Technology Up Gradation and Modernization of Fiber Line - A Key to Competitiveness of the Indian Paper Industry

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The paper describes the over view of the Indian paper industry covering the status, growth trends and issues confronting with the industry. In light of this how the modernization / technological upgradation of fibre line can help the industry in improving its competitiveness.

INTRODUCTION

The paper industry is an important industrial sector, having a bearing on the socio-economic development of the country. The economic growth of a country varies in the trends. The role of the adoption of the state of the art technology can explain this variation in the economic growth. Today globalization has made imperative for the Indian paper industry to adopt upgradation / modernization of its fiber line in order to improve its competitiveness.

It has been over a hundred years from the year 1830 for the Indian paper industry, when the first machine was set up in the country. Over this period of time, the industry has seen many phases of development and recession. Today, the Indian paper industry presents a unique picture, with a fragmented structure consisting of large and small paper mills, having capacities that range from 5 to 600 tonne per day with an average size of about 11,500 tonnes per annum. There are over 600 pulp and paper mills producing nearly 6.2 million tonnes of paper & paper board and newsprint against an installed capacity of about 8.6 million tonnes. The industry has a turnover of more than Rs. 16,000 crores employing nearly 0.3 million person directly and another 1 million people indirectly. The per capita consumption is only around 5.5 kg which is low as compared to 29 kg in case of China and of 52kg of world average.

COPING WITH GLOBAL COMPETITIVENESS

With India becoming a member of WTO, it has become important for the paper industry to evolve a strategy to become globally competitive. During the phase of industrialization after the independence, the immediate focus of the industry was essentially on growth and expansion. In a regulated market under a mixed economy, it has developed a feeling of compliance. For a long time it often came to compromise with quality - perhaps due to monopolistic conditions in a close market scenario. Indeed, for several decades, a major part of the Indian industry never really came to attach significance to terms like market forces, economy of scale, quality and customer satisfaction etc.

But, in the wake of the economic liberalization, triggered by the new economic policy of the Govt. in 1991, the Indian paper industry found itself confronted with international competition. Almost overnight, the industry was exposed to the difficult task of integrating with the global economy. This also had and evolutionary effect on the traditional Indian management style so as to trigger serious redesigning of strategies for survival. Today, the concept of globalization, eco-cycle compatibility and other environmental issues are being integrated at the planning level itself not only by the major players of the Indian paper industry but by many other mills which are now planning expansion and growth strateties for sustainability and to be competitive domestically and globally.

This industry, however, has traditionally faced with challenges like the sustained availability of good quality of cellulosic raw materials, inadequate infrastructure, uneconomical scale of operations, technology obsolescence and emerging environmental issues.

INDIAN PAPER INDUSTRY - SECTOR PERFORMANCE

The operations of the Indian paper industry have seen turbulent times ever since the economy was opened and paper was freed to be imported under the OGL (open general license scheme) of the government. The domestic demand for the paper and paper board has been rising in the past three years at a rate of around 5.5% which is

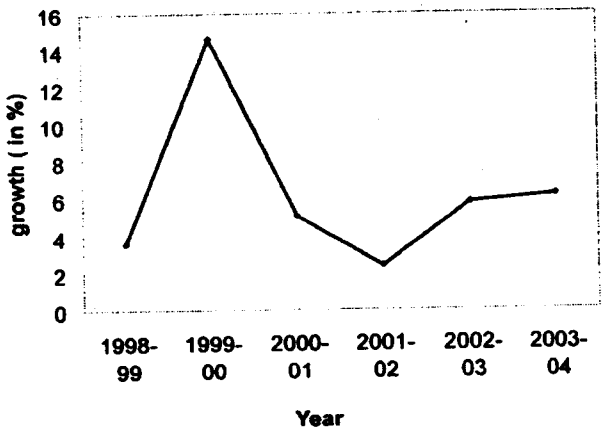

Figure 1 : Production Growth Rate

now touching the 6% mark (Fig-1). Of the total demand of paper and paper board, the writing and printing grades of paper accounts for nearly 45%, Industrial paper for nearly 50% and the remanding 5% for other varieties including the tissue paper. The tissue paper segment accounts for nearly 1.3% of the total paper consumption in India.

With the globalization, it has become important for the Indian paper industry to comply with the quality standards, keeping in view of the customer requirement, while achieving cost effective production. The other important issue is how effectively industry will address the environmental issues to comply with the new CREP requirements imposed by the regulatory authorities.

If we look into the three segments of paper industry, a portion of the forest based pulp & paper industry is slowly moving towards competitiveness through adequate modernization from time to time. However, still a significant proportion of this segment is yet to undertake modernization programme.

