

Impact of Privatization of Primary Pulp and Paper Mills on Performance of the Pulp and Paper Sector in Nigeria.

Ogunwusi, A.A. and A.P.Onwualu.

Raw Materials Research and Development Council, Abuja

Abstract

The integrated pulp and paper mills established in Nigeria were privatized in the mid 2000 as a result of lack of adequate funds to import requisite raw materials and generally because of their non performance. The Nigeria Paper Mill commenced rehabilitation immediately after privatization and started production in the 2009. The two other mills are yet to start production. While Nigeria Paper Mill has rehabilitated its paper machines, it is currently producing kraft paper within 60-250gsm range using recycled paper. The mill has been able to reduce national dependence on kraft paper importation, although, its customers are agitating that it should add long fibre pulp to the recycled waste paper pulp in order to increase the strength of its products. The deficit turn-over of the non production of the three pulp and paper mills between 2006-2009 to the economy was 153.05 billion naira. This is estimated to rise to 180 billion in 2015 as a result of the increasing cost of long fibre pulp and the anticipated rise in demand for paper as a build up to the 2015 general elections. The major problems the mills may likely continue to face even after becoming fully operational are dependence on imported long fibre pulp and chemicals, epileptic energy supply, thereby increasing costs of production. These are likely to forestall the gains of the privatization exercise among which are deepening of local market, technology transfer, employment generation and reduction in cost of paper products locally. Thus, government has significant role to play in monitoring the post privatization activities at the mills and in providing suitable environment for profitable operation of the mills by finding sustainable solution to the problems of long fibre pulp sourcing within the polity.

Keywords: privatization, turn over, long fibre, rehabilitation, energy.

1.1 Introduction

Paper production is one of the major industrial activities regarded as a pointer to industrialization and educational development worldwide. As a result of this, almost every developing countries with a modicum of forest resources or a sizeable market have approached the Food and Agricultural Organization with the request that they examine the possibility of establishing some type of pulp and paper factory of one kind or another in that country (King, 1977). In realization of the role of paper production in development, the policy makers in Nigeria have, since 1960's, schematically planned to establish three primary pulp and paper mills in the country. The Nigeria Paper Mill, Jebba, commenced production in 1969 with an initial production capacity of 12,000 tonnes of paper per annum. By 1985, the mill had undergone considerable expansion with the production capacity raised to 65,000 tons per annum of kraft paper, liner and chipboards, sack kraft, fluting media and corrugated cartons. The short fibre raw materials were planned to be obtained from indigenous wood species while the long fibre pulp component was to be imported. Although, this arrangement was successfully executed at the early stage, inadequate availability of foreign exchange during the oil glut era led to serious reduction in capacity utilization (Aribisala, 1993). Capacity utilization declined from 6.7% in 1993 to 4.3% in 1994. From 1996 to 2006, the company was out of production (CBN, 1994). Among the reasons advanced for this dismal performance were malfunctioning equipment and machinery (Makinde, 2004). Expenditure on machinery, equipment maintenance and spare parts were ₦943.0m, ₦92.6m and ₦61.18m respectively in 1994, with foreign supply funds accounting for 90% of the total investment (CBN, 1994).

The Iwopin Pulp and Paper Company (IPPC) Limited, Iwopin, Ogun State, was planned to produce fully bleached pulp for production of 68,000 tons of various grades of fine writing, printing and cultural papers on annual basis. With initial dependence on imported long fibre pulp, the mill was planned to produce long fibre pulp from *Pinus species* established in plantations in different locations in the country. Since initiation, IPPC has been experiencing tottering problems occasioned by equipment installation delays (Annon, 2004). Joint Venture collaboration with Wittermore Paterson Investment BV of Germany led to commissioning of the first phase of the mill in December 1994 (CBN, 1994). Although, the equity contribution of the partners was injected into the company, production did not commence (CBN, 1994). Efforts to run the mill on imported raw materials on one of the paper machines had to stop in 1998 because of the high cost of diesel as the company required approximately 52,000 liters of diesel per day as it was not connected to the national grid (Annon, 2004). The Nigerian Newsprint Manufacturing Company (NNMC), Oku Iboku, a newsprint mill using the chemi-mechanical process has an installed capacity of 100,000 tons of newsprint per annum. Due to the establishment of the mill, import of newsprint reduced drastically to 17.5% in 1986, 12.5% in 1987 and faded out in 1988 (CBN, 1994). However, production stopped in 1993 due to scarcity of fund to refurbish the equipment and to

purchase raw materials (Makinde, 2004).

