

THREE DECADES OF NATURAL RUBBER PRODUCTION IN NIGERIA: POLICIES, PROBLEMS AND PROSPECTS

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Abstract

Natural rubber plantation development in Nigeria has stagnated around 200, 000 ha since the past 30 years, while the ratio of smallholdings to large estates plantations is 3:1. Production data reveal three distinct output periods: 1966-79, 1980-87, and 1988-96 with mean annual production of 61, 000; 39, 000; and 98, 000 metric tonnes respectively. Circumstances which led to the observed outputs has been identified. Unfortunately, Nigeria is fast approaching the zero-planting stage as over 80% of the total hectares planted to rubber is above 35 years. Recent increases in prices and domestic consumption of the commodity has called for an increase in production. It is our opinion that increases in production could be better achieved by the development of the smallholdings because of the practical land tenure system in the country. The position taken by this paper is that the Federal Government should show more commitment to the development of the rubber industry to avoid a situation where Nigeria becomes a net importer of the commodity.

Introduction

Natural rubber (NR) is a term applied to a wide variety of elastic substances produced from over 500 plant species. Presently, nearly all commercial rubbers of botanical origin are produced from *Hevea brasiliensis* (commonly referred to as natural rubber). The *Hevea* tree is a member of the spurge family (Euphorbiaceae) and a native of the Amazon valley [Strausbaugh and Core, 1989] in South America. *Hevea* seedlings were introduced into Nigeria in 1895 from Brazil and by 1903 the first rubber estate was established in Sapele. The plant thrives in deciduous rain-forest regions of the lowland tropics with temperatures of between 21-35 °C and a well distributed rainfall of 2000mm or more. Well drained soils with a pH range of 3.5 to 5.5 have been found suitable [Uexkull and Mutert, 1995; Samarappuli, 2001]. However, advances in plant breeding techniques have given rise to the development of dwarf rubber trees with lower rainfall tolerance.

This paper examines the state of the rubber industry in Nigeria with regard to policies aimed at increasing production from 1965 (when the last major plantation development, FAO 1965-68, was carried out) to date. The limitations that have hampered past efforts, and future prospects of the industry are discussed.

Exploitation of *Hevea* Rubber

It takes 6 to 7 years for the *Hevea* tree to mature. By this time, the tree usually attains a girth of about 500mm at 1500mm above the ground. Improved rubber clones yield 1500-2500 kg Dry Rubber/ha/annum. With good tapping practices, 20-25 years of useful exploitation can be achieved.

Tapping may be described as the controlled wounding of the rubber tree and it results in the release of milky exudates (called *latex*) from the inner bark of the trunk. *Latex* is a polymeric substance made up of cis, 1-4, polyisoprene chains.

Area Planted to Rubber in Nigeria

It is estimated that about 18 million hectares of land is suitable for the cultivation of natural rubber in Nigeria. This area of land is mainly located in the rain forest zone of the country. Reports from the Rubber Research Institute of Nigeria show that plantation development has almost stagnated around 200,000 ha between 1965 and 2000 (Table 1). Smallholdings (usually 1-5 ha) accounted for between 75-85% of the total land area planted to rubber, while the remainder is held by large estate plantations. However, recent survey carried out by the Raw Materials Research and Development Council of Nigeria indicated that the area planted to rubber has dropped to 144,200 ha (RMRDC. 2004). Out of this area, 96614ha or 67% of total is held by smallholdings while the large estates

occupy 47586ha or 33%. The reason for the reduction in hectrage could be due to some demographic factors like urbanization, competition of land for other agricultural purposes, etc.

