

Fresh thinking

The development of new and innovative packaging materials will remain a key theme in the efforts of brand owners and their packaging partners to improve sustainability. Yet the obvious choices about which materials to use may sometimes be shortsighted. The best blend of materials and packaging processes must be considered in the context of the entire supply chain. Jim Banks speaks to Nestlé's global head of packaging **Anne Roulin** about the latest developments.

Despite the belt-tightening that the economic downturn forces on many consumers, brand owners and packaging companies continue to invest in the development of new materials. Their focus on sustainability remains firm despite the recession, as does their desire to ensure that packaging is a strong messenger for any brand.

Whatever the fluctuations in the world's economy, product companies must still balance their commercial needs with their environmental obligations.

"Our budgets have not been cut back

because of the recession," says Nestlé's global head of packaging, Anne Roulin. "It is very important to us that we still invest across a range of products. We still evaluate new materials and work across all our brands. Our main goal is to reinforce our brand identity, but alongside that we continually reduce the environmental impact of our packaging and our products. We view both as a whole, and materials are a part of that process,".

Nestlé has clearly demonstrated its commitment to sustainability, particularly

in regard to the development and use of innovative packaging materials. It was the first company in Europe, for example, to introduce a biodegradable plastic for use in the packaging of manufactured food products.

It has, therefore, a good vantage point from which to view the development of new materials that combine the qualities of high performance with a minimised environmental risk from their production, use and disposal. Materials, however, are just one piece of a much larger puzzle when it comes to sustainability, and the



The potential of PIOET

PIOET, the packaging impact quick evaluation tool, will play a major role in determining Nestlé's approach to sustainable packaging in the years ahead, and is likely to have a significant impact on its choice of packaging materials.

- Developed by the Centre for Design in Melbourne, Australia, PIOET addresses identified gaps in the knowledge, selection, design and use of sustainable packaging materials.
- It provides a credible, business-ready tool to enable packaging decisions that fully account for environmental considerations.
- It is a rapid lifecycle assessment tool that helps companies identify priority areas, set targets, develop optimised packaging systems and track key performance indicators
- It enables users to assess packaging specifications, manufacturing and distribution data, and environmental metrics and compare these to industry standards.
- Initially launched in 2008 for Australian businesses, the development of version 2 began last year, with the aim of globalising the system to make it relevant to international organisations operating in a world-wide market.

company is championing the drive to look at this issue in the broadest possible terms and take into account the impact of the entire value chain.

"We look closely at materials from renewable sources, but we feel that there are really no good or bad materials. It is about how they fit into a specific application, whether it is paper, glass, plastic or anything else. You can't generalise about the qualities of particular packaging materials. You must look at it in the broader context of the product lifecycle," explains Roulin.

A superficial judgment of the choice of packaging materials is often of no use, as it fails to take into account the implications of that choice across the supply chain. Nestlé has, for instance, consciously used a packaging material that may at first seem to have more environmental impact than alternatives, but which has in fact had a positive

impact on sustainability when the whole lifecycle of the product is taken into account.

"For large containers of pet food we moved from paper to woven polypropylene. With paper, a lot of the packs split, so across the supply chain the environmental impact of the product was higher. Metrics around sustainability are often too simplistic, particularly those pushed through by regulators and retailers. I am glad to see that the announcement about the Courtauld Commitment Phase 2 is broader in its definition," comments Roulin.

"We are active in cross-industry working groups on sustainability metrics. Attitudes are evolving, but there is still a lot of greenwashing going on."

Same goals, new systems

Part of any meaningful commitment to sustainability is the investment in systems that help to optimise choices of materials and packaging design. One

Although it is relatively new, PIOET is seen as a very important application for Nestlé, and Roulin expects it to start delivering tangible benefits in the near future. Its potential has led the company to invest heavily in terms of time, effort and money in the system.

"PIOET required a lot of effort. It was designed in Australia and the data related only to Oceania, so we had to ensure that it was valid world-wide. We were the only company to push for that. We did it ourselves, working with the system developers, which meant an expensive validation process. It was a significant effort on our part. It is a recent implementation but there are a lot of interesting developments in the pipeline," says Roulin.

PIOET represents the next stage in a long-running packaging strategy focused on source reduction, which Nestlé implemented in 1991. That long-term commitment has been paying huge dividends in recent years. In 2008, the

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system that will have a significant impact on such choices in the years ahead is the Packaging Impact Quick Evaluation Tool (PIOET) [see boxout], which Nestlé has recently deployed to shape the future of its packaging pipeline.

"The introduction of the PIOET tool has made a huge difference. We can calculate the impact of different packaging choices at the start of the development cycle. It means we are not focused on just one factor like carbon footprint. It has been extremely important for us," notes Roulin.

