



*Better quality of life
through better packaging
for more people.*



W P O N E W S

The Packaging Community Around the World

President's Word

What a wonderful year 2018 has been! Exciting and exhilarating!

Pierre Pienaar*



When reflecting on 2018, it is pleasing to consider all of the WPO's involvement in a myriad of programs, including: education, exhibitions, conferences and social media. I encourage reading of the December WPO newsletter for further details on this involvement and development.

I trust we have kept members informed and aware of the positive strides being made in the packaging industry across the globe. I thank the WPO Executive Team for their passion and for a job well done.

We look forward to serving the global packaging fraternity in 2019. I encourage you

to be involved at whatever level you can, wherever you are. Together we will continue to ensure that we reduce packaging waste, reduce food waste, and ensure more are informed and educated in the power of packaging.

On behalf of the WPO executive Team, I wish you all a wonderful New Year, and wish you and your families a rewarding, prosperous and fulfilling 2019.

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Around the World

Liderpack Awards, from Spain, selects 26 winners



These are the Best in Show winners

A total of 25 packaging and POS (Point of Sale) Advertising projects and a "young design" packaging proposal make up the list of winners of the 2018 Liderpack Awards, organized by WPO member in Spain, Graphispack Asociación (www.graphispack.org), in partnership with Fira de Barcelona's Hispack trade fair. The jury selected two of the above products as "the best of the show": the Porto Cask 150 label, produced by Gráficas Varias, and the display of Bimbo's Pastelitos FS, made by Tot Display. It also awarded a special award for packaging sustainability to the Concentralia Ecofoam System Home cleaning product, made by Salló Kyra, S.L.

In total, 142 projects, from 15 Spanish provinces, were submitted for this edition of Liderpack Awards. The categories which received the greatest number of entries were, once again, food and beverage packaging, although there was a notable increase in the number of logistics and distribution packaging projects, as well as solutions geared to e-commerce.

The jury gave 18 awards in the packaging speciality, seven in the POS section and one in the "Young Design" category reserved for students. Similarly, the winners in the packaging category selected by the jury included works which will represent Spain in the 2019 WorldStar Packaging Awards, the most important global packaging award, organized by WPO.

Beverage Packaging, with six projects selected, was the category that received most awards. Sleeves, labels and packaging designed for the transportation of bottles stood out due to the quality of their execution and their originality in highlighting the products inside them.

To view all winners of Liderpack Awards visit www.graphispack.org.

IndiaPack repeats the success

From October 24 to 26, the Bombay Exhibition Center, in Mumbai, India, hold the IndiaPack pacprocess 2018, International Packaging Exhibition, organized by local WPO member, Indian Institute of Packaging (www.iip-in.com), in conjunction with Messe Düsseldorf India. The show was organized concurrently with Drink Technology India and FoodPex. Exhibitors presented innovation in packaging materials and packaging machinery, and food and beverage processing machinery.



As Dr. N.C. Saha, executive of Indian Institute of Packaging explains, "The main objective of this exhibition is to create a single platform for all the industries dealing with beverages and food processing machineries and Packaging in a way it is possible to provide an additional advantage to the visitors to get all relevant informations under one umbrella. This year the exhibition emphasised the "state of art" technology, in each area, in separated country pavilions."

Australian Institute of Packaging packs 1300 Hampers for annual Foodbank Hamper Packing Day



WPO member, Australian Institute of Packaging (AIP www.aipack.com.au), held their annual Foodbank Hamper Packing Day in the end of November. The initiative packed 300x Ladies Hampers & 1000x Family Hampers for those in need at Christmas. All of the items were either donated or attained through fundraising by the packaging and supply chain industries.



According to Nerida Kelton, Executive Director of the AIP, "Over 200 people volunteered from as far as South Australia and as young as two to be a part of the AIP's favourite day of the year. The AIP is proud that we have played a major role in helping pack hampers to the value of \$170,000 this year and that over the last eight years the team has packed close to 8000 hampers to the value of \$900,000 for Foodbank to be able to give to people at Christmas time".

