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Issue 12

Quickstart

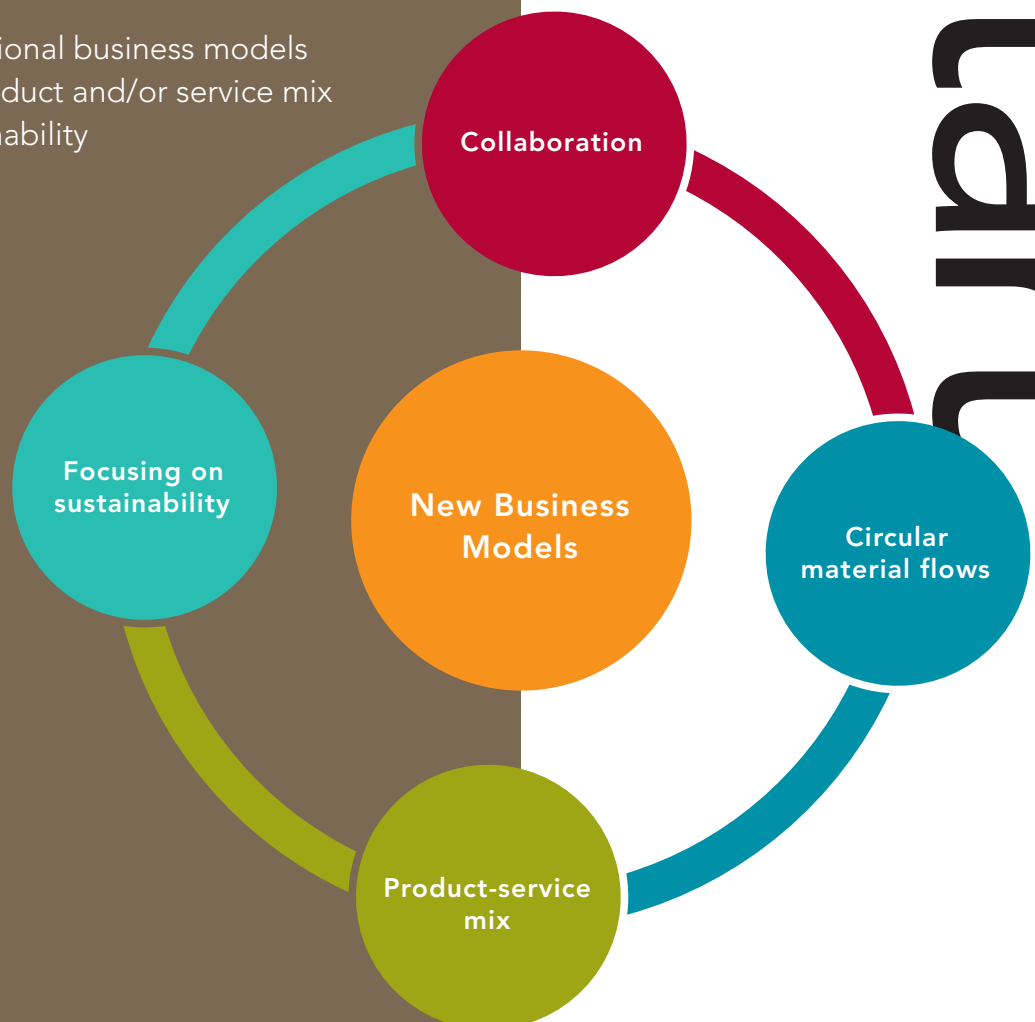
New business models

This is the twelfth in a series of Quickstarts on Design for Sustainability (D4S) with Plastics. It describes innovative business models being used by companies working to improve sustainability through the design, use or recovery of plastic products. Most of these models involve partnerships between organisations across the product chain, including raw material suppliers, manufacturers, retailers, consumers and reprocessors.