Schematically, the mills were to supply the various paper converters their required raw materials in order to reduce foreign exchange expenditure on importation. It was also expected that these mills, apart from satisfying local paper needs would produce excess paper to be exported to earn a favourable trade balance (Ogunwusi, 1985). Among the major factors responsible for the poor outing and performance of the pulp and paper mills are the high costs of importation of about 85,000 tonnes of long fibre pulp needed by the three paper mills, high cost of pulping chemicals, spare parts, expatriate staff, and diesel to run generators. Other factors include untimely release of funds by government to complete specific projects (Makinde, 2004) and non-availability of small scale machinery for the production of pulp, essential chemicals and spare parts to feed the mills (Ogunwusi, 1996). Consequently, Nigeria imported paper and allied products worth over 27 billion naira between 1998 and 2002 (Makinde, 2004). This has increased to over N150 billion per annum (Onwualu, 2010).

As a result of the various problems experienced by the mills, they were slated for privatization by the Technical Committee for Privatization and Commercialization of government properties in the 1980's. A number of strategies were adopted to promote the privatization of the mills. Assiduous efforts of the privatization body eventually led to the privatization of the three mills in 2006. Since the privatization exercise, no effort has been made to study the impact of the exercise on performance of the converters they were established to serve. This is imperative in view of the concept and objectives of the privatization exercise as subsequently discussed.

1.2. Privatization: Conceptual issues.

Privatization is a global phenomenon that is directed at promoting a redirection of management and assets of government owned institutions and enterprises into private hands to ensure effective and profitable management. The issue of privatization has been a subject of intense global debate in recent years. According to Nwoye (2009), while the proponents of privatization see it as an instrument of efficient resource management for rapid economic development and poverty reduction, the critics argue that privatization inflicts damage on the poor through reduction in employment, income and access to social services couple with increase in prices (Nwoye, 2005). In essence privatization can be defined as the transfer of ownership and control of enterprise from the state to the private sector. The policy of government is to make the Nigerian economy private sector driven. This is with a view to correct the initial industrial strategy which was skewed towards public investment in manufacturing as a result of scarcity of funds in the private sector (Picornel, 1984). The First, Second and Third National Development Plans involved huge government expenditure on establishment of industries to produce import substitution goods and heavy linkage industries (Aribisala, 1993), while the Fourth National Development Plan which coincided with global economic recession exposed the structural weakness of the earlier national industrialization strategies. The manufacturing sector was heavily hit as a result of its near total dependence on importation of raw materials, equipment and technical personnel. In the post oil glut era, Nigeria's fiscal and monetary posture could no longer sustain the requirements of its public sector enterprises, particularly since they perform below expectations in-terms of returns on investment and quality of services. Towards the end of the 1980's, the public enterprises have grown too large and began to suffer from fundamental problems of defective capital structures, excessive bureaucratic control and intervention, inappropriate technologies, gross incompetence and blatant corruption. These led to the resolve to privatize them with the following objectives.

1.3 Objectives of privatization in Nigeria

Base on the uncompetitive nature of most of the government owned industries, the privatization, exercise in Nigeria was designed to achieve the following objectives:

1. Inject market discipline at board level since the board is expected to reflect the shareholding interest of the private sector investors who are interested in maximization of profits.
2. Result in closer monitoring of performance of management practices.
3. Greater accountability and evolution of better management practices.
4. Act as a catalyst to the revitalization of the capital markets by making available capital in the capital market substantial volume of shares.
5. Fund raising avenue for governments from the divestment exercise.
6. Encourage share ownership by the members of the public leading to a more efficient mobilization of savings within the economy.
7. Attract foreign capital to the country.
8. Deepening the domestic market.
9. Skills and technology transfer to Nigeria.
10. Productivity and earnings improvement, growth, profitability, efficiency and employment opportunities.

1.4 Objectives of the study

As the mills were structured to supply the requirements of the operatives in the pulp and paper sector, the primary objective of this study is to identify the impact of the privatization on the performance of the operatives in the pulp and paper sector in the country.

2.0 Material and methods

The study was carried out with the aid of questionnaires. A set of questionnaires were prepared for completion by the privatized pulp and paper mills and another set by the converters in the sector in order to determine their performance overtime.

The structured questionnaires used were designed to solicit information in the current status of operation in the integrated mills, their production capacities and capacity utilization and the extent of equipment restructuring and upgrading that have been carried out. These sources were supplemented with on the spot assessment visits to validate information obtained.

2.1 Data analysis

Data obtained on the status of production at the integrated pulp and paper mills were tabulated. In addition the capacity utilization by the operatives in the other subsectors was also summed up in order to determine the performance of operatives in the sector. The losses due to economy as a result of inadequate long fibre pulp supply and inadequate capacity utilization in the primary pulp and paper mills were calculated. The results obtained, were juxtaposed with results of similar studies carried out by the Raw Materials Research and Development Council between 2006 to 2009. Information obtained was supplemented with those available in various reports of the studies carried out by the Food and Agricultural Organization, the World Bank and the Central Bank of Nigeria.