Nerida adds: "As this is a national program the AIP would love to hear how other companies and staff would like to help us grow this program in 2019. Whilst the packing day is held in Queensland we encourage everyone across Australia and NZ to get behind this

program; either by collecting items with your staff during the year, fundraising, companies donating much-needed items for the hampers or just volunteering on the day."

The AIP acknowledges long-term partners Kimberly Clark, Colgate, Ego Pharmaceuticals and OfficeMax who are always there to assist by donating goods for both hampers. They also welcomed Unilever and Wins Up Australia this year, who generously donated much-needed personal hygiene products. SMC Australia/New Zealand, Fromm Packaging, Fibre King, AGITO and APPMA all kindly donated towards the purchase of items for the family packs.

Greece joins SAVE FOOD initiative

On May 2018, WPO member in Greece, AGMPM (Association of the Greek Manufacturers of Packaging & Materials www.pac.gr) joined the SAVE FOOD a conjunction initiative from Messe Düsseldorf and the FAO (Food and Agriculture Organization of the United Nations). The members of AGMPM will receive the regular newsletter, SAVE FOOD studies on food loss and waste and will be included in the FAO's worldwide communication list. Furthermore AGMPM will participate at the SAVE FOOD global events.

9th Workshop on Flexible & Printed Electronics in Greece

AGMPM (Association of the Greek Manufacturers of Packaging & Materials www.pac.gr), a WPO member, reported that the 9th Workshop on Flexible & Printed Electronics Industry (Targeting the Digital Transformation), organized by HOPE-A and the Nanotechnology Lab LTFN, last October, in Athens, was a success.

The event brought together top stakeholders from Greece and from abroad, from various areas where FPEs are applied and can revolutionize the businesses. Inspiring talks were

given by internationally acknowledged scientists and engineers on how state-of-the-art technologies generated in Greece have to be exploited by the industry. Key industrial players presented how they integrate FPEs in their business endeavors and what promising applications and challenges emerge. Business Associations, like AGMPM, and cluster coordinators outlined their activities in coordinating industrial players with the scope to grab the chance lying ahead and create joint ventures. Moreover, representatives from Venture Capital firms and the European Commission informed the attendees on funding opportunities there are to support their entrepreneurial plans and collaborations.

In the networking sessions, the Workshop's attendees shared their experiences, concerns and aspirations in order to find common ways of work towards the commercialization of this rapidly evolving field. The Workshop was brought to an end with the Start-Up competition session, where Start-Ups pitched their business and the ones with the most innovative and well-structured plan were subsequently awarded. HOPE-A is at the forefront of promoting the Flexible Organic & Printed Electronics field, adding value to its members and bringing them close with international stakeholders, with the scope to boost the country's economy. Off to the next such inspiring workshop.

Members of AGMPM participated in this important event since new networking tools will be established soon between the association and HOPE-A. The target is the development and manufacturing of efficient high end new intelligent packaging structures in Greece based on the available knowhow developed in the country.

Indian Institute of Packaging celebrates Teacher's Day



WPO member in India, IIP (www.iip-in.com), celebrated the Teacher's Day on 5th September, on account of the birthday of Dr. Sarvepalli Radhakrishna the first Vice President of India and the second President of India. Keith Pearson, former WPO President and General Secretary, was present in the event as a Special Guest. During the event the cake cutting was done by Dr.N.C.Saha, Director, Indian Institute of Packaging and Board Member of WPO and 3rd Vice President of APF. Students and faculty members of the Institute were also present.

India counts with new facilities for packaging education programs



The academic facilities



The new hostel for students

With the presence of Suresh Prabhu, Minister for Commerce & Industry of India and C.R.Chaudhary, Minister of State for Commerce & Industry, the Institute of Packaging India (IPP www.iip-in.com), inaugurated, in September, the new academic block for degree programme in packaging and a new hostel to receive the students. The new facilities are in Mumbai.

IIP recognizes top packaging students in India



200 students of Post Graduate Diploma in Packaging and 150 students of Diploma in Packaging through correspondence were awarded in the Annual Convocation of 32nd batch Post Graduate Diploma and 22nd batch DEP which was held on September, in Mumbai, in the headquarters of Indian Institute of Packaging (IPP www.iip-in.com), a WPO member.

