

Competition and Cooperation - an Indian Dilemma ?

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ABSTRACT

In a time when the Indian pulp and paper industry face the tasks of improving the performance of its mills and, at the same time, address the environmental challenges in a sustainable manner, the Cleaner Production approach offers a way of meeting both these tasks simultaneously. Cleaner Production involves conserving raw materials and energy, eliminating as much as possible the use of toxic substances, and reducing the quantity as well as the toxicity of all emissions and wastes before they leave any given process. As part of a UNEP sponsored program (Network for Industrial Environmental Management-NIEM), the Cleaner Production approach has been put into practice in a number of Indian mills, generating considerable advantages-environmental as well as financial-to the mills. The Indian pulp and paper industry is now offered a unique opportunity to adopt this approach on a wide scale. Following two Cleaner Production workshops for the pulp and paper industry earlier this year, recommendations for how to promote the Cleaner Production concept in India were adopted. The successful outcome of this effort, however, requires the cooperation and active participation of the industry associations as well as of the individual mills.

INTRODUCTION

The never-ending challenge for the pulp and paper mills in India, as in other countries, is to find new ways to improve the production, to increase the output and quality of products, and to maximize the revenue of their operations. As many operators are looking for the new inventions and break-through technologies that will double the performance of their mills overnight, the truth is that in most mills, this on-going development of production and operations goes little by little and step by step. Whether in small, old mills in developing countries or in large high-tech mills in developed countries, the "Great Leap Forward" remains a rare and occasional event.

Over the last few years this challenge has been supplemented with the task of integrating

environmental concerns with the development of the industry. Even though the potential negative environmental effects of pulp and paper production, such as water pollution, waste generation, depletion of natural resources and so on, are no news, they now seem to have reached a level in India where the public is reacting and rightfully demands that the pulp and paper industry assumes its responsibility. One results of this is that the authorities are now more stringent in enforcing existing regulations and several mills in India have already been closed down as a result of their Unableness to meet the

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legislative requirements. At the same time the rapidly growing Indian market is opening up to international competition, which brings new "environmental marketing tools", such as eco-labeling, environmental management systems, ISO 14,000 certification and life cycle analyses to the Indian scene. Even though these tools are primarily aiming at improving the environmental performance of the individual company, they are also helpful in optimizing the production, and generate marketing advantages by giving the products an environmentally friendly profile, which is attractive to many customers. The issue of integrating environmental concerns into the development of the industry is therefore not only desirable, but also necessary for the long-term survival of the individual mill.

THE CHALLENGE

Thus, the Indian pulp and paper industry is facing the old task of improving the production and the "new" task of doing this in an environmentally sustainable way at the same time. In this situation it may be more tempting than ever to pursue the new and fantastic technologies that will solve all problems at once, but unfortunately only exist in our dreams. For many pulp and paper mills, however, the solution to the problem is much more down-to-earth and is, in a sense, available from the back pocket of mill managers and operators. It does not involve so much change of technologies as the way existing technologies are managed and maintained. Although the suggested solution is applicable worldwide, it is especially suitable in countries like India, where financial resources available for development of the pulp and paper industry are limited.

SOME PROBLEMS

As in many countries in the region the Indian pulp and paper industry is characterized by a large number of small mills, many of them using non-wood sources of fiber and operating with inadequate technology. Medium sized mills make up another large portion of the industry. These are generally 10 to 20 years old and built to a technical standard of the late 1970s or early 1980s. Finally there are a few recently erected world class mills, using modern technology to produce high quality grades. Many Indian mills have not kept pace with

international technology advances, since the Indian market, until recently, was protected from outside competition by Governmental import tariffs on paper. In such an atmosphere mills did not have to improve to remain competitive, and instead were lagging behind the international development. Many medium and small sized mills today are operated in an inefficient way, using obsolete equipment and technologies. They have high specific energy and raw material consumption, frequently produce paper of uneven or poor quality, and create a great deal of pollution. Furthermore, too many of these mills are not managed properly or operated efficiently. The main problem is often poor operation control and lack of maintenance, usually caused by low awareness of the problems both at manager and staff level. In boom times, some mills also operate above their designed capacity, which may maximize production but often increases the unit production cost and quantity of waste discharged per ton of product.

