Sustainability - India In a Global Context

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Bio-Data

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He has qualifications in engineering and business administration and has over 30 years' experience in the pulp and paper industry which covers strategic and engineering projects for the pulp and paper industry as well as paper mill design and operations.

He has worked for Pöyry for the last 20 years as part of their Asia Pacific operations. He has managed feasibility, due diligence and strategic studies for pulp and paper projects throughout Australia, New Zealand and the Asia-Pacific region. In particular, he has been involved in a number of feasibility and strategic projects for pulp and paper industry clients in India.

ABSTRACT

Sustainability is one of the strongest global trends in business today. Driven by consumer and NGO pressure, brand-owners are taking sustainability more and more seriously. In their quest to avoid scandals of all kind and to gain end user acceptance for their products, they are driving the implementation of sustainable business practices throughout the value chains. This is also seen in the context of the Indian pulp and paper industry.

Today, sustainability does not only cover the environmental sector, but is more and more encompassing also social and economic sustainability. The three together are usually labelled as triple bottom line sustainability.

This paper explores the global sustainability trends and what impact they will have on the Indian industry. The performance of the Indian industry compared to global benchmarks will also be discussed.

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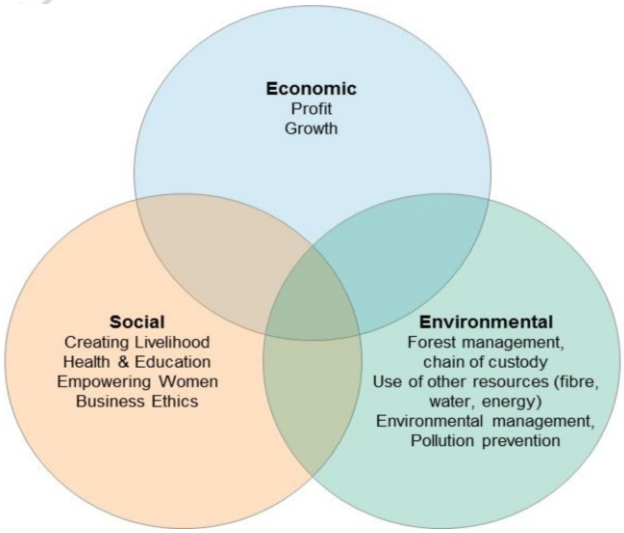

Figure 1:
Triple Bottom Line Sustainability i.e. the three Pillars of Sustainability

Economic Viability has always been a key goal of companies, with achieving profit and growth always the main goal.

Many of the large publicly-listed pulp and paper producers in India benefit from a low-cost structure, and have generated average EBITDA margins in excess of 15% over the last 5 years. However, recent performance has been deteriorating as a result of a shortage of fibre and high power costs in the country. Cost inflation has outpaced recent price increases, and the significant depreciation of the INR has also had an impact. It is estimated that profitability margins have narrowed between 2010 and 2013.

All three of the sustainability pillars are important.However, for a company to sustain its social and environmental practices, it must remain economically viable.

Social Responsibility is continuing to grow in importance. Today it is important that companies have a "social licence' to operate and not just a government licence. Social responsibility encompasses a wide range of issues covering working with all stakeholders that a company has.
Indian companies appear to take their social responsibilities very seriously. A quick check of the web pages of all major companies shows their activities in regard to working with communities. In many ways, the Indian companies are ahead of their peers in other countries.

Environmental sustainability a narrower definition of sustainability related to economic activity is "not leading to the depletion of resources or degradation of the environment."

As a business driver, the environment has been a growing force over the last 40 years. As shown in Figure 2 below, the hot