The toppers were awarded the Platinum, Gold, Silver and Bronze medal by the Chief Guest and Guest of Honour. About, 600 students from various centres of the Institute and the industry members had participated into this programme. The event was coordinated by Dr. N.C.Saha, Director of IIP.

ABRE ends 2018 with its traditional Lunch with Members



WPO member in Brazil, ABRE (Brazilian Packaging Association www.abre.org.br) accomplished its traditional ABRE's Lunch for Members with an incredible presentation from the Consumption Anthropologist, Michel Alcoforado, founder of Consumoteca. According to him, 49% of Brazilians are worried about the future. But the good news is that Brazilians always had a very flexible mindset and the post crises Brazil has a great chance of reinventing itself.

According to Gisela Schulzinger, ABRE ´s President, "it makes no sense to give up on Brazil and Brazilians have the power of changing the game. "At ABRE we work on a positive and proposal agenda, and not a defensive of complaining one."

As pointed by Michel Alcoforado it is important to be a 'social broker', a person that can destroy the barriers and transit in all levels, freely and naturally.

Great interest for Eurasia Packaging Istanbul show by international visitors



Aiming for US\$ 23 billion market size and US\$ 5 billion export this year, the packaging industry came together in the 24th Eurasia Packaging Istanbul International Packaging Industry Fair held in TÜYAP (October 31 - November 3) with the collaboration of the Turkish Packaging Manufacturers Association, a WPO member, and REED TÜYAP. Having grown 40 times larger since the first day of the show and having become the largest exhibition held annually in the Eurasian region, Eurasia Packaging Istanbul Fair was attended by 1,217 companies including 463 foreign companies from 44 countries. The fair was visited by 58,518 professionals from 115 countries, including 50,417 people from Turkey and 8,101 people from abroad.

Tunisia was the host country this year and over 1,000 special hosted buyers were brought from 42 countries, in particular from Germany, Azerbaijan, Bangladesh, Bosnia and Herzegovina, Bulgaria, Algeria, Morocco, Palestine, Georgia, Croatia, Iraq, UK, Iran, Israel, Italy, Cameroon, Canada, Qatar, Kazakhstan, Kosovo, Kuwait, Libya, Lebanon, Macedonia, Egypt, Moldova, Nigeria, Uzbekistan, Poland, Romania, Russia, Serbia, Singapore, Saudi Arabia, Turkmenistan, Ukraine, Oman, Jordan and Greece. Eurasia Packaging Istanbul International Packaging Industry Fair will be held for the 25th time next year on October 23 - 26.



Aslihan Arikan

Highlighting the importance of the packaging industry for Turkey, Aslihan Arikan, General Secretary of the Turkish Packaging Manufacturers Association (ASD) and WPO Vice President Education, said during the show: "The contribution of our industry to the Turkish economy will increase in the years to come and Turkey will move fast on the way to become the packaging center of Eurasia".

She added the industry set new motion in the industry and they are satisfied with interest from foreign people in particular. Stating that significant business connections were made in the fair, Arikan said: "We believe we'll achieve our goal of 5 billion dollars export by the end of the year. We also aim for 23 billion dollars market size this year. As an industry that exports to 180 countries, we are aware of our power and potential. As the Packaging Industry, we are aiming to sell packaging to more countries. We'll increase the number of markets and we'll export at least half of what we produce. We think we'll achieve our goal of 10 billion dollars export and 30 billion dollars market size by 2023".

Turkish packaging design competition



Winners of the 14th Packaging Design National Student Competition 2018, where in total 85 projects compete, organized by the local WPO member Turkish Packaging Manufacturers Association (ASD) with the contribution of Eurasia Packaging Istanbul Fair in collaboration with REED TÜYAP were announced with the ceremony held in the opening cocktail event for the Eurasia Packaging Istanbul Fair. Melike Balkaya, student of Özyegin University, Department of Industrial Product Design was the winner of the competition with her "Dream Honey Single Portion Honey Packaging" project while Mehmet Ali Seven, student of Marmara University, Department of Industrial Product Design ranked the second with his "SpinMilk" project and Gizem Karatas, student of Middle East Technical University, Department of Industrial Product Design ranked the third with her "Suntoy" project. 13 projects were rewarded in the competition while the top 3 students earned 12 months free scholarship in addition to cash reward.