3.0 Results and Discussions

A total of 95 private companies participated in the exercise (Table 1). As shown in Table 1, the printing and publishing and subsectors (printing paper and board producers) were the largest respondents at 15.7% each.

3.1 Pre Privatisation activities in in the Integrated Pulp and Paper Mills

In the pulp and paper sector, the privatization exercise is expected to reduce and eventually stop foreign exchange expenditure on the importation of kraft papers of all grades, newsprints, corrugated cartons and fluting media, writing printing and cultural papers. The trend of production in Nigeria Paper Mill between 1985 to 1996 is shown in Table 2. It can be observed from the table that the highest production occurred in 1986 shortly after the expansion of the mill from 12,000 tons to 65,000 tons. At this time, the actual production was 40,960 tons which represented 67.5% capacity utilization. After 1985, the actual production in the mill decreased gradually to 188 tonnes which amounted to 0.29% capacity utilization in 1996 (Table 2). After 1996, the mill was closed and Nigeria has to depend entirely on the importation of kraft and corrugated papers that are required to produce packaging cartons. Also before its closure use of paper machines were not optimized. From 1969 to 1996 when the mills stopped operation, there was no comprehensive turn around maintenance by the mill.

Table 3 shows primary paper production in Nigeria by the three integrated mills from 2003 to 2006 before they were privatized. From the table it can be observed that while installed capacity remained static at 1,169,145.00 tons per annum capacity utilization in 2003 was 4.92%; in 2004; 5.98%; 2005, 6.33% and 2006; 6.84% respectively. The average capacity utilization by the mills over this period was 6.38%. The situation was repulsive making policy makers to decide to privatize the mills. In the pulp and paper industry the Technical Committee for Privatization and Commercialization, assessed Nigeria Paper Mill and the Nigeria Newsprint Manufacturing Company, Oku Iboku in the late 1990's and observed that the mills were technically insolvent with negative net-worth arising from accumulated losses (TCPC, 1993). The body noted that mills had been extensively run down, requiring considerable investment on process facilities to operate profitably (TCPC, 1993). Furthermore, TCPC (1993) reported that to privatize both NPM and NNMC in their present states would yield poor revenue and to seek to rehabilitate them would cost more than their original historical costs (TCPC, 1993). TCPC (1993) thereby concluded that the management of both mills lacked executive competence or commitment to turn round the enterprises, even with release of more funds for rehabilitation of plants and machinery.

3.2 Post privatization activities and capacity utilization by the integrated pulp and paper mills.

3.2.1 The Nigeria Paper Mill, Jebba

Table 4 presents the current status of the three integrated pulp and paper mills. After several failed attempts to get a buyer, The National Council on Privatization and Commercialization (NCPC) approved the liquidation of Nigerian Paper Mill, Jebba. According to RMRDC (2009), a liquidator was appointed under the authority of the Federal High Court, Ilorin on 22nd November, 2005 and the Company was eventually sold to MINL Ltd, an

Indian company, in June, 2006. Rehabilitation of the mill commenced immediately and in the first phase of the programme, MINL refurbished one of the paper machines. This increased the speed of the machine from 90 meters/minute to 350 meters per minute. Also an electronically on line quality control monitoring device and high capacity motors, pumps, valves, piping materials, extra turbo high density cleaners, and a number of other components were replaced to increase the mills performance and efficiency. These increased capacities of the paper machines considerably as shown in Table 5. The current capacity of the machines is 252,000 tons per annum compared with the pre privatized era of 65,000 tons. The products of the mill are 60 – 150gsm kraft paper for wrapping and packaging and 180 – 250 gsm kraft paper used for paper tube production. While the first phase of the rehabilitation programme gulped an estimated 3 billion naira, the second and third phases which will enable the mill to meet about 67% of the raw materials requirements in the packaging subsector is planned to gulp between 9 to 10 billion naira. The rehabilitation of the wood pulping section and plantation establishment stage coupled with the installation of another biofuel boiler would be done during the second phase of the rehabilitation exercise.

The Nigeria Paper Mill is currently recycling waste paper. No primary fibre is being used. Table 6 shows that mill has progressively being recycling waste paper only. In 2009, 117,000 tons of waste paper was used out of a total installed capacity of 125,000 tons. The average capacity utilization for waste paper recycling between 2006 to 2009 was 80.8% (Table 6). In most cases, it is expedient to furnish waste paper with primary long fibred pulp to increase the strength of the paper product (Casey, 1980). While the NPM Management has made giant stride in the resuscitation operation at the mill that was moribund for upwards of 15 years, the Nigeria paper industry is expected to benefit more from their activities if it can initiate a scheme that will enable it to mix at least 20% long fibre pulp with the recycled paper to increase the strength of the products.

