAPELE MAHOGANY	1649.6	60.0	710.9	34.9	208.2	10.7	3355.0	145.3	-	-	28.2	1.6	108.1	4.5	138.3	6.4	922.8	37.1	48.9	2.2	1278.0	51.6	86.9	3.8	1521.9	75.0	10065.7	433.3	"
UTILE	381.6	11.9	213.8	9.0	45.7	1.9	369.7	15.9	-	-	-	-	63.1	2.0	-	-	-	-	-	-	-	-	-	-	-	-	1073.9	49.8	"
WALNUT	2479.2	96.7	335.5	10.0	117.6	5.0	125.2	3.4	-	-	-	-	41.0	2.0	-	-	30.8	1.5	-	-	1719.3	60.9	-	-	-	-	4848.6	179.6	"
OTHERS	246.2	6.8	938.2	20.6	290.4	10.3	504.7	14.7	-	-	-	-	9.7	0.2	1170.7	39.7	660.6	16.3	-	-	547.9	16.7	304.8	12.1	444.5	18.1	5117.8	155.4	"
TOTAL	59415.9	1511.4	46764.3	1237.0	59768.0	1615.6	51482.0	1622.2	432.8	23.0	2060.7	70.8	6952.7	199.6	6217.6	221.6	6998.0	214.2	55.8	2.7	14217.2	383.8	401.2	16.2	6305.8	223.3	261070.5	7341.7	"

SOURCE: Federal Office of Statistics, Nigeria Trade Summary, December, 1967. Lagos.

Note: .. = negligible (less than 0.1); - = NIL;
Totals may not add up due to rounding errors.

TABLE 7

NIGERIAN LOG EXPORTS, BY SPECIES AND DESTINATION, 1972. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		FRANCE		BELGIUM LUXEMBOURG		SWEDEN		DENMARK		NORWAY		SPAIN		POLAND		OTHER COUNTRIES		TOTAL		EXPO OUT
SPECIES	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VAL
ABURA	7955.8	204.7	5130.9	129.0	457.7	8.6	2483.7	67.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	229.6	5.6	16257.7	415.1	N.A
AFARA	-	-	473.3	10.0	-	-	614.4	20.6	-	-	-	-	-	-	-	-	-	-	-	-	171.3	3.3	-	-	-	-	1259.0	33.8	"
AFRICAN MAHOGANY	679.6	27.7	71.1	3.7	37.8	1.7	74.1	3.2	-	-	11.9	8.2	-	-	-	-	790.8	34.0	-	-	79.2	3.2	-	-	266.6	11.6	2068.6	100.1	"
AFZELIA	37.0	1.4	2733.4	167.2	931.3	51.8	501.3	26.4	-	-	104.2	4.3	592.6	34.1	-	-	-	-	-	-	-	-	-	-	999.1	56.0	5898.9	341.1	"
AGBA	3406.0	136.6	2324.3	99.6	286.8	11.8	2591.3	73.2	-	-	-	-	39.1	1.4	-	-	2888.4	91.5	-	-	1767.0	71.2	1053.4	41.9	586.3	24.8	14942.5	552.2	"
ANTIARIS	-	-	7.9	0.2	-	-	247.7	7.2	-	-	-	-	-	-	-	-	15.7	0.3	-	-	1705.0	37.4	-	-	576.1	12.9	2552.4	58.1	"
CANARIUM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65.0	1.5	-	-	-	-	65.0	1.5	"
CEIBA	683.9	10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.6	1.0	709.5	11.0	"
DANTA	339.3	7.4	43.4	1.9	46.9	1.5	-	-	-	-	57.9	1.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	487.5	12.6	"
EBONY	-	-	57.8	16.6	-	-	6.5	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	64.3	18.1	"
GEDUNOHOR	-	-	29.6	1.0	14.1	0.5	153.1	6.8	-	-	-	-	-	-	-	-	-	-	-	-	130.0	3.8	-	-	349.2	14.8	676.0	26.9	"
GUAREA	1075.8	36.8	156.1	7.3	-	-	82.4	2.6	29.3	1.0	2625.9	96.6	-	-	-	-	-	-	-	-	411.5	16.7	424.6	20.6	148.1	5.5	4953.6	187.9	"
IDIGBO	410.2	9.8	-	-	-	-	72.8	2.5	-	-	170.7	4.9	-	-	-	-	-	-	-	-	-	-	-	-	30.4	0.9	684.2	18.1	"
ILOMBA	-	-	27.4	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1817.6	40.0	-	-	121.3	2.7	1966.2	43.2	"
IROKO	1204.8	41.1	41.6	1.8	16.9	0.8	83.0	4.2	-	-	-	-	-	-	-	-	52.6	2.1	-	-	54.8	2.6	99.3	4.9	126.1	4.5	1713.5	62.3	"
MAKORE	-	-	15.1	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.1	0.6	"
MANSONIA	-	-	694.0	27.3	326.4	13.4	4044.2	197.4	-	-	47.7	2.3	-	-	-	-	-	-	-	-	90.6	3.0	-	-	194.4	10.1	5397.2	253.4	"
OBECHE	18047.1	592.1	16536.8	522.8	5079.4	136.6	28671.0	922.4	-	-	142.1	5.1	1197.2	24.2	4176.5	170.2	2975.7	102.5	1513.0	58.3	1178.1	36.0	-	-	812.4	27.5	80969.3	2597.8	"
OMU	-	-	169.2	6.9	525.3	20.8	2105.4	84.1	-	-	274.9	10.9	-	-	-	-	190.8	9.3	-	-	-	-	-	-	42.5	1.8	3308.1	133.7	"
OPEPE	247.6	6.4	16.8	0.7	51.9	2.1	-	-	-	-	-	-	-	-	-	-	42.5	2.8	-	-	-	-	-	-	150.2	5.7	508.9	17.6	"
PTERYGOTA	908.9	37.3	355.9	13.6	-	-	143.6	5.8	-	-	-	-	-	-	-	-	30.5	0.9	-	-	28.0	0.6	-	-	-	-	1466.9	58.2	"
SAPELE MAHOGANY	307.7	16.8	1226.6	82.0	30.7	0.5	839.1	56.9	-	-	-	-	-	-	-	-	951.1	45.9	-	-	124.6	10.8	71.3	4.3	-	-	3551.1	217.2	"
STERCULIA	854.9	120.1	51.3	2.6	-	-	3.8	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	910.0	122.8	"
UTILE	29.0	2.1	9.9	0.5	-	-	101.0	5.5	-	-	49.6	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	189.5	10.5	"
WALNUT	3040.4	151.7	156.7	5.6	-	-	270.7	10.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	126.7	3.7	3594.5	171.6	"
OTHERS	1145.7	49.6	819.0	38.7	743.2	28.1	161.7	16.1	763.9	59.2	-	-	33.8	1.8	-	-	-	-	-	-	10.7	0.5	42.0	2.3	136.0	7.9	3856.0	204.1	"
TOTAL	40373.7	1451.6	31788.0	1140.1	8548.4	278.2	62199.4	1514.3	793.2	60.2	3484.9	136.5	1862.7	61.5	4176.5	170.2	7938.1	289.3	1513.0	58.3	7633.4	230.6	1690.6	74.0	4920.6	197.0	158055.5	5669.2	