For more details contact: asd@ambalaj.org.tr

From the board

WPO at PACKEXPO Association Partner Program



For another consecutive year, WPO participated at PACK EXPO International (Oct. 14–17; McCormick Place, Chicago, USA) as part of the Association Partner Program. This year the Partner Program welcomed 50 industry associations, according to show producer PMMI (The Association for Packaging and Processing Technologies). Besides WPO own booth, there were six WPO members from:

- Argentina - Instituto Argentino del Envase
- Australia – AIP (Australian Institute of Packaging)
- Brazil – ABRE (Brazilian Packaging Association)
- Mexico - AMEE (Mexican Packaging Association)
- USA – IoPP (Institute of Packaging Professionals)
- USA - International Safe Transit Association (ISTA)

"The Association Partner Pavilions at PACK EXPO International, and co-located Healthcare Packaging EXPO, brought together leading industry associations with decision makers from the world's top CPG companies, retailers and pharmaceutical, medical device and nutraceutical manufacturers," says Jim Pittas, president & CEO, PMMI. "The expertise and industry knowledge provided by partner associations on-site offer an invaluable resource to attendees."

“This partnership with PMMI and with PACK EXPO is always a great opportunity to spread WPO’s message to the global packaging community: ‘Better quality of life through better packaging for more people’”, states Pierre Pienaar, WPO President. He also reinforced that WPO booth at PACK EXPO was the right environment to promote all WPO actions, especially the packaging education programs.

WPO at European trade shows FachPack and BrauBeviale



Known as one of the most important European trade shows for packaging technology, processing and logistics, FachPack 2018 (September 25-27 – Nuremberg) counted with the participation of WPO as a co organizer of the European Packaging Associations area, as well as of the PackBox’s presentations program.

WPO was also presente at BrauBeviale (November 12-14), in Nürnberg, Germany. There, WorldStar Awards trophy was proudly displayed in the booth, showcasing the winners of the WorldStar Awards in the beverage category.

In both occasions, WPO institutional booth presented the packaging education programs that are being carried on all over the world, including some European countries like Turkey and Italy. It was also demonstrated projects related to Circular Economy, Save Food and Food Safety.

WPO was part of The Forum at PACKEXPO 2018



With full support of PMMI (The Association for Packaging and Processing Technologies), WPO organized a series of interactive content sessions during PACK EXPO International (Oct. 14–17; McCormick Place, Chicago, USA), under the name ‘Interactive Panels on Global Perspectives on Packaging’.

In his presentation, WPO President, Pierre Pienaar, expalined how active packaging can be developed for convenience and guided the audience on how to face this challenge. The prsentation of WPO General Secretary, Johannes Bergmair, was focused on: ‘why is packaging that saves food so sustainable?’ The importance of the isseu is simple: today 1/3 of all food produced for human consumption is either lost or wasted globally.

WPO Board members spoke in China



WPO President, Pierre Pienaar, Vice President Sustainability, Antro Säilä, and General Secretary, Johannes Bergmair were speakers at the International Green Packaging Development Summit Forum, organized by WPO member in China, CEPI, during the WPO



week in Jinan (October 22-26). As reinforced by Pierre, "one of WPO pillars is to encourage the development of packaging technology, science and engineering. And a way for it is stimulating education and training in packaging."

WPO Press Conference in China



During the week of October 22 – 26, WPO accomplished its 101st meeting, in Jinan (China), organized by its local member CEPI (China National Export Commodities Packaging Research Institute). At the occasion, there were 35 members, representing 30 countries, participating in the program. Australia, Austria, Brazil, China, Croatia, Czech Republic, Finland, Indonesia, Kenya, Lebanon, Nigeria, South Africa, Turkey, UK and USA were some of the countries.

With the presence of 13 local journalists, including TV reporters, WPO also had its first press conference in China. The message from Pierre Pienaar, the President, can be summarized in three main points: increase WPO exposure, reduce poverty worldwide and reduce packaging waste. All these can be achieved through proper packaging education programs.



