WASTE MINIMIZATION AND RECYCLING AS PART OF AN ENVIRONMENTALLY SUSTAINABLE BUSINESS STRATEGY

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Summary

Inefficient resource use and subsequent waste generation are key sustainability issues. In the development of solutions, waste minimization and recycling are seen as options, but there are many approaches.

This article provides examples of different approaches to waste minimization and recycling to illustrate how sustainability may be achieved. The initiatives include business networks to share experiences and successes, community programs in which businesses participate in programs to simultaneously improve sustainability and bring about community benefits, initiatives that promote waste reuse and recycling, and initiatives that consider the use of resources by society to reduce waste and facilitate recycling.

1. Introduction

1.1. Crisis? What Crisis?

World consumers use and waste large amounts of resources, resulting in major environmental and social impacts. This statement, while undoubtedly true, is not having the necessary impact to prompt positive action to reverse these trends. The so-called "developing" nations are producing vast numbers of new consumers every year. Each individual aspires to the same standard of living currently being enjoyed in the "developed" economies. If everyone on the planet achieved the same standard of living as the average American, however, we would need 4.5 more Earths to accommodate the resources and environmental capacity they would need.

The situation is being addressed in some quarters. There has been an increased awareness of the issues by politicians, which resulted in more environmental protection legislation in the 1990s. There are also ever-increasing financial penalties for those organizations that continue to use large amounts of resources to make waste. The European Packaging Waste Directive is the first of what is likely to be a whole range of measures (under the banner of "producer responsibility") aimed at forcing companies to take responsibility for their products and to consider a move to more sustainable waste management practices, including reuse and recycling of materials. Such measures have an impact on the whole chain of suppliers, from mining and harvesting of raw resources through to the ultimate end user and beyond, and in future, all those in the chain will need to consider more carefully their burden on the environment.

Legislation, taxes, and increasing costs for resources and waste disposal will continue to prompt organizations to adopt more sustainable practices in the future. In addition, corporate reputation can be an important motivator for many companies. Many companies are keen to be seen to be doing the right thing. Many have made commitments to sustainability, and are devising innovative ways to take greater responsibility for the whole life cycle of their products.

1.2. New Ways to Tackle Old Problems

In developing more sustainable business practices, companies must first appreciate the need for sustainability. For many organizations, sustainability is still viewed as something slightly altruistic; a common view is "it would be nice to protect the environment if we had enough money or time, but we have to get on with our business." But being sustainable is about the capacity for continuance into the future.

All businesses have aspects of their operations that are currently unsustainable; aspects causing obstacles or pressures that will ultimately destabilize or kill the business. The key to successful business operation is to recognize which aspects of the business are unsustainable, and to plan for change as soon as possible. The focus, historically, was on financial sustainability, but more forward-thinking organizations now understand that financial sustainability is linked to acting in an environmentally and socially responsible manner.

1.3. Knowing the Problem is Part of the Solution

The way in which companies use resources and produce wastes is key to this understanding. The first step is an appreciation of inputs and outputs used in a process/product: that is, the resources used and the wastes generated. This mass balance approach is based on the fact that the quantity of material used as resources equals the amount of material ending up in the waste and the product (see Figure 1). Companies should be able to calculate the inputs and outputs from their processes. In putting this data together, they are often surprised by the inefficiencies in the process; usually only a relatively small percentage of resources are converted to product, and relatively high percentages end up as waste. Such data is useful in focusing waste minimization and resource conservation activities onto key resource flows.

The second step is a fuller appreciation of how resources are converted to product and waste in the various processes involved. This enables companies to focus on the least efficient processes, that is, those that generate most waste.