SOURCE: Federal Office of Statistics, Nigeria Trade Summary, December, 1972. Lagos.

Note: .. = negligible (less than 0.1); - = NIL;
Totals may not add up due to rounding errors.

TABLE 8

NIGERIAN SAWNWOOD EXPORTS, BY SPECIES AND DESTINATION, 1950. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		SOUTH AFRICA		SIERA LEONE		GAMBIA		SWEDEN		DENMARK		BELGIUM-LUX.		OTHER COUNTRIES		TOTAL		EXPORT DUTY
SPECIES	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VAL.
ABURA	404.4	16.1	-	-	-	-	-	-	-	-	43.9	2.0	-	-	-	-	-	-	-	-	-	-	-	-	448.3	18.1	-
AFARA	137.4	4.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	137.4	4.9	-
AFZELIA	54.4	2.1	-	-	-	-	-	-	-	-	-	-	-	-	16.8	0.8	-	-	-	-	-	-	-	-	71.2	2.9	-
AGBA	2881.9	102.5	-	-	-	-	-	-	-	-	423.9	33.9	49.2	1.9	226.2	11.4	-	-	56.6	4.1	-	-	-	-	3637.9	153.7	-
ANTIARIS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AYAN	87.1	3.6	-	-	-	-	-	-	-	-	-	-	-	-	43.7	2.3	-	-	-	-	-	-	-	-	130.8	5.8	-
CANARIUM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DANTA	148.4	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	148.5	7.3	-
EBONY	3.0	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	0.1	-
EKHIMI	18.4	0.7	-	-	-	-	-	-	-	-	-	-	-	-	17.5	1.0	-	-	-	-	-	-	-	-	35.9	1.7	-
EKKI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.8	0.8	-	-	-	-	-	-	-	-	14.8	0.8	-
GEDUNOHOR	305.8	12.0	-	-	-	-	-	-	-	-	-	-	-	-	20.9	1.1	-	-	-	-	-	-	-	-	326.7	13.1	-
GUAREA	611.5	22.6	-	-	-	-	-	-	-	-	11.4	0.5	-	-	47.4	2.3	-	-	-	-	-	-	-	-	670.2	25.4	-
IDIGBO	73.0	2.5	-	-	-	-	-	-	-	-	-	-	-	-	45.1	2.2	-	-	-	-	-	-	-	-	118.1	4.8	-
IROKO	237.9	11.1	-	-	-	-	-	-	-	-	-	-	22.4	1.6	3.4	0.2	-	-	-	-	21.0	1.0	45.4	2.1	330.1	15.9	-
AFRICAN MAHOGANY	1450.8	65.9	-	-	-	-	-	-	0.1	0.5	7.0	0.4	2.2	0.1	98.4	5.1	-	-	-	-	-	-	-	-	1563.3	72.2	-
MAKORE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MANSONIA	297.4	9.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	297.4	9.6	-
OBECHE	4757.3	184.3	-	-	-	-	-	-	-	-	163.1	6.6	-	-	10.6	0.6	-	-	-	-	-	-	-	-	4931.0	191.5	-
OMU	4.2	0.1	-	-	-	-	-	-	-	-	-	-	-	-	42.3	2.3	-	-	-	-	-	-	-	-	46.6	2.4	-
OPEPE	193.4	7.5	-	-	-	-	-	-	-	-	-	-	55.2	3.0	31.2	1.6	-	-	-	-	-	-	-	-	279.8	12.0	-
SAPELE-WOOD	924.9	32.0	-	-	-	-	-	-	-	-	52.0	2.6	-	-	-	-	-	-	-	-	-	-	3.5	0.2	980.5	34.8	-
UTILE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AFRICAN WALNUT	691.4	24.0	-	-	-	-	-	-	-	-	-	-	-	-	1.7	0.1	-	-	-	-	-	-	-	-	693.1	24.1	-
OTHERS	177.0	7.0	-	-	-	-	-	-	-	-	63.0	5.0	234.2	7.2	162.4	7.8	-	-	-	-	-	-	6.9	0.1	643.4	27.2	-
TOTAL	13459.9	515.9	-	-	-	-	-	-	0.1	0.5	764.4	51.2	363.2	13.8	782.4	39.5	-	-	56.6	4.1	21.0	1.0	55.7	2.4	15508.2	628.3	-