The new management has the intention of increasingly total capacity to 240,000 tonnes per annum. While this may lead to increase in kraft paper output locally, the use of recycled fibre as the sole source of pulp is not encouraging as the fibres have the tendency of becoming shorter and weaker after every recycling stage, thereby, placing limitations on the usefulness of the products.

3.2.2 Nigeria Newsprint Manufacturing Company, Oku Iboku

In 2008, Negris Limited acquired the company, and renamed it Oku Iboku Pulp and Paper Limited. As at 2012 Negris was working towards putting in place the finance required to rehabilitate the company and bring the assets back to full use. So far, the new owners have mobilized the equipment manufacturers and other relevant technical teams to the site in order to plan for replacement of the obsolete equipment.

3.2.3. Iwopin Pulp and Paper Company Limited, Iwopin

This company was sold to the Noxieme Technologies Limited, an indigenous firm in December, 2006. Since it was sold, no tangible activity had being carried out at the mill.

3.3 Gains of the privatization exercise

Presently, only the new management of the Nigeria Paper Mill has done any tangible restructuring among the privatized companies. The company has been able to refurbish at least two of the machines and it is producing kraft paper for the local market. Thus, the company has been able to fulfill the objective of reducing foreign exchange expenditure on kraft paper production. However, the major problem of the mill is currently its total dependence on recycled pulp. The packaging manufacturers are unwilling to use the products. They observed that the products use to collapse under minimum load. Thus, there is apathy towards the products of the mill. As a result, the request by NPM's management to protect the company by increasing duty on finished papers importation to 40% has not been realized (RMRDC, 2012). To increase the gains of the privatization exercise, it is necessary that a sustainable source of long fibre pulp be obtained for mixing with the recycled pulp (RMRDC 2009; Ogunwusi 2010).

3.4 Implications of Non Performance of the Privatized Mills.

The implications in the delay of the privatized mills to commence operation are enormous. The delay amounts to continual dependence on importation of requisite paper products. Table 7 shows the cost implication of non-production of the privatized pulp and paper mills between 2006 to 2009. The cost implication of non

performance of the NPM, Jebba in 2006 cost the economy 7.8 billion naira (Table 7). This cost remained the same in 2007 and 2008. It only reduced to 6.85 billion in 2009 resulting in a 4 year (2006-2009) deficit turnover of 30.25 billion naira. The cost of non performance by NNMC, Oku-iboku to the economy on annual basis from 2006 to 2009 was 18.76 billion naira. Within the four years under consideration, the deficit turnover to the economy amounted to 74.8 billion naira (Table 7). In the case of IPCC, Iwopin, the cost of non production on annual basis from 2006 to 2009 was 48 billion naira. The total cost of non performance by all the mills to the economy within the four year period was 153.05 billion naira. Considering the fact that the cost of paper is increasing daily in the global market as a result of climate change problems, it is expected that the cost of non performance will reach approximately 180 billion naira in 2015 (Ogunwusi; 2011). The cost to the economy will catapult as the demand for paper and its products is expected to increase as a result of the oncoming political activities as was witnessed in the build up to 2007 elections (RMRDC, 2009). Coupled with this, the delay in commencing operations is denying Nigerians the needed transfer of skill and technology which are important objectives of privatization in developing countries. The much touted poverty alleviation and employment generation aspirations of government at all levels may not be realizable if the mills continue in comatose. As the new owners are expected to have medium and long term plans for resuscitation of the mills before they bought them, government should ensure adherence to the development plans. This is important as a number of the investors may only be interested in quick profit to the detriment of national development.

3.5 Challenges faced by the privatized mills.

While privatization is expected to inject funds into the privatized entities, some of the problems militating against profitable management of integrated mills are national in outlook and require a multi-disciplinary and committed approach at the national level. One of the major problems investors in the primary pulp and paper mills are facing and may continue to face for a long time is the sourcing of long fibre pulp. Temperate softwoods are the major sources of long fibre pulp used globally for paper production (Casey, 1980). The principal cells or fibre elements are the tracheids which have elongated, lignified cells with tapering ends that have average length of about 3 to 5mm and an average diameter of 0.03mm (Casey, 1980). At present, no sustainable source of long fibre pulp has been identified in the country. As the investors are out to make profit, the quality of paper produced may be compromised in view of the high cost of long fibre pulp in the international market.

Another problem currently faced by the Nigeria Paper Mill is electricity supply. The constant interruption of power supply to the mill is increasing the cost of production. The problem is compounded as the power plant installed at the mill is designed to use of Low Pour Fuel Oil (LPFO). The cost of operating the plant is very high as 115,000 litres of LPFO is required to generate 22 megawatts of power required by the mill. The conservative price of LPFO in Nigeria is between 80 to 90 naira per litre. Constant use of generators will definitely increase the cost of production and hence the price of the products, thereby reducing the gains to the economy. Closely allied with the above is the problem of imported chemicals. One of the major problems of the mills is dependence on imported chemicals. While it is expected that the foreign investors must possess technical knowhow in running of the enterprises they invested in, it is imperative that conducive environment should be provided for their operation. Continual dependence on imported chemicals will hamper optimal productivity, increase the cost of production and delay the transfer of the necessary skills expected as gains of the privatization exercise.