"WPO has in its DNA the responsibility of educating professionals and industries of the relevance of packaging, from a technical and technological point of view, as well as from a marketing perspective", adds Pierre. One of the main tools WPO uses to achieve this goal is the Packaging Education Programs carried out in many countries, especially developing countries. Besides the huge number of packaging professionals trained in the last five years, other significant results of these efforts can be seen in the packaging projects that enter WorldStar Awards, the most important packaging competition in the globe, also organized by WPO.

Keith Pearson at Hall of Fame



Former WPO President and General Secretary, Keith Pearson, was nominated for the Hall of Fame during PACKEXPO Chicago, last October. WPO congratulates Keith not only for this great recognition but also to all the fabulous contribution he has given to the global Packaging industry for so many years.

WPO reinforces partnership with UNIDO



On November 12, some WPO members of Executive team participated in a meeting at UNIDO (United Nations Industrial Development Organization) headquarters, in Vienna (Austria), to discuss the next steps of the partnership that was established one year ago. "A most productive and constructive meeting held at the UN offices in Vienna today. We have together mapped resourceful opportunities with positive outcomes for the next 12 -24 months. It is encouraging to realize what is possible when two global organisations work in synergy", stated WPO President, Pierre Pienaar, just after the meeting.

It is worth to remember that on November 07, 2017, WPO and UNIDO signed a Memorandum of Understanding for strategic cooperation in the field of packaging capacity building. The purpose, according to the MOU, was "to achieve the mutually declared objectives towards the operationalization of UNIDO's mandate for inclusive sustainable industrial development".

The cooperation program between WPO and UNIDO, includes three areas:

- development and implementation of specialized training and capacity building programs on packaging;
- setting-up national packaging centers in developing countries to provide a wide variety of services including design of packaging, labeling, technical label review and training courses on packaging;
- promotion and organization of student & industry packaging competitions.

This partnership was based in the UNIDO's initiative in Lebanon which resulted in the establishment of the Lebanese Packaging Center as a private-sector led center dedicated to support the Lebanese industries in the area of packaging.

Together with Pierre, there were also present at UNIDO's meeting the WPO Execs: Antro Säilä (Finland), Vice President Sustainability; Johannes Bergmair (Austria), General Secretary; Luciana Pellegrino (Brazil), Vice President Marketing; and Soha Atallah (Lebanon), Vice President Conferences, Exhibitions and Awards.

WPO launched 02 Position Papers

It is already available in WPO webpage (www.worldpackaging.org), for free download, two new Position Papers as part of WPO's commitment of spreading packaging knowledge around the global industry. The Paper 'Packaging Technology & Design' was written by WPO President, Pierre Pienaar, and focus in the importance of packaging, packaging technology and packaging engineering as the pillars to develop a good packaging.

As main packaging technology drivers, the document highlights environmental issues, food safety, circular economy, technologies that consider seniors and disabled people and technologies for highly functional packages. The author also reinforces the importance of packaging education. "Education is fundamental to development. It is both a human right and an investment for sustainable development."

The second Position Paper on Packaging & Trade was written by the expert Kofi Manso Essuman. According to the author, "the demand for and usage of packaging has been growing rapidly and is closely linked with the performance of global trade. For example world merchandise trade, which has been growing steadily from 2005, dropped in 2009 as a result of the global financial crises. Similarly global sales of packaging, which has been growing since 2000, declined by 10% in 2009 due to falling demand for packaged merchandise".

Studies show that the value of packaging consumed globally was USD 772 billion in 2012. It is estimated that by 2018 global demand for packaging will reach USD 974 billion and consumption in Asia will be a little over 40%. North America and Western Europe will

account for 21% and 19% respectively. Packaging demand in Eastern Europe, South and Central America and Africa will be 6%, 5%, and 3% respectively.

Education

AIP is committed to New Zealand food & beverage industries



The Australian Institute of Packaging (AIP www.aipack.com.au), a WPO member, proved once again that it is committed to the New Zealand food and beverage industries by taking a lead role in running quality training and education programs as a part of FoodTech Packtech, which was held in Auckland. Over the three days the AIP provided much needed education and discussions on key issues that are challenging the food and beverage industries including Fighting Food Waste, Save Food & Sustainable Packaging Design, the issues within end-of-life recycling facilities and a better understanding of lifecycle analysis.