The agro-residue based segment is using agro-residues such as bagasse, straws as its main raw material. In this segment, there are only a few mills complying with quality & environmental requirements, whereas large number of units does not have proper technology to produce quality products at a competitive price. This segment is also having serious environmental problems due to lack of chemical recovery system. Major portion of this segment requires modernization and upgradation in order to become competitive.

The third segment, i.e. based on recycled fibre also has a number of small pulp & paper mills, which are based on obsolete technology. One of the major concern of these mills is lack of adequate equipment for processing of recycled fibres and as a consequence, the quality of paper products produced from these mills are not conforming to anywhere, even nearer to the national standards. The competitiveness of this segment without modernization and upgradation would be difficult.

INDIAN PAPER INDUSTRY - SPECIFIC ISSUES, CHALLENGES AND STRATEGIES

A) Availability of Good Quality Fibrous Raw Material

The Indian Paper industry uses a diverse mix of fibrous raw material primarily forest based agro resides including bagasses, straw and waste paper. Though agro-residues are available in plenty, however, associated problems like complexity during processing of these fibres, quality of the end product and environmental issues are the major concerns and sometimes the limit to encourages use of this potentially available renewable raw material.

As regards waste paper nearly 1 million tonne waste paper is currently recovered annually showing a recovery a rate of about 20% which is very low as compared to global scale where the average recovery rate is around 50%. This requires a well refined and aggressive collection and grading system to contain imports of waste papers.

With regard to the forest based raw materials, currently the paper industry meets its demand from the government sources and through the farmers. Industry has also being successful in raising wood in marginal land held by the farmers and this may not be adeuqate to ensure sustained supply of fibrous raw materials and to cope up with the future growth of the industry. Taking into account the increased useage possible from use of non-conventional raw materials like agro based fiber and waste paper, the paper industry will require nearly 16 million tonnes of wood per annum by the year 2010.

However, responding to the challenges posed by a liberalized system of international trade, the major players in Indian paper industry have taken up aggressive initiatives in this direction through social forestry programme.

(B) Scale of Operation

The lower scale of operations has been one of the major constraints in improving the competitiveness of the Indian paper industry. However, the industry constrains for green field expansion has adopted the global trend of mergers and acquisitions to gain economic scale beside upgradation the existing capacities. The industry in the recent past has seen some major merger, equisitions and portfolio reorganization exercises, BILT, JK Corps, ITC, West Coast Paper Mills, APPM, Emami Papers, Abhishek Industries and few others are witness to this exercise, which a step towards improvement in the competitiveness.

(C) Obsolescence of Technology

The industry is still depending upon obsolete technology with multiplicity of equipment of limited size. The structure of the industry being complex, the technology and equipment adopted by these mills prefer largely due to their size and raw material furnishing. Not only does technological obsolesce have an adverse effect on quality and cost of the product, it also involves environmental concerns. Old technologies are not only less efficient, they are also more polluting. Though some of the large players have gone for adoption of modern, cleaner technologies, much needs to be done particularly in the agro based sector.

A comparison of the estimated technological level of the Indian mills as compared to the world leaders and other South East Asian countries are presented in figure-2 hereunder, which gives out the baseline data for the year 2001. As clear from the illustration, even the best Indian production lines is about 30 years behind the best lines in Europe. On the contrary, countries like China

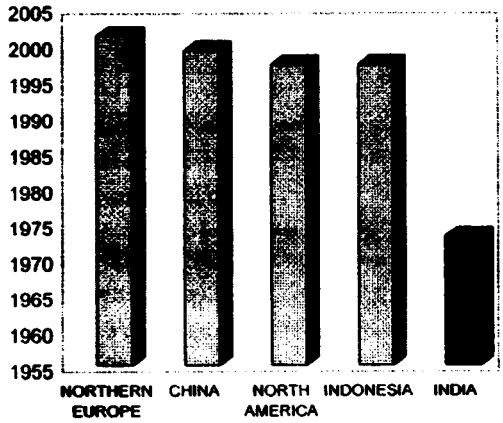

Figure 2 : Estimated Technological Level - India and the World

and Indonesia, which began the process of liberalization much after India. Clearly the technological obsolesces puts Indian paper industry in a competitive disadvantage particularly against the regional players like China and Indonesia. The situation merits urgent concerns in view of the FTA's with some regional players.

(D)Environmental Issues

Holding synergy with this are the CREP requirements, that need to be met by the large as well as the small mills in a phased manner in the next few years. Some of the provisions laid down under the CREP will necessarily require technology up gradation and modernization. The need for reduction of AOX, control of emission of odorous gases, control of solid waste generation, removal of color from effluent etc are particular case in point. Here again majors such as Andhra Pradesh Paper Mills Ltd, ITC, TNPL, Sirpur Paper Mills and few more have taken the lead by going in for technological advancements by way of adoption of an elemental chlorine free bleach sequence to address environmental issues which could prove to be a step towards improving a competitiveness of the industry.

