



Heubach India

Bridging the gap between ecology and economics

The companies of the future will be ecologically conscious. There are *two* reasons for this. The first relatively obvious one is that if companies do not become ecologically conscious there will be no ecosystem in the future to support them and their customers. Inefficient, i.e. wasteful, production and the increased consumption of non-renewable resources will ultimately lead to the demise of the earth. With nobody to sell to and with no uncontaminated products to sell companies will lose their support base and break down.

The second reason is less obvious. It lies in the very fact that ecologically conscious companies will out-perform their un-ecological competitors. By intermeshing production processes with the larger natural flows of ecosystems, companies can greatly reduce the quantity of inputs as well as the outputs of un-sellable by-products. This translates into a reduction of costs for raw materials as well as for waste treatment, resulting in a higher internal efficiency and a lower external impact. Sensitive to these new trends in competitive advantages, Heubach India is one company that has taken the principles of eco-design to heart, incorporating them right at the center of their business model.

Pigments, like the colors they reflect, are everywhere: ink in magazines, the plastic covers of mobile phones, anti-corrosive paints on cars, etc. The factories producing such pigments are typically large consumers of chemically based raw materials and hence create vast amounts of highly toxic discharges. Heubach has set its goal to come as close to zero emissions as possible without compromising its leading position as a producer of high-quality pigments for the global market. Backed up by the results to prove it, their philosophy is one that assertively states that ecology and economics can go hand in hand, even for an upstream/primary producer. As a direct result of their effort to incorporate environmental thinking into their mainstream processes, Heubach has become one of the world's top pigment suppliers, both in terms of quality and quantity.



Pigments

Globalization and the Indian advantage

Investment costs for pollution controls are usually seen as heavy burdens in a competitive market. Through globalization, prohibitively expensive compliance with environmental norms in Western countries has pulled industries towards developing countries. As many anti-globalists fear, this migration of polluting industries and the resulting natural resource depletion and contamination will spell disaster for already weakened economies. Even worse is the prospect of local companies trying to outperform their global competitors by cutting environmental corners on their home grounds. The struggle to combine economic growth without the traditional dirty phases of catch-up is one of the defining tensions of this development.

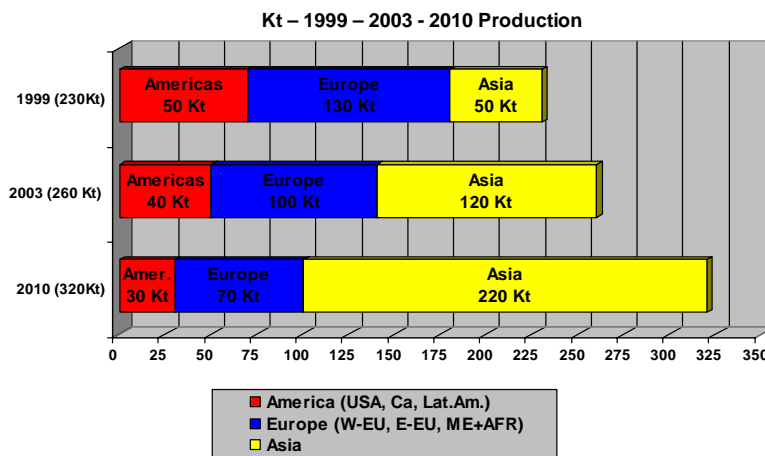


However, companies like Heubach set examples that resolve such tensions. As Heubach’s German Chairman Rainer Heubach has stated: “By incorporating environmental practices at the very first planning stages, we have managed to save the costs of cleaning up our act afterwards.” The blueprint for such environmental practices naturally comes from Mother Nature herself, free of charge. Implementing these blueprints is the costly part. However, Rainer Heubach continues: “Harnessing the Indian labor cost advantage vis-à-vis developed countries has made implementing environmental practices at such an early stage possible.”

Eco-design I: Waste = food

The most general lesson Heubach has learned from nature is the circularity of production processes. In nature, matter continuously circulates and thus ecosystems generate no waste. Traditionally, the industrial process is linear, i.e. from input to output and waste. But as technical director, Dr. Marx, observes: “in essence, every emission is a material loss and hence also a financial loss.” In the line of eco-design, Heubach has undertaken many efforts to reduce such losses by converting waste into food/feedstock. It created an “industrial plant ecology” where the waste from one unit is circulated as feedstock for the next.