What was clear is that the conversation has only just begun and the industry has many unanswered questions. It is evident that there must be a truly collaborative approach across Government, Industry and Academia to ensure that everyone is working towards the same goals and outcomes.

AIP had a full house for the new half-day training course on the Role of Packaging in Minimising Food Waste with attendees from Frucor, Fonterra, Danone, Confoil, Multivac, Goodman Fielder, Stratex, NCI Packaging, FreshPork, Snell Packaging and Totally Wrapt Packaging. The course provided participants with an introduction to the seriousness of food waste in Australia and New Zealand and how we can all make a difference as team members of the product-packaging design process to this issue. It also covered packaging design criteria for Best-Practice Save Food Packaging Design developments that should be considered. With hands-on and practical case studies participants were able to learn how designing packaging to save food actually saves food. Attendees then had the opportunity to visit the AIP stand to see the latest round of Save Food Packaging and Sustainable Packaging Design winners and their innovations.

Key takeaways from the attendees included:

- 'A new focus on what our business needs to do to improve our packaging design'.
- 'A better understanding of the true benefits that packaging plays in minimising food waste'
- 'To try and re-design packaging to reduce food loss and waste'
- 'A better awareness that packaging does have a role to play in relation to food loss and must be taken into account when designing new packaging'
- 'A reminder that packaging technologists must include Lifecycle Analysis with all of their design'
- 'A clearer view that better packaging is a solution to reducing food waste'
- 'Time to review our packaging designs'
- 'Is there a sweet spot for best-practice packaging designs for saving food waste?'
- 'The industry needs to start using the AIP developed Save Food Packaging Design guidelines'

Another remarkable event was AIP Seminar on Fighting Food Waste, Save Food and Sustainable Packaging Design with 10 speakers covering a broad range of topics including Fighting Food Waste, the new Fight Food Waste Cooperative Research Centre, Save Food and Sustainable Packaging Design, what packaging does – not what packaging is, the Australasian Recycling Label and the PREP Tool. The seminar was run by the AIP, in conjunction with key NZ industry association Packaging New Zealand and was the most well-attended at the show.

Key takeaways from the attendees included:

- 'Start looking at what packaging DOES, not what packaging is.'
- KiwiHarvest is doing an amazing job and the issues of Food Waste and Food Insecurity in NZ cannot be ignored.'
- 'I have a better view of the current issues in Sustainable Packaging Design.'
- 'Great to see some New Zealand companies who have taken the leap into Save Food & Sustainable Packaging Design.'
- 'That once packaging is designed you need to start looking at the next step in improvements; the journey never ends.'
- 'That New Zealand has many issues with lack of recycling facilities and capabilities that need to be addressed by government and councils.'
- How do we invest in designing Sustainable Packaging Design when there are no facilities available in NZ to recycle them at end-of-life?'
- What is the difference between home compostable and industrial compostable?'

AIP exhibition stand showcases PIDA Award winners The AIP had a joint stand with Packaging New Zealand that showcased all the 2018 Packaging Innovation & Design Award winners for both Australia and New Zealand and the WorldStar Packaging Awards, from WPO. The Save Food Packaging & Sustainable Packaging Design winners were well-received with a number of the 2018 winners being New Zealand companies who also spoke at the seminar.

WorldStar

WPO announces winners of WorldStar Packaging Awards 2019



The judging session took place in Jinan (China) with the participation of WPO voting members.

WPO announced and posted on its webpage, in the beginning of December, the 189 winners of the most important global packaging competition, WorldStar Packaging Awards 2019. The judging session was held in Jinan, China, last October, during the 2nd WPO Board Meeting of 2018.

The three countries most awarded are Japan, with 26 awards for the second year running, followed by Turkey, taking 22 and China, 21. The candidates for the special categories - President's Award, Sustainability Award, Marketing Award and Packaging that Saves Food Award - will be announced soon, as well as the winners of WorldStar Student Awards.