In this Quickstart:

- Rethinking conventional business models
- Reorienting the product and/or service mix
- Focusing on sustainability
- Product-to-service
- Closing the loop

Design for Sustainability
with Plastics



Rethinking conventional business models

Increasing priority is being placed on sustainability in government policy, corporate strategy, urban planning and community purchasing. This is creating business opportunities for companies in the plastics supply chain, and in sectors and markets where plastics can add further benefits and value. Manufacturers and designers are starting to rethink the conventional business model, which focuses on the financial bottom line, regards stakeholders as external to the firm, and assumes a linear approach to product life cycles (production→consumption→disposal).

Some of the new business models described here are reorienting products and processes to meet triple bottom line sustainability goals (social progress, economic growth and ecological benefit); building new partnerships with stakeholders; and helping to facilitate circular product flows (with products being recycled rather than going to waste).

In conjunction with these new business models, it is important to anticipate future opportunities by monitoring trends such as growing and ageing populations, as well as new technological developments. This will enable companies to remain innovative and, importantly, will open up new business opportunities.

Model 1: Reorienting the product and/or service mix

Many companies are reorienting their product mix in response to changes in consumer values and attitudes to the environment. There is increasing demand for particular products, either in response to regulations (e.g. water restrictions and the ban on incandescent light bulbs) or because consumers want to 'do their bit' for the environment. In 2006 residents of New South Wales were asked about the frequency of pro-environmental behaviours during the last 12 months: 76% said they had often or sometimes chosen better household products; 92% had reduced water consumption; 90% had reduced energy consumption; and 66% had avoided products with excess packaging¹.

Businesses are creating new products that respond to increasing consumer demand for environmentally and socially responsible products. Traditionally the focus was on value for money, i.e. functionality, cost and service. These issues are still paramount, but consumers are starting to place a higher priority on ethical and environmental issues. They are looking for products that:

- save water, e.g. tanks, pumps, shower timers and irrigation systems;
- reduce energy and/or greenhouse gas emissions, e.g. solar cells, insulation, compact fluorescent lights, 'smart meters' and electric cars;
- reduce waste, e.g. more efficient packaging, reusable or recyclable products and compost bins.

Some manufacturers are adding a new service to their business to capitalise on their knowledge about D4S and life cycle management in relation to their products. BASF, for example, has developed a tool called 'Eco-Efficiency Analysis', which is used to evaluate the cost and environmental impact of products or processes over their life cycle. This service is provided to internal groups within BASF, customers and other external clients, and includes recommendations for improvement².

Opportunities for companies and designers

- Investigate opportunities to develop products or services that reduce environmental impacts (e.g. by saving water, energy or materials) or meet a social need (e.g. by improving water quality or food supply).
- Undertake market research to understand current and future consumer needs and to quantify the potential market for products and services that deliver sustainability solutions.



This portable sink is one of the many new products developed each year to address social or environmental challenges, and is designed to capture and reuse water from the kitchen sink, laundry tub or shower (image supplied by Hughie Products)



Recovered and refurbished carpet tiles installed by Ontera at the University of Tasmania (image supplied by Ontera)

Model 2: Focusing on sustainability

Some companies are restructuring and refocusing their entire business to become more sustainable. The drivers for this are many and varied. In some cases the business owner has a strong personal commitment to sustainability and wants to reduce the ecological footprint of his or her business. Companies are also driven by increasing interest and scrutiny by consumers, investors, banks and insurance companies in their environmental performance.

One example is Ontera, an Australian manufacturer of carpet tiles. Their corporate philosophy is embodied in a statement on their web site: 'We minimise our environmental impact by applying a scientific 'whole of life' approach to everything that we do'³. Over the past 5 years Ontera has reduced the amount of water, energy and resources required to produce modular carpet by 40%. They have introduced EarthPlus®, a program to recondition and reuse carpet tiles. Tiles that can no longer be reused are recycled into carpet backing. New non-polymer backed carpet tiles are being designed for disassembly so that the backing and the face can be easily separated and recycled at the end of their first life⁴.

Opportunities for companies and designers

- Integrate sustainability within business policies and procedures, including for product development (e.g. through PACIA's Sustainability Leadership Framework).
- Measure the environmental and social impact of products and processes, and promote improvements to consumers, investors and other stakeholders (e.g. through an annual sustainability report).