A prime example of this is the conversion of waste from Huebach’s green pigment plant into a sellable by-product. Of all the Heubach production centers, the Indian green pigment plant was the largest producer of waste. Acidic in nature, the waste classically is neutralized with lime, which results in huge amounts of solid waste: 13 tons of waste per ton of pigment produced. This is then sent to landfills for storage. Through a new process, Heubach now transforms this waste into aluminium hydroxide, an essential ingredient for antacid formulations in the pharmaceutical industry. Developed indigenously by enthusiastic Indian technicians, this is the only plant of its kind in the world to effectively perform such a conversion. Besides transforming its own waste, the plant also receives waste from factories in the area. The environmental benefit of such a process has been the reduction of landfill-site size and hence the hazards of land pollution. With the commissioning of this process, not only has waste been converted into a product useful to man instead of going to landfill, but the investment for this project also has a payback period of four years on direct investments.



Global pigment production

In another process, the effluent from the blue pigment plant is stripped of its ammonia content through a chemical process. Normally disposed of into surrounding waters, ammonia is highly toxic for aquatic life. The plant now uses an ammonia stripping process to create a residual by-product that is also an essential raw material used at the aluminium hydroxide plant. Due to lower levels of ammonia, the efficiency level of the in-

house effluent treatment plant has been increased and by re-selling the by-product, the initial investment in the new process is repaid within two years. In sum, costs have been lowered as a result of these environmental activities, increasing efficiency and lowering material needs. In the words of the managing director of Heubach India, Ravi Kapoor: "We always strive to search for EEE solutions: economic, ecological and elegant."



On-site biodiversity

Illustrative of their commitment to the principle of "waste=food", Heubach calculated its CO₂ emissions and put into place a program to plant 50,000 heterogeneous plants to offset their emissions. 25,000 plants have already been planted on the factory's premises under the guidance of a specialist. As a result, emissions are absorbed and the region's biodiversity has increased with 40 different species of birds and reptiles spotted in and around the site. The soil for the new saplings in this sustained greening effort comes from organic wastes -- food leftover

from the 330 employees and other natural sources -- creating a rich supply of nutrients for the young trees. The premises also serve as re-assurance to visiting customers that this supplier is doing its part, in essence generating valuable marketing leverage proving the company's commitment to corporate social responsibility.

Eco-design II: Doing more with less

A second principle of sustainable business is "doing more with less". Traditionally industries have concentrated on increasing productivity by investing in labor and machines, leaving the gains that can be made by increasing resource productivity often ignored. In fact, "doing more with less" can be expanded into "doing more with nothing". Take for example the intelligent laying of pipes to increase proximity to sources and to make the best use of gravity. At Heubach this has greatly eliminated their need for electricity-consuming pumps.

In another ecological project, Heubach has taken the principle of "doing more with less" to heart and constructed one of the most efficient captive power plants in India and the world (according to *Diesel and Gas Turbine Worldwide*, Jan-Feb 2003). Rather than using electrical power from the state grid, Heubach produces its own electricity with natural gas. This is a much cleaner alternative, as it produces less nitrogen and sulphur oxide (NO_x and SO_x) emissions, which have adverse effects on the respiratory system and cause the acidification of ecosystems. Not only does Heubach avoid the blackouts that threaten on-going chemical reactions in their plant, they have more than halved their electricity costs through an integrated system of power generation. The company also uses co-generation through a heat exchanger where waste heat from the engines is used to create the steam and hot water necessary for the production of pigments, thereby reducing boiler costs to a minimum. In sum, the total efficiency of this power plant is above 80%, a great contrast to that of the conventional state power grid at roughly 35%. As a result, their investment was recouped in two years.



The Heubach plant



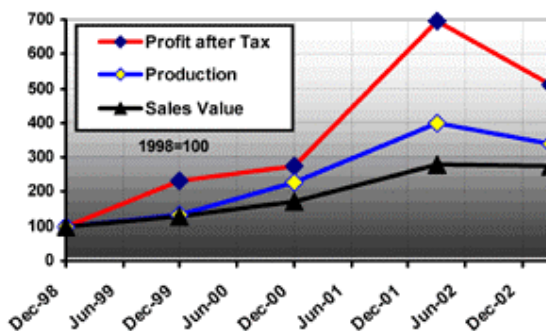
In most chemical plants today a large amount of the waste is generated from the packaging of raw materials. This usually takes the form of polyethylene bags, HDPE bags, and paper or plastic containers, which are difficult to dispose of. Before modifying its processes, Heubach generated 16,000 kilograms of HDPE per year. Heubach reduced its consumption of packaging material by:

- i) Forcing suppliers to move from small bags to big bags;
- ii) Moving from big bags to recyclable bags;
- iii) Moving from bags to recyclable containers.