SOURCE: Federal Office of Statistics, Nigeria Trade Report, 1950. Lagos.

Note: Totals may not add up due to rounding errors.
.. = negligible (less than 0.1); - = NIL.

TABLE 9

NIGERIAN SAWNWOOD EXPORTS, BY SPECIES AND DESTINATION, 1953. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		SOUTH AFRICA		SIERA LEONE		GAMBIA		SWEDEN		DENMARK		OTHER COUNTRIES		TOTAL		EXPORT DUTY
SPECIES	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VAL.
ABURA	991.9	53.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	991.9	53.8	834
AFARA	113.7	5.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	113.7	5.6	98
AFZELIA	195.1	9.9	-	-	14.3	1.0	-	-	-	-	0.7	..	-	-	9.5	0.5	-	-	-	-	-	-	219.5	11.4	90
AGBA	4737.3	259.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4737.3	259.2	3895
ANTIARIS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AYAN	201.1	9.9	-	-	-	-	-	-	-	-	-	-	-	-	..	..	-	-	-	-	6.9	0.2	208.1	10.0	109
CANARIUM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DANTA	273.6	14.0	-	-	-	-	-	-	-	-	-	-	0.3	..	4.2	0.2	-	-	-	-	-	-	278.3	14.3	115
EBONY	1.0	..	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	..	-
EKHIMI	14.1	0.7	-	-	-	-	-	-	-	-	-	-	-	-	..	..	-	-	-	-	-	-	14.1	0.7	6
EKKI	638.6	30.2	-	-	38.7	2.9	-	-	-	-	-	-	2.6	0.1	7.9	0.4	-	-	-	-	-	-	687.8	33.6	283
GEDUNOHOR	418.6	22.0	-	-	-	-	-	-	-	-	-	-	7.3	0.4	6.7	0.3	-	-	-	-	-	-	432.6	22.8	364
GUAREA	3347.1	177.4	-	-	-	-	-	-	-	-	38.8	2.9	130.7	6.8	53.5	2.8	-	-	-	-	-	-	3570.1	190.0	2960
IDIGBO	320.7	16.3	-	-	-	-	-	-	-	-	-	-	-	-	7.9	0.4	-	-	-	-	-	-	321.0	16.3	132
IROKO	638.7	37.0	-	-	-	-	-	-	-	-	..	..	1.3	..	0.4	..	-	-	-	-	347.4	13.5	987.5	50.6	837
AFRICAN MAHOGANY	2129.3	128.3	-	-	-	-	-	-	127.4	10.1	-	-	98.9	6.1	4.3	0.3	-	-	-	-	348.9	18.6	2708.8	163.4	2246
MAKORE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.4	0.4	-	-	-	-	-	-	7.4	0.4	3
MANSONIA	177.6	10.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2	0.2	181.8	10.5	151
OBECHE	10694.6	580.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61.0	4.5	10755.6	584.7	8865
OMU	-	-	-	-	-	-	-	-	-	-	-	-	5.6	0.3	5.2	0.3	-	-	-	-	-	-	10.8	0.6	8
OPEPE	1924.6	102.5	-	-	-	-	-	-	-	-	43.4	3.0	73.2	4.0	266.6	12.4	-	-	-	-	-	-	2267.7	121.9	1879
SAPELE-WOOD	1602.0	88.2	-	-	-	-	-	-	-	-	410.5	24.1	156.2	7.8	30.2	1.5	26.1	1.3	28.8	1.4	-	-	2253.9	124.3	1778
UTILE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AFRICAN WALNUT	1127.7	62.5	-	-	-	-	-	-	-	-	72.2	4.6	-	-	2.2	0.1	-	-	-	-	-	-	1202.1	67.3	990
OTHER SPP.	113.9	5.6	11.9	0.2	-	-	-	-	-	-	27.2	2.1	-	-	83.6	6.5	-	-	-	-	35.4	1.4	272.0	15.9	137
TOTAL	29661.2	1613.6	11.9	0.2	53.0	3.9	-	-	127.4	10.1	593.0	36.8	476.2	25.5	441.9	25.7	26.1	1.3	28.8	1.4	803.9	38.5	32251.8	1757.0	25780

SOURCE: Federal Office of Statistics, Nigeria Trade Report, 1953. Lagos. Note: Totals may not add up due to rounding errors.
.. = negligible (less than 0.1); - = NIL.