Model 3: Product- to-service

Some companies are pursuing a more innovative business model based on a combination of product and service. For many companies this is driven by a desire to control the way that the product is used, and in the process to minimise any environmental, health and safety and regulatory risks in the product life cycle.

The chemical industry has been a leader in this field with the development of the 'chemical management service' (CMS) or 'chemical leasing' business model. This involves a transformation of the relationship between a chemical supplier and its customers. Under the leasing model, the chemical supplier sells the services provided by a chemical, such as cleaning or lubrication, rather than the chemical itself. The supply contract often involves a range of services associated with the use of the chemical, including procurement, inspection, inventory, delivery, use, disposal, environmental health and safety (EHS), emergency preparedness and liability.

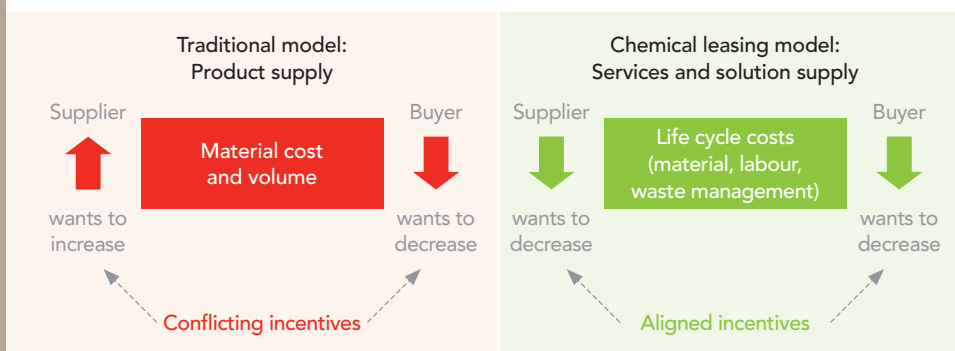
This model provides the supplier with an incentive to reduce the amount of chemical used, to optimise all of the processes involved in the use and recovery of the product, and to minimise environmental impacts⁵. Invoices to the customer are based on product performance (such as chemicals used per m²) instead of material used, which gives both parties the incentive to reduce life cycle impacts and costs (see Figure 1).

Other examples of the product-to-service model include leasing rather than selling appliances⁶ and providing an opportunity for consumers to exchange rather than buy new products⁷.

Opportunities for companies and designers

- Identify the functions delivered by a product (e.g. warmth, transport, cleaning etc.).
- Look for opportunities to deliver the function to consumers as a service rather than a product, or as a combination of the two, in order to reduce its environmental impact.

Figure 1: The chemical leasing business model⁸





Close the Loop reprocesses empty toner cartridges to produce 'e-wood', a plastic lumber replacement made from polystyrene and other styrenic polymers (image supplied by Close the Loop)

Another business innovation is the creation of new partnerships in the product chain in order to 'close the loop', i.e. to recover materials for reuse and recycling (see Figure 2)⁹.

Model 4: Closing the loop

This is being driven by a range of factors which are creating commercial opportunities for recyclers, including increasing community concerns about waste, the expansion of kerbside collection services and the introduction of product stewardship policies. Recyclers have formed partnerships with other organisations in the supply chain, including manufacturers, retailers and customers, to recover and reprocess materials and then to manufacture them into products that these organisations are willing to purchase. This helps to create market demand for recovered materials.

A good example is hardware retailer Mitre 10, which is working with a local plastics recycler, Replas, to collect and recycle used packaging films from their stores. The film is reprocessed into plastic lumber and bollards which are then sold to builders and other customers through Mitre 10.

Another innovative Australian company is Close the Loop, which was established with the sole purpose of recovering and recycling used toner and ink cartridges. The service is provided with the financial support of printer manufacturers, who cover the cost of collecting and recycling the cartridges. Collection boxes are provided in participating Australia Post and Harvey Norman stores¹⁰.