In the light of this, there is need for government to continue to provide leading role by creating conducive atmosphere for the investors to operate. Among the areas government may have to intervene and provide assistance are:

3.5.1 Raw Materials

A wide array of raw materials is required in the pulp and paper sector. The most important of these are long fibre pulp and pulping chemicals. While the problem of pulping chemicals can be solved as Nigeria has vast quantities of fossil fuel which can be processed to produce the requisite chemicals, the solution to long fibre pulp problem is not as easy. It is expected that when the Phase 11 Petrochemical project is completed and brought to reality, adequate solution will be found to the problem of sourcing of pulping chemicals, locally. While the new owners may be prepared to establish plantations of long fibre species, research on long fibre pulp development in Nigeria has only deeply concentrated on *Pinus species*, most especially, *Pinus caribaea* and *P. oocarpa* (Ojo, 1971). With the failure of the *Pinus species* establishment initiative in the early 1970's, it is imperative that fibre characteristics of indigenous species be verified and their optimal pulping parameters studied extensively (Osadare, 1996; Ogunwusi, 2010; Osadare and Udohitinah, 1993). Currently, a number of indigenous species have been observed to have relatively long fibres. Some of these species are shown in Table 8. However, none

of the species have been studied at pilot scale level as a result of lack of funds as government funding of research and development in pulp and paper is nonexistent. According to Famuyide and Adebayo (1993), about 0.02% of the budget of the Ministry of Agriculture is expended on forestry activities. However to provide leadership in this direction and curtail drain on foreign exchange through over invoicing, government may have to show more interest in this area. Of particular importance is the need to ensure that operatives in the pulp and paper sector in Nigeria direct 1% of sales of paper and allied products to research and development as practiced in the United States (AF&PA, 2004). Another important strategy is for government to allocate a lumpsum for research and development on long fibre pulp under its strategic plan as was done for kenaf in Malaysia (Mohd Edecrozey et al, 2007).

3.5.2 Finance

The issue of finance is critical to the development of this sector. There are inadequate short and medium term investible funds for industries in this sector. Short term finances are not readily available due to stringent conditions laid down by financing agencies. Where available, the interest rate is high and often scare away most investors. This may be a problem militating against the refurbishing of IPCC, Iwopin and NNMC, Oku Iboku. To alleviate the problem, Onwualu (2010) that government should make available, intervention fund in the sector in view of its importance to the social and educational aspirations of the country.

3.5.3 Energy

A major bane of industrial production and productivity in Nigeria is inadequate infrastructure. Erratic and inadequate power supply has forced many industries to stop operation or suspend production. The pulp and paper industry is energy-intensive. It requires large amount of steam and electricity to process wood into pulp and paper products. In most cases, cost of energy exceeds the cost of raw materials. In general, the paper production processes consists of five stages which includes the raw materials preparation, pulping, bleaching, chemical recovery and papermaking. Most of the energy is used in form of heat within the pulping processes (digester, evaporator and washing) when raw materials have to be cooked mechanically or chemically treated for further use in the production chain. The papermaking process consumes about 45% of total energy use. Drying is the highest energy consumer, requiring large amounts of heat (steam) to evaporate water from paper or paperboard. Pulping is the next largest consumer of energy. In the United States for example, pulping process consumes about a quarter of the primary energy required for production (World Energy Council, 1995). Mechanical pulping, a variant of the process adopted at NNMC, Oku-Iboku consumes electricity primarily to drive grinding equipment while the energy consumed in chemical and semichemical pulping is split between steam (75%) and electricity (25%) (Martin, 2000; El 1988; Nilsson, 1995; Jaccard, 1996; AF&PA, 2004a). Pulp and paper mills also utilize significant amounts of self-generated fuels that are byproducts of wood processing such as bark, spent pulping liquor, or hog fuels (a mixture of sawdust, wood shavings, slabs and trimmings). The heating value of these byproduct fuels varies considerably with the type of wood and moisture content. When moisture content is high, these fuels must be dried or in some cases are co-fired with other fuels. Black liquor undergoes an evaporation process to retrieve solid fuel for combustion.