TABLE 10

NIGERIAN SAWNWOOD EXPORTS, BY SPECIES AND DESTINATION, 1957. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		SOUTH AFRICA		SWEDEN		NORWAY		DENMARK		OTHER AFRICA		OTHER COUNTRIES		TOTAL		EXPORT DUTY
SPECIES	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VAL $
ABURA	1340.8	54.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	330.3	14.1	-	-	1671.1	68.3	983
AFARA	130.5	6.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.8	1.1	-	-	-	-	156.4	7.3	132
AFZELIA	1061.3	64.7	214.4	15.2	1444.0	110.0	-	-	-	-	57.3	3.1	14.6	1.0	22.9	1.2	-	-	-	-	-	-	2814.6	195.3	1162
AGBA	8337.5	347.7	262.9	12.2	173.8	5.8	35.7	1.5	35.5	1.4	262.9	10.6	-	-	-	-	-	-	-	-	-	-	9108.3	379.2	7619
ANTIARIS	43.0	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	43.0	1.8	36
AYAN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CANARIUM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DANTA	323.8	15.9	-	-	-	-	-	-	88.2	4.3	-	-	-	-	-	-	-	-	-	-	-	-	412.0	20.2	204
EBONY	5.1	0.7	43.8	7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48.9	8.3	20
EKHIMI	278.9	11.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19.5	1.0	298.4	12.7	123
EKKI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GEDUNOHOR	220.1	10.2	-	-	154.4	7.2	-	-	-	-	15.3	0.8	-	-	-	-	-	-	-	-	-	-	389.6	18.1	328
GUAREA	4513.1	199.9	-	-	94.2	4.7	-	-	-	-	-	-	-	-	-	-	14.6	1.0	-	-	95.9	6.5	4717.7	212.0	3931
IDIGBO	1271.9	52.2	0.7	..	-	-	-	-	20.4	1.2	-	-	-	-	-	-	-	-	-	-	-	-	1293.0	53.5	748
IROKO	1758.8	121.5	-	-	34.0	2.6	-	-	-	-	-	-	-	-	-	-	-	-	391.1	20.3	..	..	2184.1	144.4	1800
AFRICAN MAHOGANY	2992.5	182.2	-	-	-	-	-	-	121.1	10.7	15.2	0.7	-	-	-	-	-	-	344.8	18.9	56.9	4.7	3530.5	217.2	356
MAKORE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	111.5	4.2	111.5	4.2	-
MANSONIA	696.6	26.2	-	-	132.1	9.5	81.4	6.1	206.9	17.4	65.6	4.1	-	-	-	-	-	-	-	-	-	-	1182.7	63.3	994
OBECHE	15804.3	688.1	292.9	9.5	288.3	8.3	-	-	969.1	45.8	-	-	-	-	-	-	-	-	-	-	24.2	1.3	17378.9	753.4	14524
ONU	203.9	6.8	-	-	14.5	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	218.4	7.5	179
OPEPE	1521.3	77.6	-	-	38.0	1.5	-	-	-	-	-	-	-	-	-	-	-	-	4.4	0.2	-	-	1563.7	79.3	1294
SAPELE-WOOD	1538.9	76.7	14.9	0.5	261.7	13.4	77.3	3.3	1.1	0.1	-	-	-	-	111.8	4.4	104.7	6.4	-	-	137.6	8.4	2247.9	113.4	1870
UTILE	152.1	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	152.1	7.3	134
WALNUT	1686.0	105.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.1	1.6	1703.1	107.4	1397
OTHERS	1792.0	94.4	-	-	39.7	1.6	2.2	0.1	6.8	0.6	-	-	-	-	17.1	0.7	-	-	23.9	1.0	0.2	..	1882.0	98.4	823
TOTAL	45672.5	2151.9	829.5	45.0	2674.6	165.4	196.6	11.0	1449.1	81.5	416.1	19.3	14.6	1.0	151.8	6.3	145.1	8.5	1094.6	54.5	463.0	27.7	53107.6	2572.5	41857

SOURCE: Federal Office of Statistics, Nigeria Trade Report, 1957. Lagos.

Note: Totals may not add up due to rounding errors.
.. = negligible (less than 0.1); - = NIL.

