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- Food waste

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Its contributors:

Philippe Thuvien
L'Oréal

Richard Mallett
HACCP Europe

Roland Nicolas
Serac

Vincent Ferry
Danone research

Annette Freidinger-Legay

Arnaud Rolland
Coca-Cola Entreprise

Fabrice Peltier
Diadeis

The white paper is instigated by the GEPPIA

Packaging & Processing machinery-The French Trade Association

www.geppia.com

GEPPIA

PACKAGING trends

The Geppia's Packaging Trends white paper: a nugget of collective thinking

This exclusive white paper was instigated and put together by the French GEPPIA (Packaging and Process Machinery trade association) with the support of its members. It is an integral part of the association's mission to advocate, support and share information about the industry it serves.

In order to achieve this, the GEPPIA has brought together experts from a variety of backgrounds and countries to express their view on the future constraints that may be either a common denominator or an opportunity to grow.

The GEPPIA represents today over 80 manufacturers and 4000 professionals, mainly based in France. Their cumulated sales turnover in the sectors of processing and packaging machinery exceeds 1 billion Euros.

Analyzing and consolidating the future packaging and manufacturing trends will help you, market players, anticipate the challenges and keep your competitive edge by innovating in line with your customers' requirements.

You are about to get a sneak peek at our white paper, which results from the expertise of our trade association's members, and more specifically of its contributors who have supported the publication since the beginning.

The excerpt is the first step in the white paper. More expert contributions are planned in the next weeks, so keep posted and give us your feedback about what you've read so far.

We hope our content enlightens you,

Jean-Marc Doré
GEPPIA President and Founder

PACKAGING

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experts

Philippe Thuvien
Packaging & Development Director
L'Oréal

Richard Mallett
Director
HACCP Europe

Roland Nicolas
Dairy & Aseptic Business Development Director
Serac

Vincent Ferry
Packaging Manager
Danone research

Annette Freidinger-Legay
International Packaging Expert
Keynote Speaker

Arnaud Rolland
Sustainable Development
Coca-Cola Entreprise

Fabrice Peltier
Design Expert
Diadeis

Trends are opportunities if you seize them

Anticipating the consumer brands' needs when you are a packaging manufacturer can be a daunting challenge. This industry white paper, that groups the insights of major retail industry players, food manufacturers and consultants, lays out what tomorrow's trends are likely to be.

The publication, edited by the Geppia, the French Packaging and Processing Machinery association, is entitled "**Packaging Trends**" and is available in both print and digital formats. Its scope covers Europe, North America and Asia. Many viewpoints are brought together, in order to give you the most objective information, a welcome change to the instantaneous and rarely cross-checked information available on the web.

"**Packaging Trends**" is also a website, whose content will be enriched as comments and further contributions are made.
In a fast-changing environment, packaging industry players need to detect emerging markets, understand the brands' strategies, anticipate consumer needs and keep an eye on distribution channels.

New packaging formats, increased consumer health protection, energy saving, sustainability and purchasing power evolution: all these parameters impact to a different degree depending on the geographical zone how food is processed and packaged. Better be abreast and surf on the future market shifts!

Henri Saporta, chief editor
Emballages magazine

Packaging, a key vector of innovation

Philippe Thuvien
Packaging & Development Director
at L'Oréal

Packaging and design are now key vectors of innovation in the world of cosmetics, especially in the current global economic environment which calls for faster innovation processes, in line with the macro-economic trends. Cosmetic companies must innovate more and faster in order to remain competitive.

The world of cosmetics is facing increasingly aggressive competition. Attractive designs are a must-have to differentiate new products. Our sector is also paying more and more attention to costs. With millions of new consumers, emerging markets clearly begin to see their incomes increase, allowing them to buy cosmetic products, provided that they are adapted to their needs, culture and purchasing power.

On the other hand, because of the economic downturn, many consumers in developed countries are reducing their expenses. Packaging should thus allow men and women to purchase cosmetics by offering products adapted to their market. For example we sell a Garnier shampoo in a 400 ml bottle in North America, in a 250 ml bottle in Europe and in 2.5 ml packs in India, in the Philippines or in some South American countries.

Offering ever more efficient packaging

Our consumers' safety is a requirement. It is therefore non-negotiable. But beyond this prerequisite, they expect that our products have a true added value, i.e. more visible and measurable results and flawless quality.

In order to achieve this, we are improving the ergonomics of our products by developing new features such as, for example, a greater comfort of use or a more practical formula dispenser. Olia for example provides ammonia-free hair coloring in a bottle which is both elegant and easy to handle.

Other packages enhance the anti-fatigue effect of the formula - as in Mennen Roll-On Eyes with an icy massage effect - or thoroughly clense the skin, like the 'Perfect Clean' of L'Oréal Paris and its massage-like applicator.

Packages also make it possible to create mixes by coupling formulas to a diagnosis so as to customize the treatment - as in Kerastase Fusio-Dose.

Meeting sustainable development issues

Another concern of cosmetic brands: meeting sustainable development issues with more environmentally friendly materials that preserve fossil resources and reduce energy consumption, like Lancôme polyethylene tubing, Kiehl's PET bottles and Biotherm recycled glass jars.