Production trend of NR in Nigeria (1966-1996)

Production and export data for natural rubber in Nigeria during the period 1966-1996 are represented graphically in Figure I. A critical examination of the production pattern revealed three distinct periods: 1966-79; 1980-87; and 1988-96. The mean annual productions for the aforementioned periods were 61000; 39000; and 98000 respectively. We could ascribe the drop **in 1980-87** to the negative effects of the oil boom of the 1970s on the agricultural sector of the Nigerian economy, while the sharp increase during the period 1988-96 is linked to the deregulation of the local currency occasioned by the Structural Adjustment Programme (SAP) of the then Federal Military Government. Statistics on World Rubber Production by the International Rubber Study Group shows a steady decline in production of natural rubber from 1996 to 2000. The major reason for this trend is the low rubber prices in the world market from 1997 to 2002 which made exploitation unattractive. Another reason is the relatively low domestic consumption of the commodity (estimated at 30% of annual production) compared to other cash crops, especially oil palm which is grown in the same ecology. This has forced smallholders to reduce their rubber hectrage significantly. In the second half of 1990s, Nigeria's share of the global production of NR was 1.4% (IRSG 2000) and 19% of the total production figure for ANRA-member countries (Table 2).

Appraisal of the Situation in NR industry

Survey reports up to year 2000 indicate that the total area planted to rubber in Nigeria is about 200,000 hectares; with a minimum ratio of 3; 1 for smallholdings and large estate plantations respectively (Table 1). A large chunk(>80%) of these smallholdings are old (above 35years) and planted with unselected planting materials whose potential yield are between 250 and 500 kg Dry Rubber/ha/year. On the other hand, the large estates are planted with genetically improved clones whose yields vary from 1,500-2500 kg/ha/year,

The overall production/ha in Nigeria is low due to dearth of plantations, especially in the smallholdings, within economic exploitation age of 7-25 years. Also, a lot of plots in the smallholdings are not tapped. This is buttressed by the 1998 rubber production/hectrage output data of Nigeria relative to some African countries (Table 2). Out of a total of 341,100 hectares of rubber cultivated by five African countries, Nigeria's share was 200,000 hectares or 58% of the total. Ironically, Nigeria ranked third in production output despite having the largest land area planted to rubber. The steady decline in production of natural rubber from about 120,000 metric tonnes in 1995 to a mere 55,000 metric tonne in 2002 is due to the lingering low prices of rubber in the world market (1997-2002) and the stiff competition from other cash crops, especially oil palm. This situation has particularly affected the smallholder farmers and many rubber processors, resulting in* infrastructural decay, abandonment of rubber farms, and little or no new plantings. By 1982, the negative effects (low production output) of the inactivity in the small-holder sector had become significant. Since then, the agricultural sector of the economy has been put under severe pressure by way of stiff competition with the oil industry for labour and with the attendant urbanization for land resource.

In 2002, the federal government mandated some competent agencies in the country to produce 260,000 planting materials (budded stumps) for distribution to smallholder farmers at a subsidized price (76% subsidy) in line with its National Accelerated Industrial Crop Production Programme (NAICPP). The last batches of the budded stumps are now being collected for planting by farmers,

Production figure in 2003, as estimated by the National Rubber Association of Nigeria (NRAN) during its Annual General Meeting, is 80-90000 metric tonnes. The bulk of total production (65-80%) is exported. The main channels of domestic consumption are the two local tyre factories (Dtinlop and Michelin). Others are pockets of rubber parts fabricators and latex products manufacturers around the country.

Past Government Policies in Agriculture as it Affects NR Production FAO 1965-8

The FAO 1965-8 was the first major agricultural policy document which looked into the policies and programmes of development of all the cash crops in Nigeria including natural rubber. It

was prepared by the Food and Agricultural Organization (FAO) - an arm of the United Nations. The policy thrust as it concerns natural rubber was to increase production in Nigeria from about 67,000 metric tonnes in 1965 to a production target of 120,000 metric tonnes by 1973/74 and reaching

220,000 metric tonnes by 1979/80.

In order to accomplish the afore-mentioned targets, a master plan for rubber plantation development was drawn up to cultivate 221,829 ha in the then Mid-Western Region (Edo and Delta States), 57,242 ha in the Western Region (Ondo, Ogun & Osun States) and 81,109 ha in the Eastern Region (Abia, Akwa Ibom, Cross River, Rivers & Imo States).