TABLE 11

NIGERIAN SAWNWOOD EXPORTS, BY SPECIES AND DESTINATION, 1960. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		SOUTH AFRICA		FRANCE		BELGIUM-LUX		NORWAY		OTHER AFRICA		OTHER COUNTRIES		TOTAL		EXPORT DUTY
SPECIES	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL	VOL.	VAL.	VOL.	VAL	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VAL $
ABURA	650.2	33.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	457.0	16.5	-	-	1107.2	50.1	680
AFARA	60.0	3.5	-	-	20.0	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80.0	4.2	53
AFZELIA	2170.2	110.9	772.9	52.0	870.7	62.1	-	-	-	-	-	-	-	-	125.0	9.2	105.7	5.7	53.1	4.5	50.7	3.6	4148.3	248.0	1747
AGBA	8331.0	450.6	569.9	27.2	195.1	8.4	-	-	11.9	0.5	-	-	-	-	-	-	-	-	84.8	2.5	51.0	3.3	9243.7	492.5	6180
ANTIARIS	37.3	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37.3	1.5	11
AYAN	566.3	27.6	-	-	-	-	-	-	0.8	..	3.6	0.2	-	-	-	-	-	-	-	-	-	-	570.7	27.8	221
CANARIUM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DANTA	551.9	29.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	551.9	29.9	235
EBONY	..	..	93.5	14.2	-	-	-	-	45.9	4.6	-	-	-	-	-	-	-	-	-	-	-	-	139.6	18.8	36
EKHIMI	518.5	12.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	518.5	12.3	210
EKKI	41.5	2.3	2.9	0.1	-	-	-	-	-	-	7.5	0.6	-	-	-	-	-	-	-	-	-	-	51.9	3.0	39
GEDUNOHOR	99.1	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	99.1	4.6	90
GUAREA	3846.4	204.4	-	-	7.5	0.3	32.1	1.6	-	-	-	-	-	-	-	-	-	-	-	-	9.1	0.7	3895.1	207.0	3318
IDIGBO	1200.0	66.4	-	-	-	-	-	-	29.9	1.8	20.8	1.3	-	-	-	-	-	-	-	-	-	-	1250.7	69.5	515
IROKO	1776.3	108.1	-	-	24.1	1.9	-	-	1.2	..	-	-	-	-	-	-	-	-	160.1	10.2	-	-	1961.7	120.4	1629
AFRICAN MAHOGANY	2130.9	146.4	79.1	4.3	1.6	0.1	99.8	3.5	63.9	5.5	51.0	3.8	-	-	-	-	-	-	73.2	3.5	1.6	0.1	2509.5	167.1	2131
MAKORE	29.6	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29.6	0.9	11
MANSONIA	458.7	21.0	42.5	1.9	-	-	24.2	1.2	151.7	9.5	-	-	-	-	-	-	-	-	-	-	-	-	677.1	33.7	526
OBECHE	11536.9	542.8	357.7	14.7	348.7	14.5	-	-	7646.2	420.3	68.8	3.3	-	-	-	-	-	-	377.5	5.2	29.8	1.4	20365.7	1002.3	16895
OMU	143.7	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	143.7	7.4	115
OPEPE	646.6	30.8	-	-	86.4	4.4	-	-	-	-	-	-	14.2	1.0	-	-	-	-	7.1	0.3	49.0	2.4	803.3	38.8	622
SAPELE-WOOD	1680.8	79.1	92.7	5.9	62.2	3.6	-	-	39.6	2.4	504.7	34.6	-	-	67.0	4.5	29.4	1.8	65.7	3.7	304.7	22.6	2846.8	158.2	2377
UTILE	74.3	4.9	71.2	4.3	117.4	4.2	-	-	-	-	-	-	-	-	-	-	-	-	21.4	1.0	-	-	284.3	14.3	274
WALNUT	3648.2	198.8	-	-	272.4	17.8	-	-	54.6	3.8	143.7	9.0	-	-	-	-	-	-	-	-	0.8	..	4119.7	229.4	3399
OTHER SPP.	3149.6	141.5	36.6	1.8	26.5	1.5	0.6	..	-	-	23.8	1.6	-	-	-	-	-	-	730.3	23.7	-	-	3967.5	170.1	1982
TOTAL	43356.1	2229.4	2119.1	126.5	2032.7	119.5	156.6	6.3	8045.7	448.5	823.7	54.3	14.2	1.0	192.0	13.7	135.1	7.5	2030.2	720.1	496.8	34.2	59402.9	3112.1	43296

SOURCE: Federal Office of Statistics, Nigeria Trade Report, 1960. Lagos.

Note: Totals may not add up due to rounding errors.
.. = negligible (less than 0.1); - = NIL.