On the whole our materials will be the same tomorrow as those we use today, with one difference : they will no longer come from fossil energy sources but from bio-renewable, and/or recycled resources. We must also make sure that our folding cartons and paperboards (FSC or PEFC certified) are sourced in a responsible manner.

In addition we have introduced a policy to reduce packaging and secondary packaging, both for our packaging used between our suppliers and our plants and for our products themselves. And we have committed ourselves to reducing the waste generated by our finished products by 50% between 2005 and 2015, alongside our water consumption and CO^2 emissions.

The L'Oreal plant in Jababeka (Indonesia) is, for example, LEED certified, an American standard that defines strict rules for sustainable building design (in particular, rational use of water and energy). Other Group production sites (for example, Settimo Torinese in Italy, Libramont in Belgium) have set the objective of rapidly reaching zero carbon footprint.

The cosmetics industry should also anticipate the regulatory and media expectations. The 'fair' protection of our formulas is for example a focus. The quality of raw materials, the formulation, the manufacturing and packing processes and the packaging fall within this scope.

Finding the most suitable machines for each of our needs

We adapt our manufacturing processes and our packaging machines in order to address these challenges. Our objective is to find the suitable materials for our performance, quality and reliability requirements. On basic products and high volumes, this involves having powerful machines in terms of speed with very few adjustment points to make the process more reliable. On the other hand, for complex and/or high value-added products, the focus will be on flexibility in order to better respond to the brand requirements in terms of innovation and to adapt to several products.

The more we optimize our deadlines for making the machines and tools available, the better we are as regards reactivity and capacity to produce at the best possible cost. And, because employee safety is a priority for L'Oréal, each investment is subject to a safety-risk assessment.

Traceability, a key factor

The traceability of our products is regulatory. It is a key factor to fight against counterfeiting and the parallel market, and thus to protect our consumers from purchasing counterfeited cosmetic products.

In addition, the interactive and multimedia packaging features are great vectors of innovation and differentiation. We keep a close watch on coding and authentication solutions to apply those most suited to our needs:

· Securing our products: always staying ahead of counterfeiters,
· Globalizing information and data exchanges by using the potential of new technologies (integrated electronics, miniaturization….),
· Interactivity with consumers: offering them more services and information, once again through new technologies (Smartphone and QR code…).

Smart packaging makes it possible - beyond its primary function which is to protect, transport and preserve the product - to inform and advise the consumer, for example on colors (make-up and hair coloring). It is also a promotion and advertising support for the brand. The challenge is to integrate the new communication channels (QR codes, RFID, conductive ink…) on our traditional media: folding cartons, labels and sleeve, with the constraints of monitoring retraction for the latter.

Over 70 packaging patents filed each year

In order to answer all these expectations and constraints, brands must innovate continuously. Packaging is therefore more than ever a key vector of this innovation. L'Oreal thus strongly invests in research and innovation, and, for example, filed more than 600 patents in 2012 (including over 70 packaging patents). Because it is through innovation that the Group will manage to achieve the objective it has set: winning one billion new consumers within ten years.

L'Oreal's Research & Innovation and Marketing departments are responsible for developing products combining high levels of quality and performance. We have just opened a new research center in India, and will soon open another in Brazil to develop products corresponding to local expectations.

A collaborative innovation

In order to reinforce the partnership with its suppliers and accelerate packaging innovation, L'Oreal, in addition, launched the Cherry Pack operation three years ago. It enables our suppliers' packaging innovations to enter 'at the heart' of the company while offering brands throughout the Group's divisions 'ready to use' or more prospective innovations.

The process can be compared to an internal incubator, within which the selected suppliers share their expertise and invent ways of delivering new formulas, creating appealing looks and new ways of consuming the product. As a result L'Oreal binds closer links with its suppliers and accelerates the innovation process.

Food Safety - a zero tolerance approach to food safety hazards

Richard Mallet
Director of the of HACCP Europe

During the latter part of the twentieth century and the early part of the twenty first century, food safety has been a major concern and this has been reflected in the evolution of food safety legislation worldwide. Food distributors and their suppliers must now prove their credentials to satisfy the requirements not only of food safety regulatory bodies but also of food retailers, who seek to mitigate risk arising from uncontrolled food-borne hazards.

Food safety issues regularly make the headlines worldwide. However what does that expression really mean? Food safety is defined as taking all possible control measures to ensure that food is safe. This means that the risk of food contamination should be eliminated or at least reduced to the lowest possible level so that food served or sold to customers is eaten without incurring any risk to their health.

A universal issue

Food safety concerns everyone. Companies have become aware that the topic is of critical importance. The most senior directors now seek to incorporate it as part of their overall strategy to protect their brand. They are increasingly sensitive to food safety issues including contaminated raw materials, hazards introduced during processing and packaging, and hazards induced by food contact with materials.

Manufacturers have good reason to be sensitive. Across the globe there are laws to prevent contamination from any source. In the field of food processing and packaging it is required that food be protected from chemical products that may migrate from the container or the equipment and get to the food product itself.

Awareness is important both at the distributors' and suppliers' level. The retail industry across Europe and indeed across the world have set up best practices, administered for the most part through the Global Food Safety Initiative, and in the form of Global Food Safety Standards to be adopted by food manufacturers. These standards require assessment and control of food safety from all potential sources, including raw materials, processing, packaging and labeling.