Packages eligible for WorldStar are those that have already received a national award recognized by WPO. "In its 51st year, WorldStar is one of the major events of WPO and this year attracted 319 entries from all over the world. It is also interesting to note that the categories with more entries were the special ones: Sustainability with 193 entries and Packaging that Saves Food, with 189. As always, our aim for the next competition is to increase the number of entries and countries participating", states Pierre Pienaar, President of WPO.

Also in December, WPO announced the three finalists in each of the four Special Categories within the WorldStar Packaging Awards 2019 programme.

In no particular order, the finalists are:

President's Award Finalists



- 2018 CNY Capa Pack (Starlite Printers (Far East) Pte Ltd, Singapore)
- IDC aseptic bag-in-dispenser beverage packaging for food service (International Dispensing Corp, China)
- Active Packaging System for the Packaging of Prawns (JF Packaging(Pvt)Ltd, Sri Lanka)

Sustainability Award Finalists



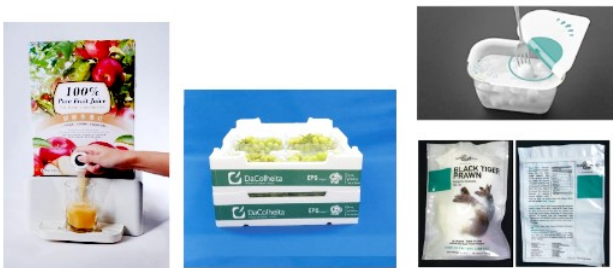
- 89oz Simply Beverages – Resin Code #1 EPET Conversion (The Coca-Cola Company, USA)
- Jospak Board-based Tray (Jospak Oy, Finland)
- Mondi's fully recyclable packaging material, BarrierPack Recyclable, drives circular economy forward (Mondi Consumer Packaging GmbH, Austria)

Marketing Award Finalists



- 2018 CNY Gift Pack (Starlite Printers (Far East) Pte Ltd, Singapore)
- CHUNGHWA Cigarette Spring Festival Theme Packaging Design (Zhejiang GPC Creative Design Co.,Ltd., China)
- Cat Milk in Aluminium Portion-Packs (Constantia Flexibles International GmbH, Austria)

Packaging that Saves Food Award Finalists



- Drop&Taste (SMILESYS SPA, Italy)
- Active Packaging System for the Packaging of Prawns (JF Packaging Pvt Ltd, Sri Lanka)
- IDC aseptic bag-in-dispenser beverage packaging for food service (International Dispensing Corp, China)

- Conserver "DaColheita" for fruit bowls (Termotécnica, Brazil)

All winners will be recognised in an Awards Gala Ceremony on May 15, 2019, in Prague, Czech Republic, hosted by local WPO member, OBALOVÝ INSTITUT SYBA s.r.o.

The complete list of winners of WorldStar Packaging Awards 2019 can be viewed at <http://www.worldstar.org/worldstar-winners-2019>.

Questions regarding the next edition, please contact WorldStar Coordinator, Rachel Bayswater – rachel.bayswater@iom3.org.

Message from General Secretary

New year, new Secretariat for WPO

This time I want to use this section of our WPO News for important internal information. As most of you know from our WPO Board Meetings in Australia and China or the minutes from these meetings, we are about to take a next step in strengthen our service for WPO members by organising a new WPO Secretariat in Vienna. The idea was that we need a proactive, well organized, fully WPO/packaging dedicated secretariat:



Johannes Bergmair

- WPO Secretariat as service point for WPO
- Built up a flexible structure, able to grow with WPO
- Using Vienna as international meeting point (esp. UNIDO)
- Stronger connection between WPO Secretariat/General Secretary

By the way – if you ask yourselves, what are the tasks of the WPO Secretariat? Here we have an overview for you:

- Manage financial budgets/accounts
- Act as communication platform (emails, website)
- Backup for WorldStar and WorldStar Student (run by IOM3/IPSA)
- Coordinate publications
- Co-organize WPO Board Meetings
- Handle corporate partnership and sponsors
- Coordinate WPOs appearance on new social media
- Organize exhibitions/conferences/trade shows together with the WPO Executive Team
- Coordinate (UNIDO) projects

The new WPO Secretariat will be located at a very emerging packaging cluster in Austria (Europe): FH Campus Vienna. Our Austrian member, Packforce Austria, is part of that cluster and will run the agendas of the WPO Secretariat for us. The new postal address will be:

WPO World Packaging Organisation

Helmut-Qualtinger-Gasse 2/2/3
1030 Wien
AUSTRIA

Most important for sure: Whom to contact?