AREAS REQUIRING MODERNIZATION IN THE FIBER LINE

Looking in to the overall requirement of the industry vis a vis quality, efficiency competitiveness, environmental norms etc. sector wise enumeration can be made on the areas that requires technological modernization / upgradation.

(a) Forest based Sector

(i) Raw material preparation and handling

- Modification of chippers and chip conveying system
- Chip washing and storages

(ii) Pulping and pulp washing

- Insulation of Digesters
- Indirect steaming through heat exchangers
- Blow heat Recovery system
- Blow down system
- Efficient pulp washing system by introducing belt washer & double wire washers and screw presses
- DCS control systems

(iii) Bleaching

Improved conventional bleaching through equipment modification and few process configuration viz;

- Oxygen delignification/Oxygen prebleaching stage
- Chlorine dioxide bleaching system
- Peroxide and Oxygen addition to extraction stage

(iv) Paper Making

- Replacement of conical and wide angle refiners with power efficient disc refiners in stock preparation.
- Modification of head boxes
- Modification of forming section and introduction of high speed twin formers
- Improved press configuration using nip press and closed draw systems
- Installation of cascade steam condensate system
- Incorporation of on line measurement and control system for basis weight, moisture and caliper and paper machine drives
- Incorporation of DCS system

- Improved finishing devices

(b) Agro Based Small / Medium mills

(i) Raw Material Handling

- Adoption of advanced method of collection, baling, mechanical handling storage transportation, bale breaking and chopping for straws
- Modern straw cleaning through disc milling
- Efficient depithing system and belt conveying system for bagasse

(ii) Pulping and Pulp Washing

- Installation of Pandia continuous digester
- Insulation of Digesters
- Indirect steaming through heat exchangers
- Blow heat recovery system
- Efficient pulp washing through installation of double wire presses or belt washer
- Installation of screw press in straw based mills before vaccum washer to increase the specific loading rate.

(c) Recycled Waste Paper Based Mills

(i) Pulping / Shushing

- Inclusion of high density pulpers
- For efficient contaminant removal, introduction of high density Cleaner, turboseparators and power screens in the fibre line
- Incorporation of modern deinking cell for efficient removal of ink particles particularly for the production of deinked pulp for newsprint and writing printing grades of paper.
- Dispersion system to reduce the dirt/speak count in the final deinked stock.
- Incorporation of screw press before dispersion system
- Bleach Towers for post bleaching of deinked stock with H_2O_2/Sodium hydrosulphite.

MODERNIZATION OF FIBRE LINE - THE CLEAN DEVELOPMENT MECHANISM (CDM) ROUTE

The global worming is seen as the main cause of concern for the very survival of the planet. In Kyoto Protocol in 1997, the nations of the world agreed that the industrialized countries will reduce their aggregate emission by 5.2% below 1990 levels by 2008-12. The protocol establishes three mechanisms to supplement national actions to achieve real, long term measurable and cost effective GHG reductions. These are (a) Clean Development Mechanism (CDM); (b) International Emission Trading(IET); & (c) Joint Implementation (JI). In the last two decades continuous effort are being made by the industry to reduce pollutants and paper industry through out the world has made a remarkable achievements in this direction. Indian pulp & paper industry while recognizing the environmental implications, has been making all round efforts to address the major envirnmental issues including the gaseous emissions. The Clean Development Mechanism offers a path for developing technologies and processes and also has a potential to act as source of foreign exchange for the country by way of trading of carbon credits.

Specific resources are available that have been ear marked by countries willing to buy the carbon credits that are generated by an activity which improves efficiency and reduces carbon dioxide emissions. There is a lot of potential for the Indian paper industry to explore the funding of all such projects and activities that result in reduction of carbon dioxide emissions or reduce the consumption of fossil fuels. However, the identification and evaluation of the projects that qualify for funding under the CDM route is carried out under a very specific regimen and procedures.

None the less, there are various areas for modernization / technological upgradation in the fibre line requiring attention to modernize / upgrade its technologies technological upgradations which are required for increasing the competitiveness, that the Indian paper industry finds difficult to finance or afford, have the potential of being funded through the CDM route.

CONCLUSION

In conclusion what we see today is a resurgent paper market in India. Most of the growth indicators are in place and on the rise. There is immense scope for modernization that address the quality and the environmental aspects of paper making. The financial climate of the country is improving and most of the paper manufacturers are going in for modernization to improve their competitiveness keeping in view of the provisions of the CREP requirements. The Indian paper industry enjoys a unique situation wherein there is sizeable domestic demand which is all set to increase as the literacy levels rise in the country with the government's efforts of increasing basic and primary education. Moreover, the phenomenal developments in the printing industry should have a synergistic effect on the demand of quality paper catalyzing to modernize of the fibre line to improve the competitiveness of the industry and the industry making all efforts to make its presence in global market.