A SOLUTION

There are several ways of reducing the environmental impact from an industry sector like this. An obvious long-term strategy is some degree of industry rationalization, resulting in fewer mills that have sufficient capacity to make installations of more expensive technologies, such as chemical recovery systems. For the individual mill, however, this is no solution. Another approach is to up-grade the mills to international standards by investments in the latest technologies and equipment. But, again, this may not be a feasible option for the majority of mills being hampered by a low cash flow. Furthermore, such technologies and equipment are themselves, at least in the short term perspective, of limited value to many existing mills, based as they are on larger production capacities and different processing techniques and raw materials. For Indian mills it is more feasible to optimize the operations based on the technology, equipment and resources already in place. This may not sound as a promising option but is in fact the best opportunity there is for many mills.

A considerable improvement in the efficiency of any mill may be achieved by targeting the "soft" areas of the production, such as management, maintenance, operation control and so on. Improving

the efficiency ("doing better with what we have") should not only result in a higher output of products but also in less waste generation in the mill. Producing more products and less waste also means saving money, increasing the revenue and generating funds for new investments. This approach is second in nature in many Western mills but is frequently overlooked in India and other countries in the region. Because many Indian mills have paid little or no attention to these areas for a long time, the scope for improvements is usually very good.

A systematic approach to identifying and remedying problems relating to these soft issues (for example technology and equipment) is the "Cleaner Production" approach. "Cleaner Production" is defined by UNEP as the *continuous application of an integrated preventive strategy to processes, products and services to reduce risks to humans and the environment and to increase efficiency*. The Cleaner Production approach offers a practical methodology to;

- 1) decide where waste and emissions are generated,
- 2) identify reasons for why the waste and emissions are generated, and
- 3) generate options for how the waste and emissions can be minimized.

The Cleaner Production approach is applicable to all parts of the production, including management, maintenance, marketing, training and so on. The benefits are achieved by conserving raw materials and energy, eliminating as much as possible the use of toxic substances, and by reducing the quantity as well as the toxicity of all emissions and wastes before they leave any given process. The approach can also be applied to the product itself (minimize the environmental impact of the product through its entire life cycle and optimize its potential for reuse), and to services (integrate environmental concerns when designing and delivering services).

Typical for Cleaner Production is that considerable environmental and economic improvements in operations can be attained without any major investments. A key issue is usually to make man-

agers and mill operators aware of the substantial economic potential in improving management and maintenance practices in the mill. UNEP's efforts in this area show that the attitude of managers and workers is often more important for the potential of improvement than the technology and equipment they use. Even very modern mills, using the best available technology, can benefit from the Cleaner Production approach.

OUR EXPERIENCE

The Network for Industrial Environmental Management (NIEM), supported by UNEP and the Swedish International Development Cooperation Agency (Sida), has proved over the last three years the advantages of adopting the Cleaner Production approach in pulp and paper mills in the region. Thirty-six mills in seven countries (China, India, Indonesia, Malaysia, Philippines, Thailand and Vietnam) undertook Cleaner Production assessments, to evaluate and demonstrate the benefits and drawbacks of this approach in mills operating under typical conditions for the region. These mills-the core mills-represent a wide range of mills, both as to size (ranging from 2,000 to 6,50,000 tons of product annually), type of raw material (wood, bamboo, various kinds of agro-residues, waste paper, market pulp etc.), type of product, production technology and so on. The results from the Cleaner Production assessments in these mills have been most encouraging. Each mill has been able to demonstrate considerable improvements in their environmental performance as well as substantial economic savings. The Cleaner Production assessments have generated benefits throughout the mills, from the raw material handling, through the manufacturing process to the storage and shipment of the final product. A few examples of achieved benefits are:

- Saving of raw material costs of 50,000 US\$ annually in one mill.
- More efficient sorting of old newsprint (saving 20,000 US\$ annually).
- Steam Consumption reduced by 0.1 tonne per tonne of paper (saving of 49,000 US\$ annually).

- Fresh water use reduced by 25%.
- Reduced need for water treatment (saving of 700.000 US\$ annually).
- Improved fibre yield by 3-6% in one mill (a gain of US\$ 0.8-1.6 million annually).
- Reduction of 20 KWH of electricity per tonne of paper (saving of 300.000 US\$ annually).
- Former "waste" now sold as raw material to other industries.
- Use of pulping chemicals (and associated costs) reduced by 64%.
- Number of paper breaks reduced by 50%.
- Positive feedback from buyers due to improved paper quality.
- Improved working condition for staff.
- Cleaner (more pleasant) industry area.