National Research Institution

The Federal Government in April 17, 1972 merged two research stations at Iyanomo in Edo State and Akwete in Abia State to establish the Rubber Research Institute of Nigeria (RRIN) with its headquarters at Iyanomo near Benin-City.

RRIN's present mandate as it concerns natural rubber is as follows:

- a) Genetic improvement of rubber and other latex-producing plants.
- b) Improvement of agronomic practices including cultivation and harvesting techniques.
- c) Processing, preservation, storage and utilization of latex from rubber-producing plants.
- d) Development of control measures for pests and diseases of rubber-producing plants.
- e) Design and fabrication of simple implements/equipment for rubber production and processing.
- f) Evaluation and development of farming systems in relation to cultivation of latex-producing plants.
- g) Socio-economic problems of their cultivation and utilization.
- h) Carry out extension services by liaising with relevant federal and state ministries, primary producers, industries and other users of research results.
- i) Organize technical and vocational courses in areas of relevance such as rubber production/processing, its utilization as well as extension services,
- j) Provide laboratory and other technical services to farmers, agro-based industries including other persons/organizations needing these services.
- k) Collaboration with all other relevant research institutions/organizations.

Establishment of Marketing Board

The Nigerian Rubber Board was established by Decree No. 29 of April, 1977. Its functions were:

- a) to secure the most favourable arrangement for the purchase of rubber and subsequent sale thereof to meet domestic requirements and the evacuation to the ports of shipment of any surplus for export;"
- b) to purchase all rubbers which are offered for sale to the board and which conform to grades and standard of quality prescribed under any enactment;
- c) to promote the development and rehabilitation of the producing areas generally and in particular to ensure that adequate supply of fertilizers and improved seedlings/other inputs are made available to the farmers; and
- d) to protect the production of high grade quality rubber, which will establish a good commercial image for Nigeria in the world market and serve as a good source of foreign exchange.

However, the board was scrapped in 1986 along with other Commodity Boards, following the introduction of the Structural Adjustment Programme (SAP) by the federal government. This programme resulted in a liberalized marketing arrangement.

Structural Adjustment Programme (SAP)

The Structural Adjustment Programme was launched by the federal government in 1986 and this led to the devaluation of the local currency (the Naira). One of the objectives of SAP was to restructure and diversify the productive base of the economy in order to reduce dependence on the oil sector and imports:

It is necessary to mention here that SAP had a positive impact on rubber production in Nigeria, especially during the period 1988-96 when annual production figures rose dramatically by approximately 60% as against the production level between 1980 and 1987 (Figure 1).

Abandoned rubber farms were revisited to obtain raw materials for export in order to earn the much needed foreign exchange.

National Accelerated Industrial Crops Production Programme (NAICPP)

This programme came on stream in 1995. It made available some funds for the multiplication of planting materials (*budded stumps* in the case of rubber) which were eventually distributed to farmers at subsidized prices.

Intervention by the Petroleum (Special) Trust Fund [PTF]

In 1998, Allisee and Company submitted a comprehensive report on the resuscitation of the rubber industry in Nigeria to the then PTF who were to finance the project on behalf of the federal government. The PTF was scrapped in 1999 when Nigeria returned to democratic rule and action is yet to be taken on the Allisee & Co report.

Limitations to Past Developmental Efforts

Before reviewing the present status of the industry and the current plan to resuscitate it, it will be worthwhile to highlight some of the usual limitations or problems that have hampered past efforts.

a) Insufficiency of Political/Economic Will and Commitment

If enough political will was there, government owned banks and financial institutions would not have shied away from funding the development of estate plantations as well as smallholdings simply for reasons of long gestation period. In a similar manner, there would have been a remarkable increase in local consumption of the commodity if private and multinational agencies had invested much more than they have done in the cultivation of rubber and establishment of allied industry.