Labeling is a critical issue. A significant number of product recalls are a result of incorrect labeling, with incorrect allergy advice being one of the greatest causes. European regulations regarding labeling are constantly evolving. They lay out very clearly the requirements concerning clear labeling. However control of labeling, to ensure that food enters the distribution chain with the correct information is down to the food manufacturer.

Suppliers and equipment manufacturers are also concerned

The need to assess and control food safety hazards is extending rapidly now to non-food suppliers. The food processing industry recognizes the risk from this source and demands evidence of compliance that processing and packaging equipment can be used without risk to the HACCP (Hazard Analysis And Critical Control Points) based food safety management system.

Already an increasing number of suppliers within the food chain, right up to and including supermarkets, is searching for equipment manufacturers that can prove that their equipment or materials will not lead to health hazards through contamination or migration. Food processing and packaging equipment manufacturers are not forgotten when it comes to the Global Food Safety Standards, benchmarked by the Global Food Safety Initiative and used by supermarkets to approve their food suppliers.

As just one example, the BRC (british retail Consortium) Global Food Safety Standard requires control of food safety in materials, processing and packaging, and also equipment and environment. More and more food processing companies are looking for a guarantee from their food and non-food suppliers that using

their materials will not undermine their HACCP based controls. Equipment and material manufacturers supplying the food industry are beginning to see this as an opportunity to show that the design of their machines supports the principles of food hygiene control based on HACCP. It is becoming something of a competitive advantage for those equipment and material manufacturers that achieve a food safety based certification such as that provided by the HACCP International Certification body.

The HACCP mission

For over 50 years, The World Health Organisation has promoted food safety control through HACCP worldwide and its Codex Alimentarius publication. The principles require an assessment of food safety and security from all the sources, not only for ingredients and food production line operators.

Legislation across the world now requires that food manufacturers implement and maintain a documented HACCP system. The European Food Hygiene Regulations is one example of how this requirement is mandated across a whole continent! The major supermarkets also demand that their suppliers implement and maintain an HACCP system. For example the BRC (British Retail Consortium) Global Food Safety Standard used by retailers to approve suppliers within the food chain, require a food manufacturer to maintain, validate, verify and review an HACCP Plan.

The mission of HACCP, managing food safety, is also applicable to non-food, including packaging and processing equipment. Indeed the principle of HACCP is used by my own organisation, HACCP International, a certification body for equipment and materials, ranging from processing equipment, packaging equipment, chemicals and materials of fabrication such as hygienic wall and floor materials.

Equipment and materials are assessed, following Codex Alimentarius HACCP Principles, for any potential risk to food arising from unhygienic design, design characteristics that may lead to increased risk of food contamination, consequence of error in use or misuse, poor quality user manuals or service manuals, or unsubstantiated food safety based claims. The equipment or material supplier can then present the HACCP International Certificate to the food processor to demonstrate that the article or material is safe for use in a food environment. This in turn supports the HACCP plan implemented by the food processor or manufacturer.

Towards unlimited control

Generally efficient and full control is the only way of reducing the risk of food safety in the food industry. Automation will remove any elements associated with human error, but this does not mean that automated systems can be relied on without correct commissioning and verification - an operator must necessarily check that the quality of automatic control is constantly optimized and effective.

Integrity of packaging and labeling is also the last line of defense: if a food product is contaminated, improperly packaged or labeled, the probability that this food product ends up at supermarkets increases – the product will have entered the food distribution chain already.

A temporary competitive advantage

In the zero-risk race, the developed world, with a history of robust and mature HACCP based controls, may still keep a small window of opportunity and a competitive advantage in with regard to food safety. But for how long? Emerging countries learn and develop very quickly. Some have already tightened their rules regarding food safety, often using European Union Food Hygiene Regulations as a template for the improvements that they make to their own food safety legislation. Within five years, the differences between the two worlds will have disappeared.

Aseptic milk packaging: new trends

Roland Nicolas
Dairy & Aseptic Business Development Director
at Serac

France has been a pioneer in the field of aseptic milk bottle filling in Europe. The French may even be the world's greatest plastic bottled UHT milk consumers ! Serac's objective in this field is to meet the manufacturers' constantly evolving demand and to adapt its range of aseptic machines in order to address new trends.

Milk shelf life in France is traditionally high, in response to the retailers' requirements and the inconsistent quality of the collected milk, which forced manufacturers to use extensive heat treatment. The quality has improved significantly for a number of years. Now 95% of milk in France is UHT. Yet there is a variety of milk processing methods throughout Europe.

Belgium, Spain and Portugal follow the same pattern as France. By contrast, Northern Europe favors pasteurized milk. As for Germany and Italy, they offer both fresh milk and UHT milk. The European drinking milk market is therefore not homogeneous.
Bottled UHT milk has just started to develop in Russia, where the first aseptic line has just been set up.

The main advantage of milk aseptic filling is that it can be used to extend the milk shelf life with a lesser deterioration of organoleptic properties of the product compared with sterilized milk for example.
The reason is that milk, which is highly nutritious , is one of the most sensitive products from a microbiologic and organoleptic point of view.