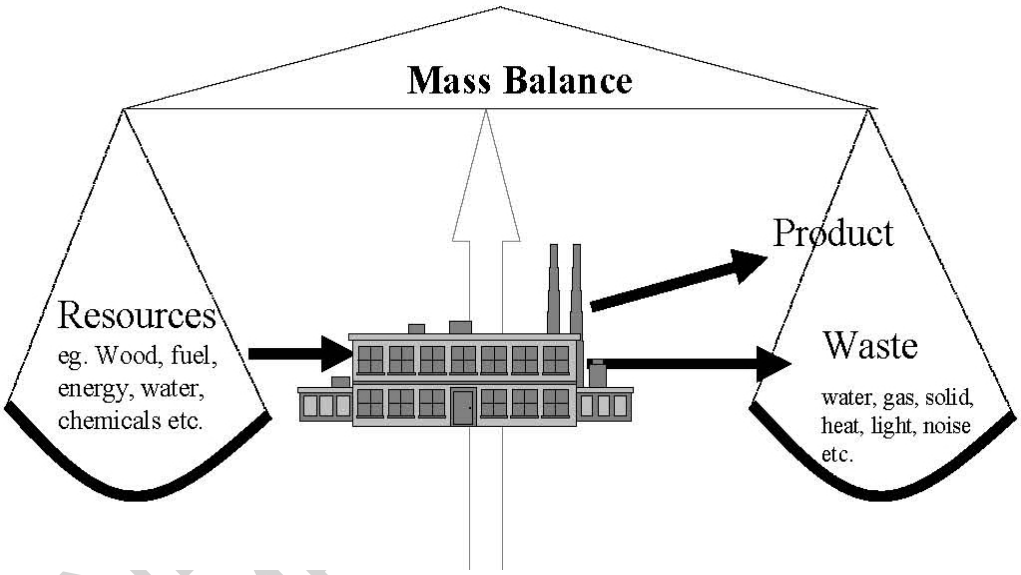

Figure 1. Mass balance approach to resource flows

If life cycle thinking is applied to manufacturing processes, many products produced today could be viewed as a transitional state for valuable resources destined to be inefficiently burned or buried in the ground. As the concept of producer responsibility obligations grows, the ultimate fate of products will gain greater importance to companies that do not want their brands associated with environmental damage.

Many companies are proud to describe a commitment to eco-efficiency, the collective title for a range of initiatives including waste minimization, process improvements, and recycling initiatives. It is certain that in the shift to a more sustainable future we will need to "do more with less." In 1997, the Factor 10 Club (an international body made up of senior government, nongovernment, industry and academic leaders centered on the Wuppertal Institute in Germany) predicted that a tenfold increase in production could be achieved with one-tenth of the current resource consumption using current technology

and knowledge. Weizsacker, Lovins, and Lovins provide compelling examples of how this might be achieved in their book, *Factor 4*. For many companies, becoming more resource efficient has brought the added benefits of improvements to bottom-line financial performance as well as the environmental improvements. By becoming more efficient, using fewer resources, and generating less waste, companies are able to save money on resource purchases and waste disposal costs.

However, eco-efficiency can only be regarded as part of an overall strategy for moving towards sustainability. A growing number of businesses, involved in defining what sustainability might mean for them, have determined that it cannot be attained in isolation. This is where partnership approaches to solving environmental problems win out. The partnership approach provides positive advantages in access to shared resources and exchange of ideas. In some areas it is essential, for example, when companies have to work with suppliers to develop mechanisms and technologies for environmental improvements to be made. Many of the sustainability initiatives also incorporate other community stakeholders, for example, Local Agenda 21 type initiatives. Local Agenda 21 arose out of the 1992 Rio Earth Summit (where most of the world's governments committed to sustainable development) and is a sustainability action plan for the twenty-first century.

The problem with sustainability, as Weiszacker et al. ably point out, is not the intellectual acceptance of the world's plight. Rather, it is the effort required to break down inertia, and move companies in a new direction. One of the best ways to make inroads into this inertia is to show how others have achieved worthy, and sometimes startling, results. In the course of our work at the National Centre for Business and Ecology (NCBE), we have come across a number of collaborative initiatives that show how organizations are beginning to work together to move towards sustainability. It is our belief that real social and environmental benefits can only be achieved by using a varied basket of collaborative approaches.

The following sections provide examples of the range of approaches to addressing these issues. The list is by no means exhaustive, but the examples share the common theme of a partnership approach. We have provided examples of "green business networks," in which businesses share experiences and help each other to reduce waste and at the same time save money. There are also a number of initiatives aimed at promoting waste minimization in a specific region or city, including the large number of projects for defining and implementing local authority Agenda 21 commitments for regional sustainability. A number of schemes provide a focus for the exchange of materials on the principle "one organization's waste is another's raw material."