8.0 Conclusion:

The privatization of the primary pulp and paper mills in Nigeria is a worthwhile exercise. Although the concept of privatization in recent times has evoked sharp political reactions locally as the impetus was introduced by creditor institutions especially IMF and the World Bank as part of the push for structural adjustment, the integrated and paper mills were not among the sectors that were in high demand as a result of envisaged low profitability of the sector. In most countries where paper is being produced, profitability has been regarded as marginal. Thus, to fully enjoy the gains of the privatization exercise, government must continue to monitor activities within the sector and provide leadership through policy directions. It is not impossible for the buyers to embark on production of inferior quality materials. Government's intervention through adequate agencies must be initiated, maintained and sustained. In addition the issues of technology transfer must be adequately pursued through manpower development at both technical and management levels.

References

- AF&PA (2004). American Forest and Paper Association. Paper, Ppaerboard and Wood Pulp: 2004 Statistics, Data through 2003 (2004)
- Aribisala, O.A. (1993): Raw Materials Revolution and Impact on Industrialisation in Nigeria. Mednet Publications Ltd. (1993). ISBN 978 – 024 – 000 – 4.
- Casey, James P. (1980) : Pulp and Paper chemistry and chemical technology. Third edition, Vol 1. Wiley Interscience Publications
- Cassey, J.P. Pulp and Chemistry and Chemical Technology. Wiley Interscience Publication pp 113-159
- CBN (1994): Annual Report of the Central Bank of Nigeria, 1994.

- EL (1988) The US. Pulp and Paper Industry: An Energy Perspective. Published by Energetics Incorporated 1988.
- Famuyide O.O. and Adebayo O. (1993): Forest Policy Implementation in Nigeria. Problems and Solutions In E.A. Oduwaye (ed). Proceedings of the 23rd Annual Conference of the Forestry Association of Nigeria, Ikeja, Lagos State 29 Nov-3rd Dec, 1993.
- Jaccard, M.K. (1996). Industrial Energy End Use Analysis and Conservation Potential in Six Major Industries in Canada. Chapter 3. Pulp and Paper, March, 1996
- King, K.F.S. (1977): Political Economy of Pulp and Paper. *Unasylva* 29 (19):6 – 9.
- Makinde, M.A. (2004): Keynote Address at the National Symposium of Technical Association of Pulp and Paper Industry in Nigeria. In Proceedings of National Symposium on Rehabilitation of the Forestry, Pulp, Paper and Board Industries for the Revival of National Economy. March, 2004.
- Martin, N, Anglani, N, Eisten, D., Khrushch, M., Worrrl, E. and Price, L.K. (2000). Opportunities to Improve Energy Efficiency and Reduce Greenhouse Gass Emmissions in the U.S Pulp and Paper Industry (July, 2000).
- Mohd Edeerozey, A.M., Akil, H.M., Azhar, A.B., AND Zainal Ariffinn, M.I. (2007). Chemical Modification Of Kenaf Fibres. *Materials Letters*, 61., 2023-2025.
- Nillson, L. Larson, J., Eric, D. Gilbreadth, K.R and Ashok, G . (1995). Energy Efficiency and the Pulp and Paper Industry-American Council for an Efficient Economy. Published 1995.
- Nwoye M. I. (2005) Privatization of Public Enterprises in Nigeria: The Views and CounterViews. *Globalizacija : Journal for Political Theory and Research in Globalization, Development and Gender Issues*. Women Center for Democracy and Human Rights, Serbia and Montenegro, Jan.
- Ogunwusi, A.A. (1996): Sustaining the Nigeria Paper Industry (I). *Daily Times* July 25, 1996.
- Ogunwusi, A.A. (2010). Variations in pulping properties of *Pinus caribaea* (Morelet) from Ijaye Forest Reserve. *Nig. Jour. For.* 40 (1 & 2): 51-59.
- Ogunwusi, A.A. (2011). Pulp and Paper Industry in Nigeria: Current Status, Challenges and Options for Resuscitation. *Nig. Jour. of For.* 41(1): 6-16. (Nigeria)
- Ogunwusi, A.A. (1985): Variations in Pulp Characteristics of *Pinus caribaea*. M.Sc. Thesis. Department of Forest Resources Management. 1985. Unpublished.
- Ogunwusi, A.A. (1985): Variations in Pulp Characteristics of *Pinus caribaea*. M.Sc. Thesis. Department of Forest Resources Management. 1985. Unpublished.
- Ojo, G.O.A. (1971). Thoughts on tree improvement programme for some savanna plantation species. In S. Kolade Adeyolu and M. A. Odeyinde (ed) Proceedings of the Second Annual Conference of the Forestry Association of Nigeria. Zaria 17-20th August, 1971 pp146-150.
- Onwualu, A.P. (2010): Pulp and Paper Sector in Nigeria: Challenges and Prospects. Paper Presented at the Annual General Meeting (AGM) of the Pulp, Paper, Paper products, Printing and Publishing sector. MAN House, Lagos. July, 2010.
- Osadare O.A. (1997):. Strategies For Long Fibre Pulp Production In Nigeria. *Nig. Jour. For.* 24(1 and 2). pp 16-20
- Osadare, O. A. And Udohitinah, J.S. (1993). Fiber characteristics of some Nigerian raw materials for long fibre pulp production. In Forestry urbam and rural development in Nigeria. E. A. Oduwaiye ed. Proceedings of 23rd Annual Conference of Association of Nigeria, Ikeja, Lagos State pp 133-138.
- Picornelli, P.M. (1984). Protecting new pulp and paper industries: an opinion from developing countries. *Unasylva* 144: 54-62
- RMRDC (1992): Task Force Report on Pilot Scale Pulping of Kenaf Bast Fibres for the Determination of the Optimal Pulping Parameters for Commercial Scale Pulping for the production of Long fibre Pulp. Unpublished Report. November, 1992.
- RMRDC (2009). Raw Materials Sourcing for Manufacturing in Nigeria. 4th Edition. RMRDC publication.
- RMRDC (2010). Technical Report of Assessment Visit to Nigeria Paper Mill, Jebba. Report Submitted by Technical Committee on Pulp and Paper Production to the Raw Materials Research and Development Council. Unpublished.
- RMRDC(1997). Raw Materials Sourcing for Manufacturing in Nigeria. 3rd Edition, Raw Materials Research and Development Council, Abuja.
- TCPC (1993): The Presidency. Technical Committee on Privatization and Commercialization. Final Report. Volume I. (Main Report).
- TCPC (1993): The Presidency. Technical Committee on Privatization and Commercialization Final Report. Volume I. (Main Report).