Complex decontamination solutions

Today, as far as Serac's aseptic lines are concerned, there are several solutions to decontaminate plastic bottles for UHT milk. First of all, an aseptic blowing machine can be used to produce a sterile co-extruded and blow-molded HDPE bottle that consists either of six layers (light and oxygen barrier) or three layers (light barrier only). No chemical treatment is thus required inside the bottle.
The bottle is then trimmed just before being filled in a sterile atmosphere.

Second, for open-neck bottles, including PET bottles, "wet processing" with a peracetic-acid based liquid solution (PAA) or "dry processing" with a hydrogen peroxide-based gas solution (H2O2) can be used.
Unlike PAA processing, H2O2 processing has the advantage of not requiring sterile water rinsing after processing. It therefore reduces overall water consumption.

Innovating to add value

Although milk remains a staple product, its manufacturing requires complex processing : UHT sterilization of milk, aseptic filling, barrier materials, and therefore a high production cost.

In order to attract new market players, technical innovation is therefore important. As a pioneer in the design of aseptic filling machines, Serac is continually investing in R&D in this field. One of the major fields of research in packaging decontamination is the electron beam or "E-Beam".
With this process, it is possible to avoid using chemical products. Nowadays, there is growing interest in «chemical-free» processes. E-beam is therefore one of tomorrow's solutions.

Towards smaller and more flexible machines

Demand is also evolving in terms of machines. High output volumes enable the large dairy companies to write off their production units.

Newcomers on the other hand look for smaller machines with slower outputs, especially on the new markets. They also tend to favor bottles versus cartons because they stand out on the retailer shelf.

Greater flexibility is another emerging trend

In order to make investments profitable, food manufacturers also wish to fill different products on the same line, such as fruit juices (products with acid pH) or fermented milk (non-sterile chilled products). We are therefore starting to have requests for flexible multi-product lines in order to produce extended shelf life and cold chain products on a same line. Flexibility in packaging materials is also required, with lines that can fill both polyethylene and PET bottles.

Lastly flexibility is required in terms of packaging sizes, with lines filling both quarter of a liter and one liter containers. We have therefore developed neck transfer systems which are used to rapidly change the format without requiring machine sterilization.

To sum it all up, production lines must be more flexible in terms of products, materials and formats, while retaining their primary objectives: product sterility and integrity, as well as performance of the filling line.

Column written further to Roland Nicolas' interview

Packaging innovation: “The problem is not to find ideas… but rather to find what the problem is”

Vincent Ferry
Packaging Manager
at Danone Research

Successful innovation is a subtle mix of boldness and simplicity. “Why didn’t we think of it before?” - this remark about innovation precisely demonstrates that it is successful. In order to find a good idea, however, the right problem should be found first. Simplicity and meaning are in fact the two fundamentals necessary to design tomorrow’s packaging.

Innovation is above all a matter of finding the “true” problem to be solved; the one with potential. At Danone, our new yogurt pot, KISS, is a major example. Firstly, its name shows the search for simplicity: “Keep It Simple and Safe”. It was undertaken because the packaging of Danone Fresh Products had to be simplified. Thus, this brings consistency in the range and message and results in true differentiation on the retailer’s shelf thanks to its look and ergonomics. It has improved our operational flexibility through standardization. Lastly, Danone has thus initiated a return to basics by drawing on its roots and DNA: displaying its products in an original and friendly manner.

As a result, both packaging differentiation and ergonomics have been achieved with the KISS pot.

Reinventing the yogurt pot

The concept struck me during the Danone Convention in February 2009 : the special series of yogurt pots made for our 90 year anniversary aroused in me a creative flash. I told myself that the Danone pot had to be reinvented. Although the idea was simple, yet it had to be achieved with a modern technology adapted to the contemporary world. And above all we had to convince the group’s senior executives to adopt it.

The design work consisted in analyzing and meeting the consumers’ needs while considering the numerous constraints (economic, industrial, logistic, environmental, legal …), in order to shake them up and enhance them in the end. In total, the development lasted two years in which we carried out an industrial pilot with ARCIL, our machine supplier, as well as consumer tests.

The group then decided to make a first “life size” launch in Spain in July 2010 on 5 of our brands. Since Spain owns ERCA machinery, this configuration made it possible to include the constraints of our two main suppliers by defining a standard fitting for the single pot concept, whatever the machine used.

Concurrently with the new packaging, we also improved our recipes and made our store displays more appealing. Velouté was the first brand to benefit from the repackaging in September 2012 and recorded a 20% growth in volume.

Integrating new machines and transforming the existing ones

This in-depth transformation obviously mobilized many resources within the company. It required that the company invest in new machinery. In particular, we changed the molds, the cutting devices, sealing pieces, and adapted conveyors and the wrapping system.

In the end, this work greatly exceeded the purely technical perimeter. KISS is more than a product: it is a unifying concept.
We had to organize the support of our personnel through, in particular, training, and redesigned our plants (moved walls, changed ceilings, gutters and tiles, reorganized our stock…), without stopping production. A true challenge! Today, we have upgraded half of the machinery with, overall, performance exceeding the set objectives.

Rethinking packaging

The objective of Danone Produits Frais France is to reduce or remove packaging, when possible, in order to improve its carbon footprint while retaining satisfactory protection, display and consumer information levels. April 2010 was a significant step with the removal of the secondary packaging on the Activia and Taillefine brands – 1,600 tons of cardboard saved, i.e. the equivalent of 2,500 tons of CO^2.
Then, in April 2011, four brands reduced secondary packaging on their large formats – i.e. 1,000 tons of cardboard saved or 1,800 tons of CO^2 equivalent.