"With our global SAP system we can look at all our purchasing data world-wide through one application, so we can focus on where we can make the most difference. We are active in over 150 countries world-wide, so it could be hard to keep track of all the data without a system like that."

company saved 58 million kg of materials, and – despite much of the low-hanging fruit having been harvested already – in 2009 it saved 59 million kg.

One area in which significant amounts of packaging material have been cut out is in the design of plastic bottles used by Nestlé Waters. Carbon embedded in the PET resin for each bottle accounted for 55% of the greenhouse gases of Nestlé Waters North America, so the company worked to reduce the amount of PET by 40% over 15 years. Then, in 2007, it launched the EcoShape bottle, which contained a further 14% less plastic.

"Nestlé Waters has been a big part of that saving, thanks to the lightweighting of bottles, but there have been savings across many of our products lines," Roulin points out.

"Lightweighting can only go so far. If you remove so much packaging that damage to the product increases then the

Nestlé and bioplastics

- Research is ongoing into bioplastics derived from plants, algae and other biomass.
- The programme in Paris complements existing partnerships with material suppliers to develop new materials.
- Nestlé has worked with Indian packaging supplier UFlex on a new PET film of which 30% is derived from the sugar by-product molasses.
- The UFlex PET film is already used in flexible sachets and pouches in India and Asia, for products including Maggi noodles, soups, sauces and Kit Kat chocolate bars.
- The material is 15% thinner than the world-wide standard of 12 microns.

process becomes very counterproductive. We are also working to increase recycling and recovery rates. We use recycling materials where that is appropriate and we use materials from renewable resources where possible," she adds.

This claim is borne out by Nestlé's role as one of the industry sponsors of research into bioplastics at the École des Mines in Paris, which began last year (see box above). The first of its kind, this collaboration is part of the company's Sustainable Development and Creating Shared Value initiative, and will focus on the study of the properties of polymers derived from renewable resources, and their potential industrial applications.

Broad horizons

In some cases, Nestlé has already moved to replace packaging materials with more sustainable alternatives. Last year, for instance, it replaced non-recyclable packaging in the majority of the 25 million Easter eggs it makes with recyclable cardboard, as well as reducing the overall amount of packaging material by 30%.

While such a move is an obvious swap of one material for another that clearly has better potential for recycling, when it comes to making the judgment on which materials to use, Roulin insists that a very broad set of measures must be taken into account. The obvious choice may not necessarily be the best one when

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considered in the context of the entire supply chain.

“We must look not only at the carbon footprint of a material, but also at other environmental impact factors such as water usage, solid waste, land use, and non-renewable energy. With respect to materials from renewable resources, we need to consider whether it replaces food production or whether it requires water that is then taken away from other vital needs, such as domestic needs,” Roulin explains.

Taking this view has led to some novel choices, including the replacement of one material derived from a renewable resource with another that has better credentials. In one confectionery product, for instance, a more traditional material – cellophane – has been replaced with PLA. Cellophane comes from a renewable source, but requires a lot of energy in its production. PLA requires much less energy in its fabrication.

“We are leading the way in taking the broadest possible view on the environmental impact of packaging materials, including looking at the wider implications of agriculture, and also the products themselves,” says Roulin.

The focus on agriculture and, indeed, the entire supply chain is evident in the company's approach to coffee products. As well as lightweighting the packaging, the focus is also on working with local farmers to promote sustainable farming techniques and ensuring that the use of water for coffee production does not negatively impact the availability of drinking water in local communities. The company's R&D centre in Tours is also looking at high-yield and drought-resistant coffee varieties.

Such an approach is not adopted solely for commercial reasons, or to add a greenwash to the brand.

“It is part of our responsibility as a large corporation, although it must also fit into

our brand context. It is about Creating Shared Value, which is how we do business. The brands must fit into that ethos. For some consumers, sustainability is very important, but we do it not just because they want it, but because it is right,” stresses Roulin.

“Our ambition is very broad, but we look at each packaging decision application by application. It must come down to very specific packaging choices, including the choice of material, at the start of the development cycle. P1OET is the starting point, and then we do a lifecycle assessment at the end of the process.” ■

Anne Roulin

Having studied chemistry and materials in the UK up to doctorate level, which was in the field of adhesive bonding of aircraft structures, Nestlé's global head of packaging, Anne Roulin began her career at the Swiss Federal Institute of Technology in Lausanne where she worked for nine years and was responsible for teaching and research work in composite materials.

From 1988 to 1998 she worked for Tetra Pak in Switzerland, the US and Italy in the areas of package development, barrier technologies and aseptic filling.

From 1999 to 2003 she founded and managed PTI Europe – a consulting company specialising in the research and development of PET container technologies.

From 2003 to 2005 she was responsible for Package & Product Development at Nestlé Waters in the Product Technology Centre for Water in Vittel, France.



In 2006 she was appointed global head of packaging and design for Nestlé based at its corporate headquarters in Vevey, Switzerland, reporting to the chief technology officer, Professor Werner Bauer.