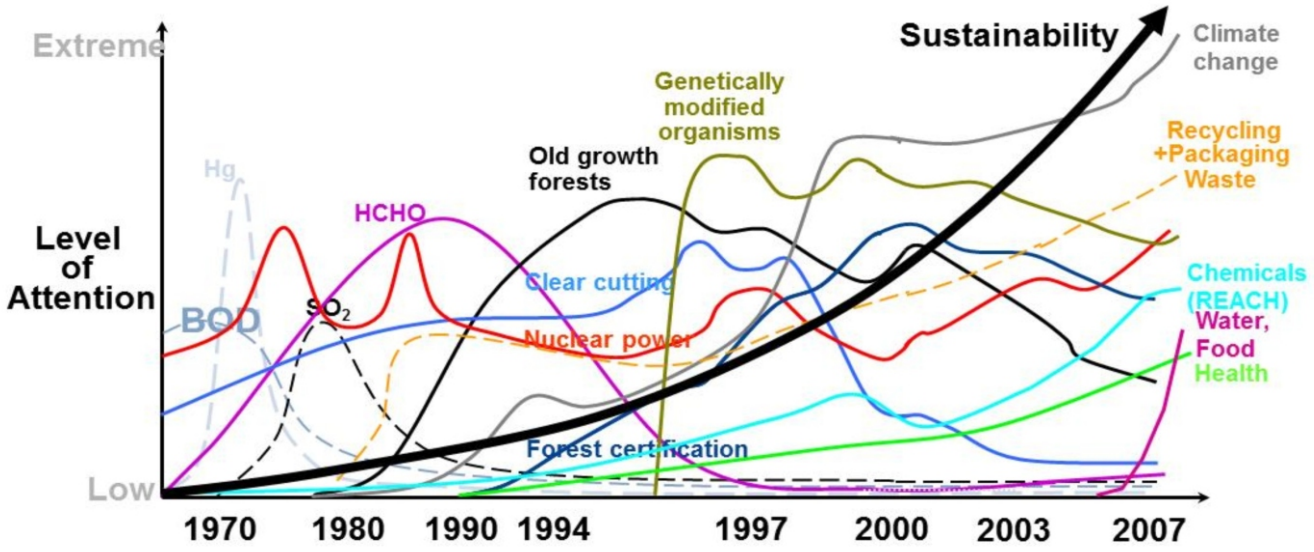

Figure 2: Importance of Environmental Issues

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issues have changed over time, but there has been a common underlying theme of sustainability, with an accumulating residual impact.

This paper will focus on environmental sustainability.

Why is Sustainability Important?

Taking a big picture view of the global trends, Pöyry sees a number of global "mega-trends" that will affect all areas of our lives and drive business decisions. Three key mega trends driving the need to focus more on sustainability are shown in Figure 3 below.

Figure 3: Key Mega Trends

Fact 1: We are consuming more than our fair share of resources. This is particularly true for the developed economies who are big consumers after decades of wealth accumulation. The growing middle class in Asia is also helping to increase consumption levels in this region.

Fact 2: Consumption of resources will only continue to intensify with increased income and urbanisation of the less-developed world.

Fact 3: A shift in economic balance of power to emerging economies such as India, for example, will create more demand for resources. Therefore, sustainability is important and more so in countries such as India.

What are the sustainability trends?

Some of the key trends and their impact on India are discussed below.

Technology

Today the focus is on choosing the best available technology (BAT) to reduce the amount of resources consumed and to reduce the production of pollutants within the process. Minimising water and energy use are key issues for the pulp and paper industry. In general, minimising the use of resources to improve environmental outcomes also helps the economic sustainability of a company even if the resource is an apparently cheap one such as water.

A good guide for what is considered BAT for the pulp and paper industry is found in BAT reference documents (BREF) produced by the European Commission. A final draft update of the pulp and paper BREF document was issued in July 2013.

The document provides descriptions of BAT for all pulp- and paper-making processes as well as emission limits. Some of the key technologies listed for pulp mills are shown in Table 1 below.

Table -1
BAT for Pulp Mills

Dry debarking of wood; specific make-up water demand, 0.1-0.2 kl/m^3 (sob)

Modern low kappa cooking; target blow-line kappa 15-17

Effective pre-oxygen brown stock washing; target COD-loss to O_2-stage <50 kg/ADBt

Two-stage oxygen delignification ; target post- O_2- kappa ~10

Effective post-oxygen washing; target ex POW washing loss < 10 kg COD/ADBt

ECF bleaching and ClO2-Plant Generating clean ClO_2 ; target ClO_2- consumption < 16 kg/ADBt

Comprehensive control of both concentrated and dilute malodorous gas emissions

Tightly closed process water circuits ; target fresh water demand <25 kl/ADBt

Proper segregation, steam stripping, and reuse of secondary condensates and condensation of methanol stripper gas ; incineration of NCG's and methanol in recovery boiler

Control and recovery of fibre and black liqour spills; target spill control level < 5 kg COD/ADBt

Maximising of energy efficiency of the fibre line, recovery island and utilities to minimize fossil fuel demand ; target fossil fuel demand < 50 kg OE/ADBt.

It can be noted that specified technologies relate to minimising use of water and energy, minimising production of pollutants and avoiding emissions of pollutants.

Many of the new pulp lines installed in India over the last decade use these technologies. As India tightens its environmental requirements, all pulp and paper mills will gradually have to change to the BAT technologies or will have to close down.

The challenge for the Indian pulp and paper producers is to ensure the technologies they have are operated in a way that optimises environmental sustainability.

