Measuring the green label

By Rahilla Zafar

When it comes to understanding the environmental impact of products, life cycle assessment (LCA), an analytic method developed nearly two decades ago, is beginning to take root.

LCA measures the full lifetime effect of a product, examining its multiple impacts on the environment.

Like nutrition labels on food, LCA is helping develop a similar concept listing its contribution to global warming, ozone depletion, acid rain, habitat loss, fossil fuel depletion and a handful of other environmental indicators.

In 1969, Coca-Cola used a form of LCA to determine the environmental impact of switching from glass to plastic bottles. Since glass is a natural material, most people expected it to be the better environmental choice. However it was later determined that using plastic bottles would be less harmful to the environment. Coca-Cola reached its decision by considering environmental impacts such as energy saved by producing plastic bottles in their own factory rather than having glass bottles shipped. The lower weight of plastic bottles also reduces the energy used in shipping since glass is heavier.

ProLogis, a global distribution provider, has started using LCA to take a deeper look at the carbon emissions associated with its facilities – including

emissions from product development and transportation, construction, maintenance, and dismantling. These emissions are thought of as the carbon “embodied” in the warehouse. With more than 44 million square metres of industrial space in North America, Europe and Asia, the company found that in a study of one of its developments, concrete and steel accounted for 65 per cent of the building’s embodied carbon. One way to reduce these emissions is by increasing the amount of recycled content in the steel it uses since it takes much less energy to melt down existing steel than to create it from scratch. In addition, ProLogis has explored concrete substitutes with lower embodied carbon but has not yet found one that meets its standards.

Assessing life cycles can help companies make more informed decisions

Today in India, Coca-Cola has started to use LCA to take stock of a different issue. A Coca-Cola bottling factory in Kala Dera was blamed by farmers for causing water shortages. Located in the recently drought-stricken state of Rajasthan, the beverage giant agreed to an independent third-party assessment, only to find that it was indeed contributing to some of the cause.

“There are terrific examples of large retailers such as Wal-Mart, Home Depot and Target (making progress in terms of sustainable development) but large beverage (firms), for example, face different challenges in the water area,” says **Paul Kleindorfer**, Distinguished Research Professor of INSEAD and Emeritus Professor of Management Science at Wharton.

While some companies have it easier than others, nearly all are getting the message.

One company that did not was General Motors (GM) which delivered massive profits on sport-utility vehicles (SUVs). GM sought to maximise short-term profits without much concern for the long-term costs of pollution**.** Meanwhile oil companies like Shell and BP began to factor pollution into their capital spending budgets when Europe started greenhouse-emission trading.

While the former auto giant was enjoying short-term profits, it failed to tap into the global demand for smaller cars which cost less and are more energy efficient using natural gas, battery power, and solar panels.

“If General Motors, like Toyota, had planned with a more open mind about expensive energy, risks to expensive manufacturing, and the accumulating carbon in the atmosphere, they would have vastly reduced their downside risk of vehicles that don't sell,” says **Paul Herman** founder of HIP Investor, a San Francisco-based company which advises investors and corporations on how to be more sustainable and profitable.

Instead, having received a government bailout and now bankrupt, GM looks set to become a much smaller company which will have to play catch-up to competitors.

A company that has profited from long-term thinking is Waste Management Inc (WM). For years the trash-hauler and land-filler company simply moved garbage from homes to empty land – a short-sighted approach which cost the customer money and polluted land.

By using LCA, WM set up a new business unit to turn "trash into cash" - with services for business to convert former waste into new raw materials. For example, one third of all aluminium produced is recycled and reused. Serving businesses such as Wal-Mart has made WM more of a "market maker", converting methane gas from landfills into new energy sources.

LCA is also helping to debunk myths in what is really sustainable

In the agricultural industry, several studies using LCA counter claims from the organic farming community that their products are more environmentally friendly because they do not use artificial fertilisers and pesticides which require energy to manufacture.

While organic farmers use manure instead of artificial fertilizer, a study in Norway found it not to be feasible on a large scale.

“In order for Norway to shift to organic farming, it would require every bit of biological waste to be turned into fertiliser,” says **Leonard Gianessi** of the Croplife Foundation, a Washington DC-based non-profit.

A study sponsored by the UK Department for Environment, Food and Rural Affairs found that a litre of organic milk requires 80 per cent more land, has 20 per cent greater global warming potential, releases 60 per cent more nutrients into water sources, and contributes 70 per cent more to acid rain.

The LCA assessment also found that a kilo of organic beef releases 12 per cent more greenhouse gas (GHG) emissions.

New global environmental standards

As the only developed country with no national regulations on GHG, the United States uses only 13 per cent of available input energy, with the rest lost in conversion or use.

“The 87 per cent that is wasted causes environmental problems, especially climate change. From the mass flow perspective in the United States, very little material is actually recycled,” says **Robert Ayres**, Emeritus Professor of Economics and Political Science and Technology Management at INSEAD.

But if consumers are not interested, advocates say that without them being a driving force, it will be difficult to push governments and businesses in the right direction.

“Beyond regulation, there needs to be leadership coming from municipalities, states, cities and the federal government. Without the leadership in government, we are not going to be doing things that are visible to the citizens,” says Kleindorfer.

Over the next several months, the United States government is expected to pass new energy regulations under the leadership of President Barack Obama.

“It was only two years ago, at the Bali discourse on Kyoto (Protocol on climate change), when a representative from Indonesia told an American representative to get out of the way if they are not going to lead,” says Kleindorfer.

Now there is the political will in the United States to be partners, discussing and listening – and this represents a much different tone.

"Waste is a flaw of good design" is commonly attributed to architect Bill McDonough. In his book *Cradle to Cradle*, McDonough outlines that, "at its deepest foundation, the industrial infrastructure we have today is linear: it is focused on making a product and getting it to the customer quickly and cheaply without considering much else."

Rahilla Zafar interviewed INSEAD professors Robert Ayres and Paul Kleindorfer at the Initiative for Global Environmental Leadership annual conference on Life Cycle Assessment organised by the Wharton School and the University of Pennsylvania.

For more information on IGEL's LCA conference and workshop: ***http://environment.wharton.upenn.edu***

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