b) Land Acquisition Problems

It is only the forest reserves that can easily be converted to rubber plantations. All other lands are difficult to acquire due to our practical land tenure system. In the 1960's, Nigerian agriculture was often regarded as land surplus economy [Helleiner, 1966]. Within that period, the surplus land was considered to have played a significant role in export crop expansion (Eicher, 1970). In recent times, population explosion and its attendant demographic factors have affected the availability of land. The aforementioned factors coupled with a land tenure system that is traditionally oriented have promoted small scale agricultural enterprises as portrayed in the ratio (3:1) of smallholdings to large estate plantations (Table 1). The Land Use Decree of 1978 by the Federal Government was aimed at establishing an acceptable land tenure system to discourage land fragmentation and enhance accessibility to land by all persons and to ensure that land allocation procedures promote optimal use and land conservation. In 1987 government tried to modify the land tenure decree of 1978. This was aimed at controlling land use and management within each state of the federation and to facilitate payment of compensation for economic crops and structures on acquired land. Unfortunately, these policies have not elicited much change in the traditional land tenure system and all the problems associated with gaining access to agricultural land are still prevalent several years after the land policy was decreed.

c) Inadequacy of Planting Materials and High cost of Inputs

Improved high yielding and disease resistant clones have always been in short supply while inputs such as fertilizers, herbicides, and insecticides are becoming too expensive for the average farmer.

d) Poor extension Services

There is inadequate number of extension staff and working facilities. In addition, a good percentage of the available staff is not knowledgeable in rubber cultivation.

Current Proposal to Resuscitate NR Production

In the year 2000, Resource Persons drawn from the Rubber Research Institute of Nigeria (RRIN), the National Tree Crops Development Unit (NTCDU) of the Department of Agriculture in

Benin City, and the National Rubber Association of Nigeria (NRAN) were constituted into a committee referred to as the Nigerian Rubber Consultative Study Group (NRCSG). The Study Group was mandated by the aforementioned organizations to review the slate of the rubber industry in Nigeria and to make recommendations to Government on how the declining production of NR can be redressed.

Main Objective

The main objective of the NRCSG was to make recommendations to the Federal Government of Nigeria which would make the country self-sufficient in natural rubber production and utilization as well as capture a sizeable portion of the world market.

Extent of Replanting/New Plantings

A total of 250,000 hectares are to be planted at the rate of 25,000 ha per year over a 10-year period.

Eco-Regions

Plantation developments were proposed for the rubber supporting ecological zones of Nigeria comprising of 11 states (viz. Abia, Akwa Ibom, Bayeisa, Cross River, Delta, Ebonyi, Edo, Imo, Ondo, Ogun, and Rivers.).

Cost Implication

The total cost of implementation in the first 5 years was put at N6.6 billion (computed on 1999 mean production prices).

Implementation Strategies

The research and technical support is to be provided by RRIN. The NTCDU will monitor and evaluate the plan implementation, while NRAN will assist in identifying and sensitizing the participants.

It was the view of the Study Group that the Federal Government should provide the bulk of the venture capital required to ensure the successful implementation of the proposal. The state governments in the rubber producing areas in collaboration with the relevant local governments and community development associations are to provide land or assist farmers with-obtaining problem-free land. The proposed distribution of funding among the various levels of government is shown in Table 3.

Future Prospects of the Rubber Industry in Nigeria

The world market situation has a somewhat direct effect on the rubber business in Nigeria since the bulk of our production (65-80%) is exported. This explains why the glut in the international rubber market between 1997 and 2002 almost completely grounded rubber operations in the country until the second half of year 2002 when world rubber prices began to experience recovery. World NR demand increased by 4.92% and reached 7.89 million tonnes in 2003 compared with 2002. This development which has invariably resulted to increase in prices is attributed to China's sudden upsurge in NR consumption (1.2-1.4 million tonnes per annum) since 2001 (Buakaew, 2004). Hence, there is the need for Nigeria to exploit this opportunity presented by increase in global demand for the commodity.