TABLE 12

NIGERIAN SAWNWOOD EXPORTS, BY SPECIES AND DESTINATION, 1963. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		FRANCE		SPAIN		NORWAY		BELGIUM-LUX		YUGOSLAVIA		NIGER		OTHER COUNTIRES		TOTAL		EXPORT DUTY
SPECIES	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VAL $
ABURA	799.2	32.5	-	-	-	-	-	-	1.3	0.1	-	-	-	-	-	-	-	-	-	-	128.6	6.6	-	-	929.1	39.2	470
AFARA	205.6	11.8	-	-	-	-	-	-	141.6	10.0	-	-	-	-	-	-	-	-	-	-	-	-	6.3	0.4	353.4	22.2	322
AFZELIA	2187.2	141.1	1211.2	95.6	256.4	21.9	46.5	2.4	-	-	-	-	48.3	3.6	67.5	5.3	308.1	30.6	-	-	-	-	93.1	6.8	4218.4	307.3	1750
AGBA	11960.4	556.7	109.0	10.8	69.6	3.0	-	-	35.7	2.2	-	-	68.8	3.0	14.7	0.8	57.1	3.0	-	-	-	-	-	-	12315.3	579.6	126535
AMTIARIS	690.7	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	690.7	28.0	286
AYAN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CANARIUM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DANTA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EBONY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EKHIMI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EKKI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GEDUNOHOR	446.6	18.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	446.6	18.6	454
GUAREA	6397.6	296.3	67.9	2.1	133.7	7.4	46.5	1.2	..	..	-	-	29.6	1.3	-	-	-	-	-	-	-	-	-	-	6675.4	308.4	6936
IDIGBO	754.4	39.7	-	-	-	-	-	-	381.9	13.1	28.6	1.4	-	-	-	-	-	-	-	-	-	-	-	-	1164.9	54.2	501
IROKO	2151.2	141.3	-	-	14.2	0.7	-	-	14.6	1.3	-	-	-	-	8.1	0.7	-	-	-	-	155.2	9.0	56.6	4.6	2400.1	157.6	2475
AFRICAN MAHOGANY	1461.9	101.4	-	-	155.7	11.6	-	-	554.5	29.8	4.7	1.1	-	-	8.8	0.6	-	-	-	-	32.9	1.6	81.6	5.9	2310.0	152.1	2416
MAKORE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MANSONIA	69.3	4.4	43.7	2.2	88.8	3.8	519.8	26.5	230.4	14.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	952.0	51.4	1184
OBECHE	14054.0	657.4	2060.9	57.7	2170.5	61.9	148.8	3.5	6562.5	437.7	-	-	8.5	0.4	-	-	322.7	10.4	-	-	-	-	96.1	2.9	25424.0	1232.0	31049
OMU	469.3	18.0	-	-	-	-	-	-	..	..	-	-	-	-	-	-	-	-	-	-	-	-	-	-	469.3	18.0	462
OPEPE	765.9	32.8	-	-	70.2	3.2	-	-	0.7	..	-	-	-	-	-	-	-	-	-	-	-	-	4.3	0.4	841.1	39.4	868
SAPELE-WOOD	2164.6	130.2	-	-	135.0	8.0	207.7	9.3	-	-	-	-	19.9	1.2	2.3	0.2	36.3	2.4	90.7	4.6	-	-	276.6	18.6	2933.2	174.4	3209
UTILE	179.6	11.7	-	-	92.2	2.7	-	-	-	-	14.9	1.0	-	-	-	-	-	-	-	-	-	-	-	-	286.6	15.4	-
WALNUT	4119.7	248.1	-	-	-	-	49.8	3.2	45.7	3.6	-	-	45.7	1.8	74.3	5.7	-	-	-	-	-	-	34.5	1.6	437.0	263.9	4595
OTHERS	2743.7	113.5	738.5	40.1	52.7	3.5	1.1	..	416.1	19.4	27.4	2.8	13.9	0.8	56.1	5.8	25.0	1.2	16.0	0.7	82.2	3.5	6392.2	179.6	10509.4	369.3	7944
TOTAL	51621.0	2583.5	4231.4	208.5	3248.9	127.6	871.5	42.7	8385.2	531.6	75.6	6.3	234.6	12.1	231.9	19.1	749.2	47.6	106.7	5.3	398.9	20.8	7041.4	220.8	77345.2	3829.5	191456

SOURCE: Federal Office of Statistics, Nigeria Trade Report, 1963. Lagos.

Note: Totals may not add up due to rounding errors.
.. = negligible (less than 0.1); - = NIL.