In the wake of Activia and Taillefine, Velouté is starting its metamorphosis. Until now, we could not remove secondary packaging because the former pot had no individual decoration. Thanks to KISS, it is now possible.

We must bear in mind that packaging plays a major role in the life and identity of the products. They contribute to their protection, make them easy to find on the shelves and display consumer information. The difficulty lies mainly in graphic design. Basically the same brand visibility and amount of information must be conveyed over a smaller printing surface. A true challenge for graphic design agencies! What is at stake is worth the effort: from an environmental point of view, cardboard represents a total of approximately 20% of the packaging carbon footprint!

Choosing the right materials

The choice of materials is another research area. To minimize the environmental impact, eight levers have been identified: reducing packaging quantity, increasing transportation density, recycling industrial waste, using recycled and plant-based materials, integrating the existing collecting, sorting and recycling channels, favoring 100% consumption without waste and giving materials a second life.

In the years 2006-2007, we used expanded polystyrène on our yogurt pots, which resulted in reducing the quantity of packaging and decreasing the weight of the pot by 20%. Regarding the KISS pot, we wish in the future to reintroduce expanded polystyrène. The first tests have just started.

Constantly reinventing ourselves

And we are not going to stop there in terms of innovation. We must reinvent ourselves every day ! I recommend relying on common sense and respecting the rule “let’s keep on simplifying”.

Successful packaging connects consumers to their product. Let’s not forget that packaging is the first media that is in contact with them. They have it in hand when purchasing and consuming. It must therefore enhance the outlet shelves and convey a strong message. Successful packaging also connects the manufacturer to its partners and suppliers. What KISS does within the company can also be seen outside. KISS is the showcase for Danone’s expertise and its ambassador. Successful innovation is like hitting a strike at bowling: when the ball is launched in the right direction with the right energy, striking is systematic. To achieve this, technique, experience and a lot of common sense are needed!

There is still much to invent in processing and machine design

Annette Freidinger-Legay
International Packaging Expert

Let's be honest: today's society is rather gloomy. Economically speaking, we are not overcome with euphoria! And this affects the behavior of consumers who claim for smart shopping and increasingly favor snack food. This may lead to increasing innovation and inventing new ways of processing materials - while still looking for new sustainable materials. It is now essential to 'give added value to packages at a lower cost'.

In order to treat themselves despite this air of gloominess, French people want to make their everyday life different and purchase product with an emotional value that makes them happy. Limited editions take off, both in the high volume consumer goods and the luxury industry with Champagne.

Because people have less and less time, snack foods are more and more popular… with significant consequences on packaging. Packaging must preserve the food from extreme external temperature variations, include different ingredients, be easy to open, be heatable in the oven, microwave oven and in a water bath, while preventing burns! Brands, whatever the sector, have to innovate and meet both environmental requirements and the snack food trend.

How can we fight both against food waste and for packaging reduction?

Fighting against food waste has also emerged for some months. However, it might go against the fight for packaging reduction that has been on since 1992. For environmental protection purposes, we have worked on the reduction in weight and thickness of packaging materials, and on a weight ratio favorable to the product rather than the packaging. This tends to favor large containers.
This brings up a critical issue : what should be favored: fighting against food waste by offering small quantities and individual doses, or protecting the planet by generating less packaging waste using large containers?

The solution might lie in 'portion-sized' or re-sealable packaging that would allow deferred consumption or in active and clever packaging that would allow a longer preservation of the product, including once it is opened (through food substances that fight against oxidation like Vitamin C), or that would avoid the development of micro-organisms on the packaging wall. Laboratories rely heavily on the properties of essential oils in this area. They undeniably are a great future for tomorrow's packaging.

Today's… and tomorrow's most used materials

According to the last market survey carried out by Pira International, the world packaging production ($670 billion in 2010) should reach $820 billion in 2016 (Source: The Future of Global Packaging - Smithers Pira - January 2012), with an average annual growth rate above 3%.
The growth is mainly driven by urbanization, the development of the health sector, and the development of emerging and transitional economies, like China, India and Brazil, but also some eastern European countries, where purchasing power is on the rise.

Overall the classification of the world's most used materials should remain the same in the next years: cardboard (corrugated and flat) should remain the leader (30.49% of the market, $250 billion in 2016), followed by rigid plastics (24.39% of the market, $200 billion in 2016) that are boosted by the drinks market, cosmetics, personal care products and detergents, and by flexible plastics (19.88% of the market, $163 billion in 2016), used in fresh and processed food products as well as drugs.
Number Four in the market, metal packaging (14% of the market) should decrease by 2016 in favor of rigid plastics. Lastly, number five on the market, glass should still increase but at a slower rate (6.46% of the market, $53 billion in 2016).

Countries with strong environmental sensitivity favor cellulosic fibers, i.e. paper-board. Japan, which has a strong culture of convenience fresh and individual food portions, favors complex flexible materials which ensure that those products are protected. By contrast, for developing countries, we note that rigid plastic materials rapidly take a strong market share since the processing industry for those materials requires significantly less capital than the glass, paper or metal industry. A closer look at the PET penetration rate for water and drink bottles worldwide speaks for itself.