Table 1: Response to the questionnaires.

S/N	Subsector	No. of respondents	% of respondents
1.	Primary paper (fibre sources)	3	3.1

2.	Primary paper chemical sources	15	15.8
3	Stationery, light/ heavy packaging (paper)	10	10.5
4	Stationery, light/heavy packaging (boards)	5	5.2
5	Stationery, light/heavy packaging	8	8.4
6	Stationery,light/heavy packaging(miscellaneous)	10	10.5
7	Printing and publishing (paper)	15	15.7
8	Printing and publishing (boards)	15	15.7
9	Printing and publishing (chemicals)	6	6.3
10	Printing and publishing (miscellaneous)	8	8.4
	Total	95	100

Table2: Trend of Production History of Nigeria Paper Mill Ltd. (NPN), Jebba, 1985 - 1996

Year	Installed Capacity (MT)	Actual Production
1985	65,000	40,480
1986	65,000	*42,960
1987	65,000	27,749
1988	65,000	29,365
1989	65,000	16,509
1990	65,000	12,498
1991	65,000	7,707
1992	65,000	7,747
1993	65,000	2,314
1994	65,000	2,720
1995	65,000	2,884
1996	65,000	188

*Highest yearly output.

Table 3: Summary of Capacity Utilisation in the Pulp, Paper, Paper Products, Printing and Publishing Sector (2003 – 2006)

S/N	Sub-Sector	Installed Capacity	Capacity Utilisation (%)				Average Capacity Utilisation (%)
			2003	2004	2005	2006	
1.	Primary Paper (Fibre sources)	1,169,145.00	4.92	5.98	6.33	6.84	6.38
2.	Primary Paper (Chemicals)	105,262,517.00	0.00	0.00	0.00	0.00	0.00
3.	Stationery, Light/Heavy Packaging (Paper)	3,467,400.00	68.44	75.87	84.81	88.07	82.92
4.	Stationery, Light/Heavy Packaging (Boards)	463,410.00	79.62	85.06	85.57	87.61	84.53
5.	Stationery, Light/Heavy Packaging (Chemicals)	571,093.00	76.54	80.24	85.71	87.61	84.53
6.	Stationery, Light/Heavy Packaging (Miscellaneous)	10,203,418.00	63.64	59.67	60.61	62.64	60.97
7.	Printing and Publishing (Paper)	42,903.00	17.64	19.24	20.68	22.222	2.71
8.	Printing and Publishing (Boards)	499,271.10	58.81	61.18	63.16	65.88	63.41
9.	Printing and Publishing (Chemicals)	20,808.00	46.18	46.74	47.49	47.96	47.40
10.	Printing and Publishing (Miscellaneous)	25,573.00	88.98	89.18	89.40	89.83	89.47
Total	Average Annual Capacity Utilisation (%)						54.18

Source: RMRDC (2009)

Table 4: Present status of the integrated Pulp and Paper Mills.