The development of the rubber industry in Nigeria in terms of increase in production output seems to be largely dependent on the development of the smallholdings rather than on the large plantations because of the practical land tenure system in the country which favours the availability of greater land resource for smallholdings. Besides, the management and economics of rubber production in smallholdings are less cumbersome. However, judging by the rate at which smallholdings are being abandoned in some areas, it is envisaged that the large estates will represent a minimum of 40% of total rubber hectrage in the next decade. A

critical observation shows that the

level of economic activities is highest in smallholdings located in areas around the large estates. This is because the smallholder farmers find ready market for their rubber as well as technical assistance from the large estates. With this trend, it is possible to triple the present production output of the smallholdings if aggressive replanting programmes are carried out with high yielding and disease resistant planting materials.

• The problem of zero-economic return from rubber plantation during the long gestation period (7years) has been overcome in recent times, hence making rubber cultivation more attractive. The breakthrough is as a result of successes recorded in researches carried out in Nigeria (Esekhade et al. 2003) and other parts of the world (Rodigo et al. 1997) regarding the integration of some economic viable and nutritious annual and semi-permanent crops in the first three years of plantation development (before canopy closure).

The quality of agricultural commodities produced in Africa including natural rubber has for a long time been a subject of concern to all the stakeholders- Thus, the African rubber producers under the umbrella of the Professional Association of Natural Rubber in Africa (ANRA) attracted a grant (CFC Grant N° 28) from the Common Fund for Commodities (CFC) through the defunct International Natural Rubber Organisation (INRO) to execute a project in this regard. Beneficiaries of the CFC-sponsored Quality Improvement and Quality Control of the African Rubber Project (1996-2003) were Cameroon, Cote d' Ivoire, Gabon, and Nigeria. The project embarked on the development of manpower as well as the strengthening of the Rubber Technology Laboratory at the National Rubber Research Institution in each of the aforementioned African countries. The project also established a common quality specification scheme, the Standard African Rubber (SAR) scheme [SARS, 1998], for all rubbers produced in Africa. A follow up project [Sainte-Beuve, 2003] is being articulated to focus specifically on the smallholder rubber farmers and this will naturally complement the initial project. The rubber farmers and processors in Nigeria are more quality conscious now and this is expected to be sustained.

A major factor which has militated against the production of natural rubber in Nigeria is low domestic consumption of the commodity. Micheiin and Dunlop companies are the two tyre manufacturers in Nigeria. Interestingly, Micheiin (Nigeria) in 1997 commenced the export of truck tyres made-in Nigeria and in 2003 added tyres for cars and vans to its exports. Also, latex processes are getting some boost as demands for carpet under lays and floor tile adhesives are on the increase due to improved standard of living of some Nigerians. These developments increase domestic consumption and stimulate the drive to increase the production of natural rubber in Nigeria. The tempo is likely to continue throughout this decade. The benefits of this development to Nigeria are the expansion of non-oil exports; increase in employment opportunities and reduction in rural-urban population drift.

Conclusion

Production figures for three decades are given in the text including the different policies that were aimed at improving rubber production in Nigeria. Some of the usual limitations to these policies are highlighted. About 80% of Nigeria's 200,000 hectares of rubber are over 35 years and needs aggressive replanting. The Federal Government has recently subsidized the production of 260,000 planting materials for distribution to smallholder farmers. A study group has suggested that the Federal Government should bankroll the bulk of the venture capital for the replanting programmes under the supervision of tested management consortium. The position taken by this paper is that the Federal Government should show more commitment to the development of the rubber industry to avoid a situation where Nigeria becomes a net importer of the commodity. Despite the present ugly picture, there is a bright future for the rubber industry in Nigeria. This is due to the increasing domestic consumption (>35, 000 metric tonnes per annum) of the commodity coupled with improved prices of field materials since year 2003. The enormous land area available for the cultivation of rubber is also a great potential begging for exploitation. Furthermore, the management and technical skills rendered by the Rubber Research Institute of Nigeria, the Michelin and Pamol plantations, are invaluable. In the long term, the current increase in domestic consumption will stimulate increased production and export of high quality Technically Specified Rubber (TSR) grades as well as rubber products. At that time, the image of rubber produced in Nigeria would have

improved considerably thus facilitating the generation of much needed foreign exchange.