New materials have adjusted their strategy

New materials have slowed to a standstill. 5 years ago, considerable publicity was made around biopolymers. But now we are realizing that using corn or wheat to make packaging materials was perhaps not the wisest thing to do knowing that one billion human beings have no food! Bio-based PET is still used but it comes from sub-products such as sugar cane residues. Some are looking for starch sources that could be available without using corn, such as potato wash water. Another reason for the standstill undergone by new materials derives from the regulations that have precisely defined what is meant by biodegradable and compostable materials.

The future technological developments should lead to a greater consumption of better defined biopolymers. The worldwide production of biopolymers should thus reach 5.8 million tons in 2016, according to the association European Bioplastics. Bio-based PET production would thus be 4.6 million tons, i.e. 80% of the worldwide offer in front of PLA (298,000 tons), PE (250,000 tons) and PHA (142,000 tons) (Source: Salon de l'Emballage, France, 2012).

The focus is also on incorporating recycled materials in packaging. As regards corrugated board, a traditional cardboard box often contains up to 80% of recycled fibers. A wine bottle may be manufactured with 100% recycled glass. Aluminum, whose transformation requires a high amount of energy, is worth recycling. Progress is being made not only on recycling processes which, for example, allow to put recycled PET in contact with food according to drastic European regulations, but also on automated sorting systems that in the future will allow consumers to put all their packaging wastes in a unique dustbin. There is no longer reference to waste but to secondary materials.

From my point of view, the future belongs to active materials whose permeability will be perfectly mastered in relation to gas and steam and which will be able to regulate the atmosphere, thus preventing the development of micro-organisms inside the packaging, and extending the life duration of food products once the packaging is opened. Nano-particles have interesting physical properties in this context… but for the future… and provided that regulations allow it. However, it is certainly an avenue worth exploring to fight against waste.

– There is still much to invent in processing and machine design –

Now is the time for the virtuous circle of recycling

Arnaud Rolland
Sustainable Development Manager
at Coca-Cola Entreprise

We are entering a new era where the price of raw materials is increasing as they are becoming less available. Manufacturers are getting more involved in optimizing the materials used in their packages, in reducing their purchasing volume and recycling rather than buying new raw materials. The objective is both environmental and financial . It is a real long-term trend.

Recycled materials clearly are tomorrow's materials. Their potential is endless. Progress must be made in the supply chain and in public awareness. This is what is called the circular economy, also known as «cradle to cradle». In the light of the shortage in resources, it is more necessary than ever to re-use those we have and invest in the search for new materials, that will allow us to do without non-renewable resources - like second generation bio-based plastic, a promising solution in the field of packaging.

Reducing the carbon footprint of packaging

At Coca-Cola, our objective is to reduce by one-third the carbon footprint of our beverages at the European level by 2020. We are working on the whole life cycle of our goods at six stages: ingredients, packaging, production in our plants, transportation of our products, refrigeration, and end of life. The packaging production stage represents 47% of our overall carbon footprint alone !

In order to reach our overall objective, the first step consists in working on reducing raw materials. Packaging production is strongly linked to the extraction and processing of raw materials. We therefore target to use 25% less non-recyclable materials in our packaging to produce the same quantity by 2020.

Partnering with our suppliers and distributors

Recently we decided to remove a carton undercoat when supplying our goods and found a new system which does not impair the product's integrity. We conducted tests over several months and, in certain cases, adapted our production lines. We are also working on the reduction of plastic films around our packs and on the thickness of our labels.

With our main can supplier, Ball Packaging, we are testing the can of the future, the lightest on the market. Our industrial teams are working hand in hand to find, within two to three years, the thinnest possible aluminum sheet.

The aim is to involve the whole supply chain to continuously invent new machines and new technologies in order to respond to the strategic challenges, make sure that we are gaining in productivity, efficiency and safety. All this without impairing the package's quality.

Maximizing renewable resources to produce tomorrow's bottle

Second line of action: reducing the carbon footprint, in particular of plastic bottles, and using renewable resources to produce packages. The PlantBottle™ is the first alternative solution to fossil-based PET. This technology has existed since 2009 in the United States and since 2011 in Western Europe. In 2010, the worldwide production of 2.5 billion Plantbottle™ packages made it possible to save the equivalent of 60,000 barrels of oil used in the manufacturing of PET plastic bottles. We launched it in France at the end of 2011 on our 50 cl bottles, which contain up to 22.5% of plant-origin plastic. In the manufacturing process, in order to obtain the PET plastic molecule, we use bioethanol derived from sugar cane.

But our ultimate goal is to find, within 5 to 10 years, a technological and industrial solution that makes it possible to produce plastic bottles with 100% of plant residue. In the United States, together with other large companies, such as Ford, Procter & Gamble and

Heinz, Coca-Cola Company has developed tomorrow's bottle. Three partnerships have also been signed with leading start-up companies specialised in the development of second-generation plastic. The ultimate objective is to disconnect production of plastic from fossil resources.