Some examples of this:

Many mills have spill control systems installed, but they are not always maintained correctly, resulting in black liquor or other pollutants being discharged from the pulp mill, resulting in overloading the effluent treatment plant and high COD in the mill effluent.

Even with BAT installed, process instability will cause increased consumption of water and emissions of pollutants. Buffer storages between mill departments must be large enough to avoid process upsets from one department affecting another.

Environmental Limits

As technology improves, the authorities and the community are asking industry to meet tighter environmental emission limits.

This also applies in India, where the Central Pollution Control Board has developed tighter emission limits for effluent, gaseous emissions and solid waste. The new standards introduce colour limits for the first time, tightening up on effluent volumes as well as concentration limits for other pollutants. With modern BAT technology, these new limits can easily be met, but additional investment will be required by some mills. Some of the Indian limits are still below those set by other international bodies, such as the EU and US EPA. Limits for effluent volume and some key effluent pollutants are compared in Table 2 below.

Table 2: Discharge Standards for Large Pulp and Paper Mills

Parameter	India's Existing Standards	India's Proposed Standards	EU-IPPC Bref.1	USEPA
Effluent Volume, m3/Ft	100	80	80	35
Tss, mg/l	50	50	50	135
COD, mg/l	350	250	250	Not Specified
BOD, mg/l	Disch. to surface waters: 30	30	30	90
	Discharged on land: 100			
AOX, mg/l	5 (1.0 kg/Ft)	10	10	6

In addition to the revised standards discussed above, regulatory authorities have also been discussing even tighter regulations with community and the industry. Possible new regulations include:

- Zero liquid discharge
- Continuous monitoring by State Pollution Control Boards
- Stricter monitoring of ash disposal
- Compulsory tertiary effluent treatment.

Some of these new regulations will be particularly challenging, and some cases will put India ahead of what is required in many other parts of the world.

It is noted that the operating permits (Consent to Operate) of most Indian mills do not require a high degree of openness, and mill emission levels are not available to the public. The practice of publishing environmental performance is common for major

European companies. Some are required to do this by law and others offer to do it as part of their social sustainability practices.

Based on some recent examples, a trend towards public reporting of environmental performance is expected to develop in India over the coming years.

Fibre Sustainability

India faces huge problems in sourcing fibre to meet the demands of its pulp and paper industry, and is importing woodchips as well as recovered paper to meet its needs. The fibre demand is expected to nearly double between 2010 and 2020. This fibre deficit puts pressure on managing the fibre resource that India does have in a sustainable manner.

More than half of the fibre used by the Indian paper industry is sourced from recovered paper and nearly half of this is imported. While India's demand will increase significantly by 2020, global demand is also expected to increase, resulting in increased prices. The recovered paper that is imported today is estimated to cost the country about USD1.3 billion/a which, in turn, puts pressure on the economic sustainability of the industry and is likely to limit the industry expansion.

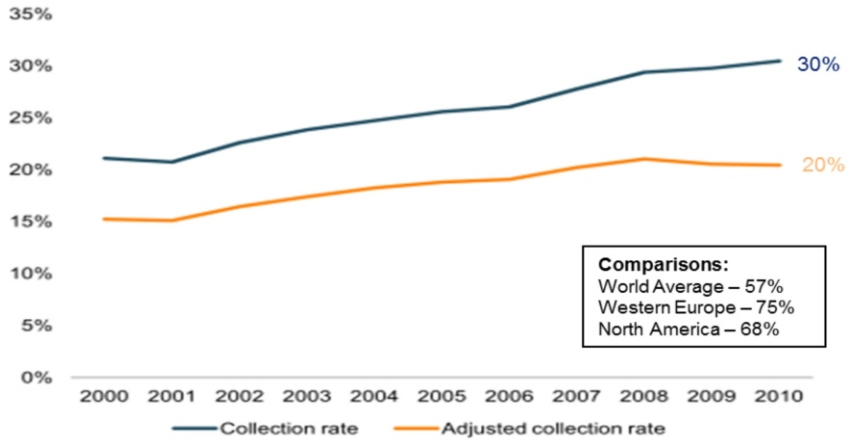
The opportunity exists in India to increase collection of recovered paper. This can be as a result of increased availability of paper as consumption is increased and collection of an increased proportion of the paper consumed. As shown in Figure 3 below, India's collection rate is only 30%, and this compares to a world average rate of 57% and Western European rate of 75%

Note that the total recovered paper collection rate in India is around 30% if calculated based on apparent paper consumption.

However, when adjusting to take into account additional paper consumption used for packaging imported goods, the real collection rate is actually lower, at around 20%.