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Table 1: Land Area (ha) Under Rubber Cultivation in Nigeria

Year	Estate	Smallholdings	Total	% Smallholdings
1965	36,084	207,395	243,479	85
1980	53,000	195,800	248,800	79

1995	"43,541	165,354	208,895	79
2000	50,000	150,000	200,000	75

Source: Rubber Research Institute of Nigeria (RRIN).

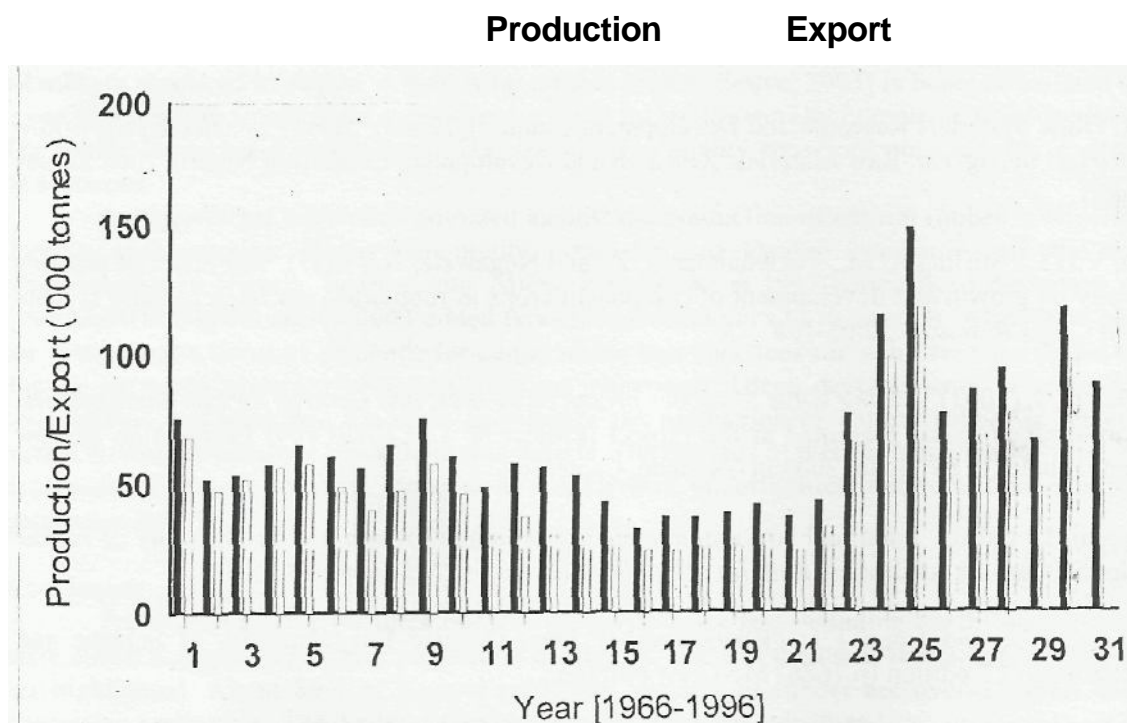


Figure 1: Production Levels ('000 Metric Tonnes) of NR in Nigeria (1966-1996).

Table 2: Production Figures for 1998 and Total Hectrage Planted to Rubber in ANRA '-Member Countries

Country	Hectrage	Total production	Production/ha (tonnes)
Cameroon	44,000	61,000	1.39
Coted'Ivoire	73,000	107,000	1.47
Gabon	9,500	11,000	1.16
Ghana	14,600	10,000	0.68
Nigeria	200,000	45,000	0.23

*ANRA is an acronym for a regional body meaning *the Professional Association for Natural Rubber in Africa*.

Source: Kpolo (1999), with slight modification by the authors.

Table 3: Distribution of Funding Regarding the Action Plan on the Revitalization of the Rubber Industry in Nigeria

Government	Amount (N)	% Funding
Federal	3,960,270,000	60
State	1,650,112,500	25
Local	990,067,500	15

Source; Nigerian Rubber Consultative Study Group (2000).