TABLE 13

NIGERIAN SAWNWOOD EXPORTS, BY SPECIES AND DESTINATION, 1967. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		FRANCE		SPAIN		NORWAY		BELGIUM-LUX		DENMARK		OTHER COUNTRIES		TOTAL		EXPORT DUTY
SPECIES	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VAL $
ABURA	360.6	20.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.2	4.4	431.8	25.2	N.A.
AFARA	24.6	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	81.1	1.3	105.6	2.8	"
AFZELIA	2918.8	191.2	228.1	16.8	1198.1	74.9	52.8	3.7	-	-	-	-	-	-	-	-	137.9	8.7	-	-	95.6	3.1	4631.3	298.2	"
AGBA	9709.1	460.9	26.0	1.4	124.6	4.6	-	-	69.4	0.8	31.1	0.8	-	-	14.9	0.8	149.9	7.1	-	-	24.3	1.0	10149.4	477.3	"
ANTIARIS	221.2	10.1	-	-	-	-	-	-	-	-	-	-	149.6	2.2	-	-	-	-	-	-	-	-	370.8	12.3	"
AYAN	235.0	8.8	4.0	0.3	-	-	-	-	26.7	1.3	-	-	-	-	-	-	-	-	-	-	-	-	265.7	10.4	"
CANARIUM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"
DANTA	138.3	6.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	138.3	6.8	"
EBONY	-	-	383.3	12.7	-	-	-	-	57.7	3.0	-	-	-	-	0.7	0.1	-	-	-	-	-	-	441.7	15.9	"
EKHIMI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"
EKKI	-	-	-	-	-	-	5.9	0.2	-	-	-	-	-	-	-	-	-	-	-	-	21.6	0.4	27.6	0.6	"
GEDUNOHOR	74.7	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74.7	2.2	"
GUAREA	1806.1	58.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.9	0.5	-	-	1816.0	59.4	"
IDIGBO	687.5	32.6	-	-	-	-	-	-	72.9	4.8	-	-	-	-	-	-	-	-	-	-	-	-	760.4	37.5	"
IROKO	2614.8	146.3	23.7	1.6	385.0	19.8	-	-	41.3	3.0	-	-	111.7	6.3	-	-	-	-	-	-	38.9	3.0	3215.5	180.0	"
AFRICAN MAHOGANY	1235.9	68.7	-	-	-	-	-	-	557.5	29.2	11.4	4.2	-	-	-	-	-	-	-	-	26.0	1.0	1830.9	103.0	"
MAKORE	2.1	..	-	-	24.1	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.2	0.6	"
MANSONIA	52.2	4.4	-	-	-	-	265.6	18.5	198.4	20.4	-	-	42.9	3.4	-	-	-	-	-	-	-	-	559.1	46.7	"
OBECHE	9465.2	492.0	36.8	1.8	584.7	16.9	-	-	5358.5	318.5	20.3	1.1	-	-	-	-	-	-	-	-	93.1	4.0	15558.5	834.4	"
OMU	119.7	4.5	-	-	83.7	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	203.3	7.2	"
OPEPE	1681.8	82.4	-	-	25.5	1.9	6.0	0.2	-	-	-	-	-	-	-	-	-	-	202.5	9.9	76.5	6.3	1992.4	100.7	"
SAPELE-WOOD	1716.0	81.0	-	-	-	-	96.6	5.3	28.0	1.7	-	-	604.8	33.1	57.9	3.7	-	-	-	-	160.2	9.6	2663.6	134.3	"
UTILE	49.5	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49.5	2.3	"
AFRICAN WALNUT	1094.0	72.8	-	-	-	-	-	-	-	-	-	-	162.0	13.5	-	-	-	-	-	-	-	-	1256.0	86.2	"
OTHERS	2733.6	55.3	22.7	1.8	26.5	1.3	6.7	1.0	531.3	26.3	-	-	22.4	0.5	-	-	767.5	8.4	-	-	1841.4	40.8	5951.5	135.6	"
TOTAL	36940.6	1803.4	724.7	36.4	2452.2	122.5	433.6	28.8	6941.7	409.2	62.8	6.1	1093.5	509.1	73.5	4.6	1055.3	24.2	212.4	10.5	2530.0	74.8	52520.2	2579.4	-

SOURCE: Federal Office of Statistics, Nigeria Trade Summary, Dec. 1967. Lagos.

Note: Totals may not add up due to rounding errors.
.. = negligible (less than 0.1); - = NIL.

TABLE 14

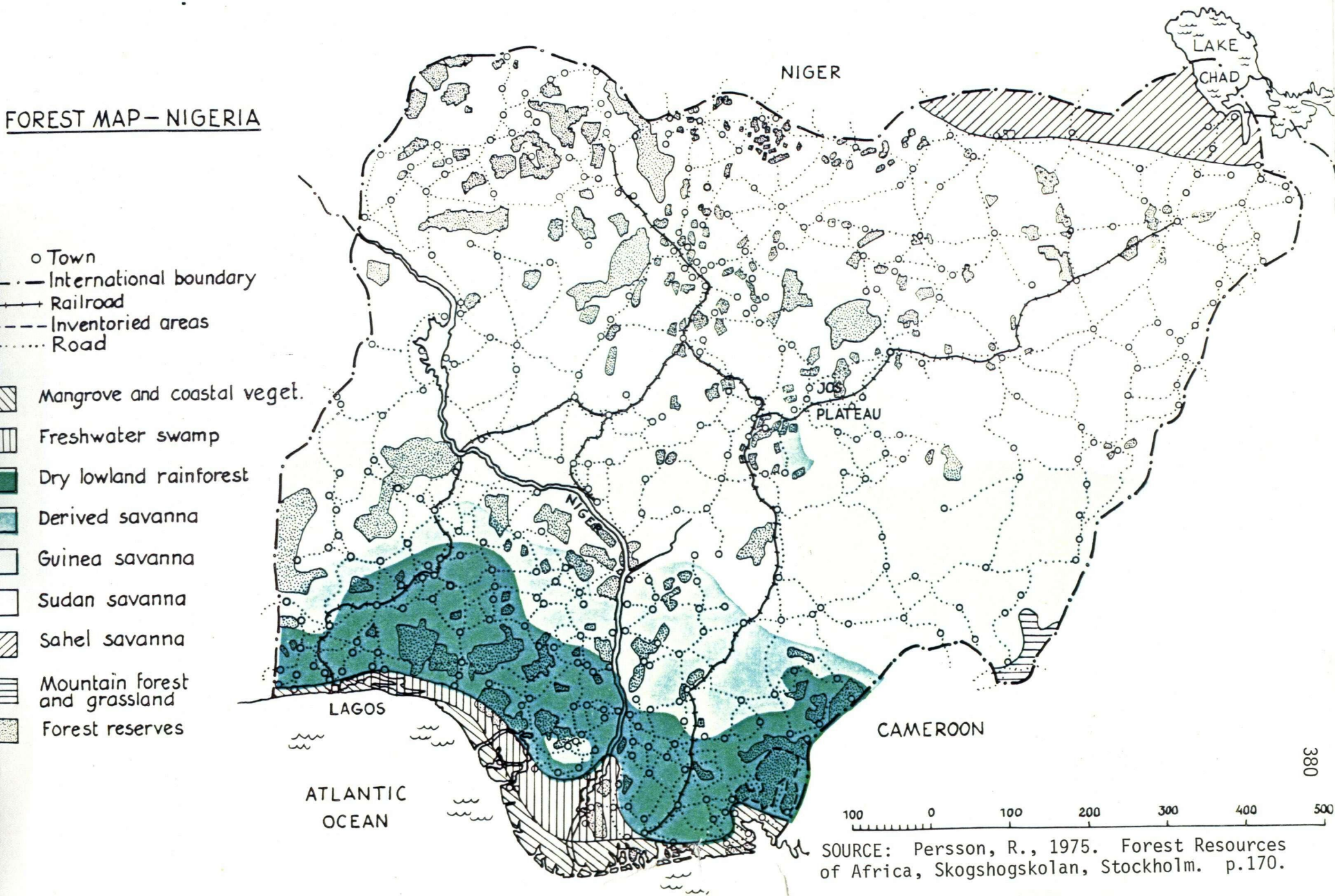
NIGERIAN SAWNWOOD EXPORTS, BY SPECIES AND DESTINATION, 1972. (VOL. = M^3; VAL. = $000)