In order to improve collection rates in India, the Indian industry and the Government will need to work together to develop appropriate policies an approaches to encourage the collection of recovered paper. Improvement of the local collection will expand paper mills' fibre sources, and reduce their reliance on imports and ultimately their profitability. A developed collection system will also have a positive economic impact for the Indian Government, including increased employment and lower trade deficit in fibre products. There would also be flow-on effects to the local community.

Figure 4: India's Recovered Paper Collection Rate



The pulpwood supply in India is mostly plantation based and produced on small-scale and fragmented farms. The natural forests in India are managed mainly for social and environmental needs, so the sustainability of this resource is not an issue for the pulp and paper industry.

The plantation pulpwood resource is also under pressure to be managed sustainably. This is particularly the case on the Maharashtra/Andhra Pradesh border, where a number of pulp mills are all competing for the same plantation resource. There are opportunities to improve yield of the resource with genetic improvements and management practices. While plantation yields are below those of countries such as Thailand and Indonesia, India also has climate constraints that limit achieving same high yields as these countries.

An interesting opportunity to increase pulpwood availability may be the Khan-na concept, developed by Double A in Thailand, where Thai farmers are encouraged to grow trees on the vacant spaces used as paths between rice fields, thus utilising land that was otherwise unused.

While the agro-based mills are making use of the agricultural residues on a sustainable basis in terms of fibre supply, many of these small, old mills cannot afford BAT technology, and so are not necessarily operating in an environmentally sustainable way.

Certification

Being sustainable is ultimately dependent on being perceived as sustainable in the public eye. This perception is the result of a comprehensive set of actions and policies a company takes in relation to all the sustainability issues shown in Figures 1 and 2 presented earlier in this paper.

Certifications and labels represent one important tool used by companies to help promote the perception of being sustainable and, globally, the importance of certification is growing. However, the differences between regions are significant.

Most of the growth in BHKP production is occurring in South America and the eucalypt plantations there mostly have Forest Stewardship Certification (FSC). In Europe, a lot of the wood comes from managed forests, and in Scandinavia, some of the wood is from Russia.This reduces the share of certified pulp, especially FSC, from these regions.

There is also less certified pulp in Asia, partly

due to lower demand from consumers.On the other hand, some multi-national companies aim to buy certified raw materials in their Asian operations in order to maintain their global image as a responsible company with sustainability issues high on their agenda.

Overall, it is clear that the share of certified pulp and paper products is increasing in the global market place. In some cases, there are now discounts for non-certified products and an increasing number of customers will only buy certified products.

There are two main certification labels in use; FSC and Programme for Endorsement of Forest Certification (PEFC). In many regions and products, buyers, consumers, and especially consumer groups and Non-Government Organisations (NGOs), have a strong preference for FSC certification. Some NGOs such as Greenpeace consider the PEFC certification to not "*have the ability to ensure responsible forest management ….and lack robust requirements to protect social and ecological values*."Conversely, among producers and forest owners, the interpretation of the FSC modus operandi is questionable/negative, partly due to the higher costs, but also due to FSC rules for decision-making or the unsuitability of their criteria to the local conditions. As an example, FSC used to insist that each forest owner certifies his piece of forest separately and pays FSC the fees for that. That may have suited an owner of 10 000 ha of plantation forest in South America, but it most definitely would not have suited the small farm forestry plots in India of just a hectare or two.

An increasing number of producers is now targeting double certification (PEFC and FSC).

Forest certification currently plays a minor role in India's pulp and paper sector, with the majority of certified products being imported. However, many pulp and paper companies have begun to work towards achieving certification. BILT, ITC, TNPL, West Coast Papers, Century Pulp and Paper and JK Paper are among many companies that have achieved certification for a selection of products and mills. As India's forestry sector continues to play a larger role in global markets, it is expected that certification will become increasingly important across the entire value chain.

Conclusions/Opportunities

Today it is becoming more and more important for pulp and paper companies in India to focus on all aspects of sustainability; economic, social and environmental. This is particularly true in India, with its large population and shortage of fibre.

While there can be increased costs installing modern technology to reduce emissions, environmentally-sustainable practices often lead to improved economic sustainability as a result of improved efficiencies and reduced consumption of materials.

Similarly, addressing social sustainability issues carries associated costs, but ultimately economic sustainability is also enhanced.

Important sustainability opportunities for India providing significant benefits include:

- Improving energy efficiency to reduce coal consumption and associated ash and greenhouse gas generation
- Reducing water consumption to reduce pollution and the use of the resource as well as reduce treatment costs
- Improving plantation yields and recovered paper collection rates to increase fibre availability and decrease costs.