We have grouped examples into a number of categories:

- Networking through clubs and Best Practice programs—in which a number of organizations participate in reducing waste;
- Waste exchanges and recycling guides—designed to stimulate flat recycle markets;
- Community initiatives—Local Agenda 21 type initiatives in which businesses work locally in the community to assist sustainability objectives; and

- Building sustainable products, describing how some businesses are now ensuring that their products are more sustainable by leasing.

Putting it all together—it is unlikely that any one initiative will work in isolation.

2. Networking for Sustainable Business Practices

There are many examples of business networks involving companies working together on waste management and other environmental and sustainability-related issues. The advantages of such projects are the provision of advice and support on waste issues and the capabilities for sharing experiences.

The benefits of such projects are well documented in numerous case studies. In many cases, the driving force for companies to collaborate in such schemes has been the potential to save money. Case studies show that many companies were able to demonstrate that environmental improvements can bring about associated benefits in bottom-line performance.

Although a large number of companies have taken on board this message and are working towards reducing environmental impacts, a greater number, particularly SMEs (small to medium-sized enterprises) have not. Given the number of programs and case studies to drive home the message, this is somewhat surprising.

The UK's Business and Ecology Demonstration Project (BEDP) attempted to determine why so few companies were engaged in the sustainability agenda. It appears that many smaller companies do not see the relevance of such programs and are unable to recognize the potential benefits. They feel that participation in such programs would lead to a drain on resources that are already stretched to the maximum to meet other business objectives.

In addition, many of the programs offering environmental assistance to small companies in the United Kingdom suffer from the lack of consistent, high-quality advice, the lack of coordination of effort, and the lack of a unifying vision of achievement.

Despite these real and perceived problems, business networks have delivered some impressive results in reducing environmental impacts and increasing business efficiency, as demonstrated by the examples provided below.

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Biographical Sketches

Erik Bichard B.Sc., M.Sc., MCD, has been academically and professionally involved in environmental assessment and pollution control for over 10 years. He had an extensive and varied academic career, which included four higher degrees in environmental sciences, noise control, and land use planning disciplines before becoming Cheshire County Council's first "Environmental Planner." At Cheshire he dealt with hazardous industry and contaminated land issues, and co-wrote the County guidelines for the implementation of the Environmental Assessment Directive.

In 1987 he joined the prestigious chemical engineering firm Cremer & Warner where he became Technology Leader in both Environmental Assessment and Noise Control and Assessment. In January 1992 he was appointed Operations Manager for the company's new Hong Kong office. In addition to being responsible for all aspects of the business, he acted as environmental coordinator for the Kowloon Density Study, a pioneering investigation into prospects for one of the world's most populous areas as a result of the relocation of Kai Tak Airport in 1997.

In January 1993 he joined ERM (Asia) where his prime responsibility was to act as joint coordinator for the Lantau-Airport Railway Environmental Impact Study for the Hong Kong Mass Transit Railway Corporation (MTRC).

In May 1993 he returned to the United Kingdom to become Manager of the new ERM office in Manchester, where he worked on a series of high profile projects for companies and organizations, such as the Greater Manchester Passenger Transport Executive, North West Water, Zeneca, Kellogg's, and the Environment Agency.

In September 1997 he was appointed Director of the Co-operative Bank's National Centre for Business & Ecology, which is currently located in the Peel Building of Salford University. The Centre was set up to advise businesses on adopting environmentally sustainable practices.

Dr. Mary Parkinson B.Sc., Ph.D., MCIWEM, C.Biol., MI.Biol., has been a Project Manager at the National Centre for Business and Ecology since early 1996. Prior to this she was Operations Manager at UMIST Environmental (a consultancy within the department of Chemical Engineering at UMIST).

She has a B.Sc. in Biological Sciences (Manchester Polytechnic, now Manchester Metropolitan University) and researched microbial foaming problems in wastewater treatment systems for her Ph.D. at UMIST. Her work has included research into novel biotechnologies for water and wastewater treatment and consultancy in environmental issues relating to water, wastewater and environmental management.

Her project experience has included acting as project manager and water specialist on a project for Biffa, which resulted in the publication of *Great Britain plc*, and project management and review of a waste management strategy for Trafford Park. Mary has worked closely with The Natural Step UK in the Pathfinder Projects for the Co-operative Bank, Yorkshire Water, Tarmac, and Dupont and is an experienced trainer for The Natural Step and EARA (Environmental Auditors Registration Association) foundation courses in Environmental Auditing.