As a result, the amount of waste generated through packaging materials has been reduced to a negligible amount: 70,000 bags or 10,000 kg of HDPE were saved. Although the new process required an initial investment of US\$ 100,000 to modify production lines, the resulting decrease in waste management costs saves Heubach US\$ 90,000 annually. Given Heubach's recent increases in production, the full force of the potential of "doing more with less" is unmistakably shown.

Conclusion

Heubach is a prime example of a company that is actively engaged in limiting its environmental impact while achieving outstanding financial results. Turnover has doubled every three years since its inception in 1994, despite almost 25% of investments flowing



into ecological projects. In fact, profits have risen partly due to these environmental investments. This can be traced back to measures that have increased efficiency and reduced consumption through resource productivity. Probably the most significant ecological effect has been the reduction of CO₂ emissions, which are largely blamed for the greenhouse effect. As a result of supply-side efficiency measures like gas-produced electricity and co-generation, as well

as streamlining consumption, CO₂ levels have dropped to 10% of those of conventional pigment manufacturers.

From a macro-economical planning perspective, resource productivity takes on a much more vital dimension. In a country like India where water is scarce, there is a fine balance to strike in terms of allocating natural resources to different sectors. Due to its added value, industry is normally given priority over agriculture. This can be traced back to the fact that, for example, one cubic meter of water translates into roughly US\$ 1 in profit from agriculture while if invested into the pigment industry might achieve gains of up to US\$ 10-20. However, in a densely populated country like India, the continued bias towards allocating water to the industrial sector must be relativised against the backdrop of the absolute need for food and healthy drinking water for local populations. This is further amplified by continued ground water contamination by industry and chemical pesticides.

The only practical solution to such dilemmas is to produce more with less and avoid further contamination. Heubach's ingenious waste treatment and prevention techniques are one step in that direction. In contrast to many other pigment manufacturers, Heubach currently achieves gains of up to US\$ 20-40 per cubic meter of water. The ability of governments to help firms that display such high water productivity is essential to the sustainability of national and global economies. Such ideas are cemented by the fact that it makes sense to follow the path of industrial modernization only if the long term total macro-economical utility of industry to development goals is greater than the sum of the micro-economical profits of these companies plus their contribution to national GDP.

**The results of Heubach’s programs speak for themselves:**

- Turnover doubled every three years
- 25% of total investments went into environmental projects

Environmental Project	Investment (US\$)	Payback period
Aluminium Hydroxide	1,400,000	3 years
Ammonia Recovery	200,000	11 months
Captive Power Plant	1,500,000	3 years
Reverse Osmosis	150,000	3 years
Reduction in Packaging	100,000	1.5 years

Although resource productivity alone will not solve the planet’s environmental crisis it can certainly buy precious time to allow for the transition to a sustainable society. This is relevant because the impact of climate instability and ozone depletion will be borne disproportionately by regions like India, where most areas still depend on agriculture and where slight changes in climate can fully destroy rural livelihoods, generating political instability.

In an era where foreign direct investment has been the biggest driver of development, and has often left environmental devastation in its wake in developing countries, examples like that of Heubach are tragically few in number. However, there is a growing awareness that companies can only achieve long-term business success if they recognize that the economy is an “open subsystem of the earth’s ecosystem, which is finite, non growing and materially closed” (Herman Daly, *The Case of the Global Economy*, Sierra Book Club, 1996). It is in this scenario that ecologically oriented companies will outperform their competitors. Heubach profits from its values, precisely because it values its profits. As a private firm, it shows that environmental projects can be profitable, and sometimes even imperative in cutthroat competition.

While it pushes its competitors to find more efficient and clean modes of production, Heubach’s example also forces environmentalists to translate vague ideals about the environment into concrete, workable concepts laid out across engineering plans and account sheets.

Environmentalists need to develop more tools to be able to speak business language and point firms in a different direction. In order to achieve this, however, as the saying goes, the devil lies in the details. Companies must have an eye on all facets, i.e. the nitty-gritty crossing points between ecology and economics, before generalized solutions for the world’s environmental problems will become a reality.

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About the WBCSD

The World Business Council for Sustainable Development (WBCSD) is a coalition of international companies united by a shared commitment to sustainable development via the three pillars of economic growth, ecological balance and social progress. Our members are drawn from more than 35 countries and 20 major industrial sectors. We also benefit from a Global Network of 40 national and regional business councils and partner organizations involving more than 1,000 business leaders globally.

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