Using more recycled materials

The third field of research lies in the use of recycled materials. Coca-Cola Entreprise is the first food company to invest directly in the recycling industry as well as participate in research and development: we have invested 6.5 million Euros in a joint-venture with APPE, the recycled PET leader in France, in order to increase the share of recycled plastic bottles in France.
Coca-Cola Entreprise has conducted the same type of project in the UK with the creation of Continuum Recycling, a joint venture with Eco Plastics, the English leader of recycled PET plastic for food products. This investment will increase by 70% the capacity of the Sainte-Marie-la-Blanche plant. The project is also aimed at improving plastic recycling technologies in France.

Most of the PET is recycled for textile, construction and automotive (e.g. dashboards) applications. In the food industry it is authorized only since 2007 in France. This is an advanced technology for food products and still a young industry. Investing in this sector makes it possible to develop it, consolidate it, and innovate with new machinery.

Although the use of recycled PET has no influence on the production chains of our bottling plants, it alters the pre-forms' manufacturing process. The pre-form of our 50 cl bottles is comprised of recycled plastic (up to 25%), plant plastic (22.5%) and virgin plastic; i.e. three difference sources of plastic molecules which come from three different manufacturing processes to make a single pre-form which will give only one bottle!

Last important goal: make the public aware that waste sorting is important. This is what we do in music festivals for example for young people. This is what we will do with our project of an educational centre within our joint-venture in Beaune. We must all be part of this collective challenge. This is why Coca-Cola is committed at the world level to reducing the environmental impact of its packaging. This strategy takes local forms in each country with objectives and investments adapted to national markets.

– Now is the time for the virtuous circle of recycling –

“We are dealing with a new cycle, with reinvented systems”

Fabrice Peltier
Packaging design Expert
Diadeis

Given the current economic slowdown, the packaging market is doing rather well; especially since it focuses on responding as closely as possible to the evolution of our patterns of consumption. Although today the sustainable design logic is an integral part of the manufacturing processes, innovation is on-going. With the continuous improvement of the materials’ preservation qualities and the renewed interest for cardboard, packaging is permanently reinventing itself.

Sustainable packaging is now well-established in our society. In this area, we are no longer at a crossroads but in movement and action insofar as brands are actually working on sustainable design and even on recycling design. Every customer meeting mentions these issues and the same goes for tradeshows where these environmental concerns give rise to innovation. Sustainability is no longer an abstract concept, it is an integral part of the companies’ strategies.

Brands are therefore directly affected since it can either be very costly or lucrative. Sustainable design is an integral part of the process.

Packaging Manufacturers are facing major changes

These new trends obviously affect packaging machinery suppliers. Some of them are already ahead on these issues. They have not waited for markets to impose their requirements. Packaging is evolving for good. In the beginning it was designed to solve an industrial problem: preserve its content and transport it to retail stores. However, nowadays, the retail industry model is facing major changes.

Another issue is to reduce materials consumption. Packaging’s impact must be moderate on the environment and on the volume of materials required. The developed countries’ goal is to reach a 75% recycling rate. We therefore have two obligations: improve the environmental impact of packs and above all make them recyclable.

As a result, packaging and material manufacturers can’t afford to work separately. Partnerships are essential. We are moving towards joint solutions.
Yesterday’s material manufacturer will in the future have to take an interest in the machines and the end product – and the same goes for machine and end-product manufacturers. We are dealing with a new cycle, with reinvented systems.
Brands and machine manufacturers are challenging themselves in order to adapt their system in the long run. This revolution is both defensive and prospective. It is not related to packaging itself, but to the evolution of our society, our consumption and purchasing patterns, the supply chain, manufacturing, globalization, as well as local sourcing. Nowadays, we need to see the whole picture, not just isolated events.

Machines are evolving in sync with the end products. They need to be more flexible and communicate with one another.

Intelligent packaging and the return of cardboard

New materials, compacting and associating materials are particularly promising. After having been left aside for a long time, cardboard is back. It is considered the material of the future! Cardboard is becoming less rigid, it can be compacted with plastic film. These developments are directly linked to the price of resources and their image. With inexpensive oil, it was simple to produce plastic packaging.

This is no longer the case today; paper and cardboard have become competitive again, all the more so as thin plastic and polymer films can be added.

There is also much talk about smart packaging. However, the attribute applies if it is used to preserve the food product. It is inherently smart ! Add to that nano-materials and a number of technologies used to extend the food products' shelf life. Packaging materials' shelf life itself is continuously improving. Like this astonishing plastic film suitable for ovens at 220°C (430°F) !
Materials are evolving in two directions: they protect what they contain better and they are more convenient for the consumer.

What's the ideal packaging? Multi-purpose packaging

The idea is quite obviously to design multi-purpose packaging. And to this end, it should answer the fundamental issues raised by its four main customers: industrials who manufacture packages and products, retail stores who sell them, consumers who use them, and waste management companies which must recycle them. Therefore packaging has as many, if not more, functions as life cycles!

For the manufacturer, the ideal packaging preserves what it contains, is cost effective and facilitates logistics. Packaging thus meets all the company's logistical, economic and environmental requirements. For the retail stores, the ideal packaging is one that sells well and presents the product appropriately, which will in turn increase the value of the store's brand and its display.
Third, the consumer, for whom the ideal packaging should simplify his life: easy to open, to close, to store, and to empty completely. Finally, during its last phase, the ideal packaging should easily find its way to selective sorting containers, and be repeatedly recycled.