As these achievements are truly significant and important to almost any mill, most of them have not been conceived by the introduction of any new inventions or break-through technologies, but rather by applying common sense in an organized way. An analysis of the measures taken to realize the benefits shows that most of them involve changes in housekeeping habits, process control, recycling of materials and modification of equipment. Only 15% of implemented measures incorporate any kind of technology change. Input material changes, utilization of by-products and product modifications also contributes but to a less degree.

A SOLUTION FOR INDIA ?

While one of the strengths of the Cleaner Production approach is that it does not require any outside expertise to adopt, the experience from NIEM and other Cleaner Production programmes shows that most mills find some kind of outside "coaching" very useful, and even crucial, when starting on the first Cleaner Production assessment. The outside coaching may be provided by another

mill that has already adopted the approach. In Western countries it is not unusual that the coaching consists of a mutual sharing of information and experiences about Cleaner Production, within a limited group of similar companies. In this way not only the new company, but all the companies in the group, may benefit from this "coaching" process. India has good experience from using this approach in many industry sectors, where small groups of companies have formed so called "Waste Minimization Circles".

A limiting factor in India is of course that, as yet, only a handful of mills has adopted the Cleaner Production approach and can offer relevant experience. Another limitation is of course the perception that mills in India are first and foremost competitors, raising the question of why any mill would want to help another one. The rational is the realization that the prime competitor to Indian mills is hardly other Indian mills but rather the competition from abroad. There is a very real incentive for the Indian mills to cooperate on this issue: By supporting each others Cleaner Production efforts it is possible to raise the general standard of the Indian pulp and paper industry to a level where it becomes internationally competitive. The alternative-no cooperation-is likely to leave many Indian pulp and paper mills incapable of competing with mills abroad, which in the end may result in the outclassing of a large number of mills in India. The key to success is obviously to be found in a successful cooperation on this issue among the Indian mills. Despite what is stated above, cooperation among competitors is not a new or unique phenomenon in the Indian pulp and paper industry. Indeed, the existence of industry associations, such as IPPTA, is proof of the opposite.

THE ROAD FORWARD

The Indian NIEM node-the Central Pollution Control Board (CPCB)- arranged two workshops on Cleaner Production in Pulp and Paper Mills in New Delhi and Hyderabad in March and April this year (1997). These workshops adopted a set of recommendations, among which are:

- The Cleaner Production approach is the right way for Indian mills to improved mill management with economic gains and environmental advantages.
- Cleaner Production should be a self-driven and industry-motivated approach.
- The Central Pollution Control Board role is catalytic and proactive.
- The Indian industry associations should catalyze mutual transfer of knowledge among member mills.
- Organizations, like the Central Pulp and Paper Research Institute (CPPRI) and other agencies, in association with individual mills, can conduct Cleaner Production audits, select options and help monitor and evaluate the Cleaner Production efforts.
- Mills that have taken part in Cleaner Production assessments should conduct at least one workshop on their experiences for operators of the mills in surrounding areas.
- Waste Minimization Circles may be formed to achieve multiplying effects.

Thus, it is clear that the responsibility for implementing the Cleaner Production approach in the Indian pulp and paper industry is shared

between governmental agencies, research institutions, industry associations and individual mills. As none can help the Indian pulp and paper industry better than the industry itself, it is especially important that the industry associations and individual mills take an active role in this work. The industry associations are in an excellent position to provide information, to identify and seek potential external support, and to coordinate and follow up cleaner Production efforts with the member mills. The individual member mills, on the other hand, constitute the main body of the associations and can ask the associations to undertake this task. However, while the mills are in a position to ask for support from their industry associations, relevant research institutes and related Governmental agencies, they are also the only ones, which can actually make the Cleaner Production approach come true in their own mills.

To encourage mills all over India to take part in this effort, a number of prominent actors in the Indian pulp and paper sector, including representatives from CPCB, the Institute of Paper Technology, NIEM Core mills and industry associations, have decided to issue an award for Best Cleaner Production. The Indian mills will also be informed about the Indian Cleaner Production effort, through a newsletter distributed by CPCB. Furthermore, a training programme on Cleaner Production is planned for January 1998, with the assistance of four NIEM core mills and CPCB. These and other undertakings show that the time is ripe for pulp and paper mills in India to adopt Cleaner Production.