S/N	Name of Mill	Year of Privatization	Extent of Rehabilitation	Commence of Production	Production Capacity
1	Nigeria Paper Mill, Jebba	2006	2 Paper Machine refurbished -Paper machines capacity increased from 65,000 tons /annum to 254000 tons per annum	2009	252,000 tonnes per annum
2	NNMC	2006	Rehabilitation yet to commence	-	-
3	IPPC, Iwopin	2005	Rehabilitation yet to commence	-	-

Table 5: Expected Total Capacities at NPM after Complete Rehabilitation

Machine		Capacity before 2006 (MT/Annum)	Capacity after 2006 (MT/Annum)
Machine	1	12,000	40,000
Machine	2	26,500	85,000
Machine	3	26,500	85,000
Total		65,000	240,000

Table 6: Installed capacity and actual production by the Nigeria Paper Mill, Jebba.

NAME OF ITEM	INSTALLED CAPACITY	ACTUAL PRODUCTION				ACU(% 2003)
		2006	2007	2008	2009	
Long fibre pulp	75,250	0	0	0	0	0
Short fibre pulp	280,000	0	0	0	0	
Gmelina log	603,000	0	0	0	0	0
Local pines and	110,000	0	0	0	0	0

Bamboo						
*Waste paper	125,000	80,000	90,000	96,000	117,000	80.8%
Total						16.16%

Table 7: Summary of average Capacity Utilization in the Pulp, Paper, Paper Products, Printing and Publishing Sector

S/N	SUB-SECTOR	INSTALLED CAPACITY	CAPACITY UTILIZATION				AVERAGE CAPACITY UTILIZATION (%)
			2006	2007	2008	2009	
1	Primary paper (fibre sources)	1,169,145.00	6.84	7.7	8.21	10.01	8.64
2	Primary paper (chemicals)	105,262,517.00	0.00	0.00	0.00	0.05	0.02
3	Stationery, light/heavy packaging (paper)	4,038.800	88.07	36.06	79.8	81.44	65.77
4	Stationery, light/heavy packaging (boards)	517,430.00	87.39	78.34	82.27	86.41	82.34
5	Stationery, light/heavy packaging (chemicals)	674,927.00	87.61	77.89	81.57	86.02	81.8
6	Stationery, light/heavy packaging (miscellaneous)	10,203,418.00	62.64	58.27	61.40	55.85	58.51
7	Printing and publishing (paper)	133,433.00	22.23	73.2	68.9	62.3	68.1
8	Printing and publishing (board)	569,316.00	65.88	57.8	65.8	69.7	64.3
9	Printing and publishing (chemicals)	20,808.00	47.96	48.9	50.2	51.2	50.1
10	Printing and publishing (miscellaneous)	30,381.00	89.83	81.7	88.4	95.8	88.6
Total	Average annual capacity utilization (%)						56.82

Table 8: Cost implication of non production by primary pulp and paper mills

Company	Product description	Installed capacity tonne	Revenue price per ton	Yearly revenue at full production N(b)	Cost implication for non-production (Billion naira)				4 years deficit turn over (Billion naira)
					2006	2007	2008	2009	
NPM JEBBA	Industrial grades of paper	65,000	120,000	7.8	7.8	7.8	7.8	6.85	30.25
NNMC OKU-IBOKU	News print	110,000	170,000	18.7B	18.76	18.76	18.76	18.7	74.8
IPPC	Bond papers	60,000	200,000	12.06	12.0	12.0	12.0	12.0	48
Total									153.05 BILLION

Table 9: Indigenous relatively long-fibre Species in Nigeria.

Fibre	Length (mm)	Diameter (um)
<i>Adansonia digitata</i>	2.45 (3.87)	30.03 (27.96)
<i>Bombax buonopozense</i>	2.11 (3.83)	45.09 (29.85)
<i>Ceiba pentandra</i>	2.22 (4.04)	37.77 (33.01)
<i>Sterculia oblongata</i>	2.07 (3.27)	32.98 (28.53)
<i>Sterculia setigera</i>		
<i>Sterculia rhinopetals)</i>		
<i>Sterculia tragacantha)</i>		
<i>Dracaena arborea</i>	Screened	Screened
<i>Hidlegadia barter</i>		
<i>Rhizophora racemosa</i>	1.57*	20.78
<i>Ficus exasperate</i>	1.29*	29.29

Source: Osadare and Udohitinah (1993) Length of bark bast fibres in parenthesis.

This academic article was published by The International Institute for Science, Technology and Education (IISTE). The IISTE is a pioneer in the Open Access Publishing service based in the U.S. and Europe. The aim of the institute is Accelerating Global Knowledge Sharing.

More information about the publisher can be found in the IISTE's homepage:

<http://www.iiste.org>

CALL FOR PAPERS

The IISTE is currently hosting more than 30 peer-reviewed academic journals and collaborating with academic institutions around the world. There's no deadline for submission. **Prospective authors of IISTE journals can find the submission instruction on the following page:** <http://www.iiste.org/Journals/>

The IISTE editorial team promises to review and publish all the qualified submissions in a **fast** manner. All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Printed version of the journals is also available upon request of readers and authors.

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