DESTINATION	UNITED KINGDOM		FED. REP. OF GERMANY		NETHERLANDS		ITALY		U.S.A.		FRANCE		NORWAY		DENMARK		SPAIN		BELGIUM-LUX		OTHER COUNTRIES		TOTAL		EXPORT DUTY
SPECIES	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VOL.	VAL.	VAL $
AGURA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7	0.2	5.7	0.7	N.A.
AFARA	1.9	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	0.1	"
AFZELIA	340.8	16.3	125.9	11.8	1027.3	104.9	-	-	-	-	-	-	-	-	-	-	-	-	116.8	11.5	-	-	1610.8	144.5	"
AGBA	1031.2	78.3	57.2	5.6	113.5	7.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1201.9	91.3	"
ANTIARIS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"
AYAN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"
CANARIUM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"
DANTA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"
EBONY	-	-	638.0	131.3	-	-	23.4	3.3	6.2	2.3	-	-	-	-	-	-	11.8	2.9	-	-	-	-	679.6	139.8	"
EKHIMI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"
EKKI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"
GEDUNOHOR	23.1	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23.1	1.2	"
GUAREA	553.9	25.6	-	-	-	-	-	-	-	-	52.7	1.7	-	-	-	-	-	-	-	-	-	-	606.6	27.3	"
IDIGBO	72.0	4.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72.0	4.7	"
IROKO	297.5	11.8	-	-	91.3	4.5	222.2	2.5	-	-	-	-	-	-	20.2	1.0	-	-	-	-	20.4	0.7	651.6	20.5	"
AFRICAN MAHOGANY	214.1	12.4	65.7	18.8	-	-	-	-	-	-	5.4	3.4	29.3	2.0	-	-	-	-	-	-	-	-	314.5	36.5	"
MAKORE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"
MANSONIA	-	-	7.8	1.0	-	-	-	-	46.4	5.6	-	-	-	-	-	-	-	-	-	-	-	-	54.2	6.5	"
OBECHE	2467.2	154.4	-	-	-	-	70.0	2.4	1796.8	117.7	-	-	-	-	-	-	-	-	140.3	7.5	948.4	61.2	5423.1	343.3	"
OMU	50.1	4.4	-	-	-	-	-	-	-	-	-	-	49.7	2.5	-	-	-	-	-	-	-	-	99.8	6.9	"
OPEPE	204.9	6.9	-	-	84.0	6.2	-	-	-	-	-	-	-	-	44.1	2.4	-	-	-	-	-	-	333.0	15.5	"
SAPELE-WOOD	212.8	13.2	-	-	34.6	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	247.5	15.9	"
UTILE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	"
AFRICAN WALNUT	993.0	76.1	-	-	-	-	-	-	-	-	-	-	18.4	1.7	14.8	1.7	-	-	-	-	42.7	4.7	1058.8	84.2	"
OTHERS	14478.7	880.9	279.9	26.2	441.0	51.0	352.0	164.6	23834.3	866.0	-	-	65.3	4.2	844.0	65.8	274.7	18.3	137.4	14.2	212.2	32.3	40919.5	2123.4	"
TOTAL	20941.2	1286.3	1174.5	195.0	1791.7	176.6	667.6	172.8	25683.7	991.6	58.1	5.1	162.7	10.4	923.1	70.9	286.5	21.2	394.5	33.2	1229.4	99.1	53313.5	3062.3	-

SOURCE: Federal Office of Statistics, Nigeria Trade Summary, Dec. 1972. Lagos.

Note: Totals may not add up due to rounding errors.
.. = negligible (less than 0.1);
- = NIL.

FOREST MAP—NIGERIA



SOURCE: Persson, R., 1975. Forest Resources of Africa, Skogshogskolan, Stockholm. p.170.