Circularity: Towards Sustainable Consumption & Production

By Wayne Visser

Towards the end of the 1980s, a concept called 'industrial ecology' emerged. It was popularized in 1989 in a Scientific American article by Robert Frosch and Nicholas E. Gallopoulos, in which they declared: 'Why would not our industrial system behave like an ecosystem, where the wastes of a species may be resource to another species? Why would not the outputs of an industry be the inputs of another, thus reducing use of raw materials, pollution, and saving on waste treatment?'

Hence, the idea of industrial ecology is that businesses should not only look at the life cycle impacts as individual entities, but rather look for ways in which to link up with other businesses to minimise their impacts. For example, there is a Danish industrial park in the city of Kalundborg where a power plant, oil refinery, pharmaceutical plant, plasterboard factory, enzyme manufacturer, waste management company and the city itself all link together to share and utilise resources, by-products, energy and waste heat.

Another concept that was gaining popularity around the same time was 'cleaner production', which resulted in the UNEP Declaration on Cleaner Production in 1998. Later, this evolved into the concept of 'sustainable consumption and production', which was defined at the UN's 2002 World Summit on Sustainable Development as an approach 'to promote social and economic development within the carrying capacity of ecosystems by addressing and, where appropriate, de-linking economic growth and environmental degradation through improving efficiency and sustainability in the use of resources and production processes and reducing resource degradation, pollution and waste.'

The University of Cambridge Business Primer on Sustainable Consumption and Production (2007) gives an example to underscore the importance of creating more sustainable industrial processes. On average, the report says, a gold wedding ring weighs 6,000 kilograms. The enormous discrepancy between the actual retail product and the remaining weight is explained by accounting for all the materials used and the waste created during the production life cycle of the ring. The gap between a gold ring's actual, physical weight and its 'resource weight' highlights the scale of physical and financial impacts that are associated with the creation of apparently simple, everyday products.

The report concludes that 'the increased cost that results from the difference between sustainable and unsustainable production is not good for anyone. It is not sustainable financially – such low resource efficiency is wasteful and inefficient. And it is not sustainable socially or environmentally – hazardous or damaging waste products are produced systematically, and resources are increasingly depleted.'

Recognising this challenge, the EU government has begun working with business to create 'product roadmapping' as a way of systematising what might otherwise be a more organic, haphazard approach to developing products and the policies that support them. 'Integrated Product Policy' (IPP) is how government describes conducting life cycle assessments with a view to potential policy interventions. The IPP of the EU, adopted in 2003, aims at reducing the environmental impact of products, instead of specific industries or processes.

Two familiar products with diverse impacts were chosen by the EU to demonstrate IPP. One was a mobile phone, put forward by Nokia; the second, a teak garden chair proposed by Europe's largest retailer, Carrefour. The result of the exercise showed that, for Nokia, energy consumption is the greatest impact, both during manufacture of components and during use – when chargers left on 'no-load' consume electricity constantly. It was estimated that, if 10% of worldwide subscribers unplug their chargers once their phone is fully charged, enough energy would be saved to supply 60,000 European homes for one year.

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