However, there is no single solution to packaging issues - quite simply because it is impossible to isolate packaging from what it contains. We should therefore stop talking about packaging and only packaging since, as such, it is useless! What is useful is a packaged product.
We should therefore talk about a "packaging-product" combination, and there are as many solutions as there are combinations. Most of the time, packaging is black-listed because only its end-of-life aspect is taken into account, it is only seen as waste.
It is time to stop thinking that way! The services rendered by packages are too often forgotten. The issue is thus to find the best "packaging-product" combination by taking all the parameters into account: from the content itself to its place of production and its place of consumption.

– "We are dealing with a new cycle, with reinvented systems" –

A Chemistry engineering graduate, **Philippe Thuvien** started his career as Raw Material Purchaser at Pivert Coiffure (Rhône Poulenc Group) in 1979.

He then worked for Jacomo Perfumes from 1980 to 1988, first as Purchasing Manager, then as Plant Manager for the Deauville, Normandy, facilities.

In 1988 he joins Cosmopolitan Cosmetics France in the Wella Fragrances division. He manages the Edipar company (Escada) and is later appointed Manufacturing and R&D Manager. In 2004 he becomes Manufacturing and R&D Manager at YSL Beauté.

Since October 2009 he is Packaging and Development Manager at L'Oréal S.A. in Saint-Ouen, near Paris.

Born in 1957, **Roland Nicolas** has an Economics Master's degree, that he consolidated with a Business School Master's degree specialized in the food industry.

He starts his career as Export Manager for Primel, then Cetra between 1982 and 1985. He joins Serac as Northern Europe Export Manager (1986-1990), then is promoted Aseptic Systems Sales Manager (1990-2000) and Food Division Sales Director (2000-2011).

Since April 2011 he is Dairy and Aseptic Business Development Director

Richard Mallett is a microbiologist and food safety professional with 25 years of experience within the food industry. He has performed in food safety and technical roles within large organisations such as Rank Hovis McDougall and BioMerieux UK.

Within the last 10 years, he started and managed both a food safety consultancy group, MQM Consulting, and in 2010 became the Managing Director of HACCP Europe, the European arm of HACCP International

Vincent Ferry is a design engineer with a keen interest in packaging ever since his engineering studies, when he invented the garbage bag with a draw string. He works at Mars for eighteen years in the pet food division. During that period he introduces the unit dose meal pack for cats in 1994 and turns Sheba into a premium brand with the creation of the dome-shaped containers in 2004.

He is since 2006 Packaging Manager of Danone Research, managing a team of 5 people and representing 5 billion consumer units throughout 5 manufacturing facilities. His assignment, along with his team's, is to participate in optimizing the current packaging solutions and create new ones. He works closely with all the company's services and its suppliers.

Vincent Ferry is a visionary who finds the perfect balance between four aspects of packaging innovation : creating perceived value-added, optimizing operational feasibility and cost efficiency, as well as protecting competitive advantages in the long run. He considers himself a « packaging architect » rather than a « designer ». He has a particular gift for bringing up leading edge ideas that are often misunderstood but eventually are applied far beyond their initial scope.

Annette Freidinger-Legay, International Packaging Expert, Conference speaker, is an engineer from the ENSAIA school. She started her carreer as Engineering Manager at the French Beverage Institute, then co-directed the French Institute of Packaging for 14 years.

A consultant since 2003, she carries out four types of assignments: appraisal, studies, training and promotion in the field of packaging.

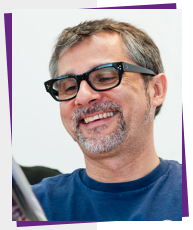
Expert at the International Trade Center, the E.U. and OSEO, member of the European Packaging Institutes Consortium (EPIC), she is also keynote speaker at the Lorraine Polytechnique Institute (France).

She leads the Pack Experts Committee of the French Salon de l'Emballage tradeshow.

Arnaud Rolland, Sustainable Development of Coca-cola Entreprise, 42 years old, with a Nice Business School Master's Degree, started his career in the retail industry, then in consumer surveying.

He later joined the Sales Department of Coca Cola Entreprise, then was in charge of the Sustainability strategy of the company.

His two main focuses are sustainable packaging and display advertising. He is also an administrator of the French National Packaging Council since 2010.



Artist and designer, **Fabrice Peltier** studied at the Ecole Estienne in Paris between 1980 and 1983.

He sets up the P'Référence brand agency in 1985. End 2011 he sells the agency to Diadeis, the leading French packaging manufacturer, having designed over 10,000 consumer good packages for small business and multinationals over the period. Fabrice Peltier now works as a consultant for Diadeis and other companies in the packaging industry. He hasn't given up designing unique furniture and decoration pieces.

Fabrice Peltier is acknowledged as a packaging design expert who focuses on sustainability. He is a seasoned keynote speaker and contributor to multiple professional magazines.

Currently President of the French Design Packaging Institute, he took part in creating it in 2003.

He sets up the Designpack Gallery in 2008, the first one that is open to the public, with a bookshop, a shop, exhibitions and a conference room. Next to the Louvre Museum in Paris he opens The Recycling Street, a permanent exhibit displaying best practices in packaging recycling.