Opportunities for companies and designers

- Undertake research to understand how a product is used, disposed and recovered in the product chain.
- Talk to other organisations in the product chain to find out if there are any opportunities to work together to facilitate recycling, for example by establishing a collection service for used products, by encouraging companies to buy recycled products, or by sharing the financial costs of recovery.

Figure 2: New partnerships to close the loop

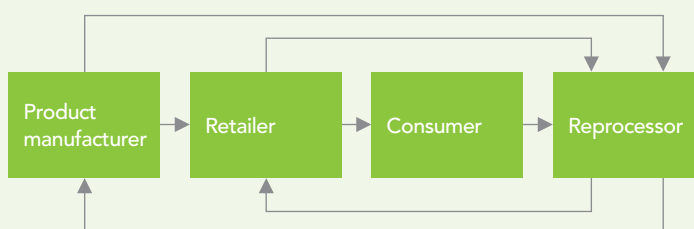
Traditional supply chain model



Product manufacturer and retailer focus on product performance, cost and consumer demand

Reprocessor focus on material supply and end markets

A closed loop business model



Product manufacturer and retailer working together with reprocessors to optimise recovery and recycling in the supply chain and at end of life, through improved design and purchase of recycled products

Reprocessor working with product manufacturers and/or retailers to secure supply of materials and create new markets



Recycled plastic lumber for sale at Mitre 10
(image supplied by Replas)

The Quickstart series is part of the 'Design for Sustainability with Plastics' program managed by a collaborative partnership between Sustainability Victoria and PACIA. The Quickstart series can be downloaded from www.pacia.org.au

The aim of the Quickstart series is to promote the design of products and services that are sustainable—that is, products and services that contribute to social progress and economic growth, as well as providing ecological benefit, throughout their life cycle. The sustainability of a product is largely locked in at the design phase, which is why D4S is so important.

The Quickstarts are written for practitioners at every stage of the plastics product chain, including designers, polymer suppliers, product manufacturers, brand owners, specifiers and recyclers. The series also supports the implementation of PACIA's Sustainability Leadership Framework (2008), which promotes a whole-of-life approach to product innovation and stewardship and the need for step-change 'transformations' in material and resource use.

Further information

PACIA
(for information on life cycle management, D4S, plastics recycling and sustainability):
www.pacia.org.au

Sustainability Victoria
(to download a range of D4S resources):
www.sustainability.vic.gov.au

Footnotes

- 1 Department of Environment and Conservation, *Who cares about the environment in 2006?*, Sydney, p. 59.
- 2 BASF, *Quantifying sustainability: Eco-Efficiency Analysis and SEEBALANCE*, www.basf.com/group/corporate/en/function/conversions/publish/content/sustainability/eco-efficiency-analysis/images/Quantifying_Sustainability_Eco-Efficiency_Analysis_and_SEEBALANCE.pdf.
- 3 Ontera, www.ontera.com.au/Enviro/default.aspx?A=8316.
- 4 Ontera, www.ontera.com.au/Enviro/default.aspx?A=8340.
- 5 Jenny Oldham and Tom Votta (2003), 'Chemical management services: greening the supply chain', *Greener Management International*, 41, Spring, pp. 89-100.
- 6 An example is Fuji Xerox, which sells document management services rather than printers: www.fujixerox.com.au/solutions/global.
- 7 See 'My sister's wardrobe' for a product exchange model: www.clothingexchange.com.au.
- 8 Based on SAFECEM and Dow, 'Chemical product services and chemical leasing as risk management best practice', www.greenchemistryandsustainabledesign.org/SAFECEM%20Overview.pdf, p. 2.
- 9 PACIA (2008), *Sustainability leadership framework for industry*, p. 6.16.
- 10 Close the Loop, www.close-theloop.com.au.

Publication details

Quickstart: Design for Sustainability with Plastics was prepared by Helen Lewis Research for Sustainability Victoria and the Plastics and Chemicals Industries Association (PACIA) with input and advice from practitioners and others involved in the sector.

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