Well, best in future will still be to contact me directly (j.bergmair@worldpackaging.org; +43 676 5711388). But as we had Sarah and Marita in the past at Kellen, there will be one central person handling our WPO issues:

Barbara Zottl
info@worldpackaging.org
+43 1 60668773577

Many of you know Barbara from our meeting in Vienna



in November 2016. Meanwhile she is Bachelor and on the way to get her master's degree in international packaging technology. Barbara has long time experience in organising offices, handling financial budgets of non-profit organisations and organizing meetings, conferences and trade shows. But I think best will be, to contact her directly or see her at our next Board Meeting in Prague.

Barbara - happy to work for WPO

Time plan for the transfer:

- The decisions for the transfer was taken from WPO Board in Australia (May 2018) with a mandate for WPO President to make all detail arrangements/contracts
- Our old contract with Kellen runs through end of 2018
- Termination of that contract was done on 2018-06-30
- The transfer process started in November 2018
- The new WPO Secretariat in Vienna starts activity on 2019-01-01
- Finance:
 - Kellen closes year 2018 (all invoices for 2018 are going to Kellen, USA)
 - 2019: all invoices to Vienna; membership invoices for 2019 are issued by the new secretariat in Vienna
- The transfer process will be closed in February 2019 with the last details and the closing of the final budget for 2018

We try to make the transfer process as smooth as possible for you. Please apologize, that at beginning, there can be longer timelines for answering your questions and handling your requests, until everything is settled.

So, let me finally wish you all the best for the New Year 2019! For us, the turn of the year will come with some busy days ...

Johannes Bergmair

General Secretary

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Sustainability

AIP invites members and industry colleagues to participate in APCO's Sustainable Packaging Guidelines consultation



WPO member in Australia, AIP (Australian Institute of Packaging – www.aipack.com.au) invited its members and industry colleagues to participate in APCOS's (Australian Packaging Covenant Organisation – www.packagingcovenant.org.au) Sustainable Packaging Guidelines (SPGs) consultation. Sustainable design is at the heart of APCO's work to lead industry towards a circular economy for packaging. The Sustainable Packaging Guidelines (SPGs), originally published in 2011, have played a fundamental role in driving sustainable design practices across the industry.

The SPGs are currently under review to ensure they effectively assist the industry to review

and optimise their packaging. With the recent announcement of the National Packaging Targets, the review of the SPGs is an opportunity to ensure that APCO delivers detailed and targeted resources to support you in our common journey towards the targets.

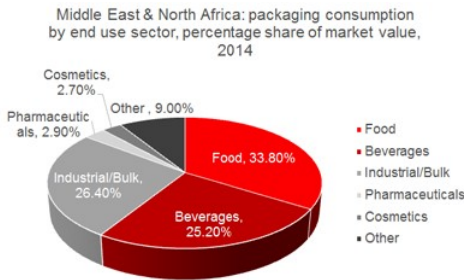
APCO facilitated a workshop on 29th August 2018, in Sydney, to collect views on the sustainable packaging principles and inform the development of the new draft SPGs. APCO is now opening the draft SPGs for industry consultation to ensure the new proposed format and attached resources meet your needs and expectations. Your input into this process will be fundamental to ensure deliverable resources that are adapted to your business and help you achieve your packaging sustainability objectives.

More information on how to participate, send an e-mail to sballard@packagingcovenant.org.au or to AIP Executive, Nerida Kelton nerida@aipack.com.au.

Country Report

The potential of the Egyptian packaging sector

While the packaging sector is not one that Egypt is known for, it is one with that enjoys complex relations with several other more prominent and competitive national sectors. From a MENA region (Middle East and North Africa) perspective, the largest markets remain Saudi Arabia and Turkey, due to their vibrant food and personal care industries. As for packaging material, the MENA region is mainly driven by plastic and cardboard over glass, wood or metal.

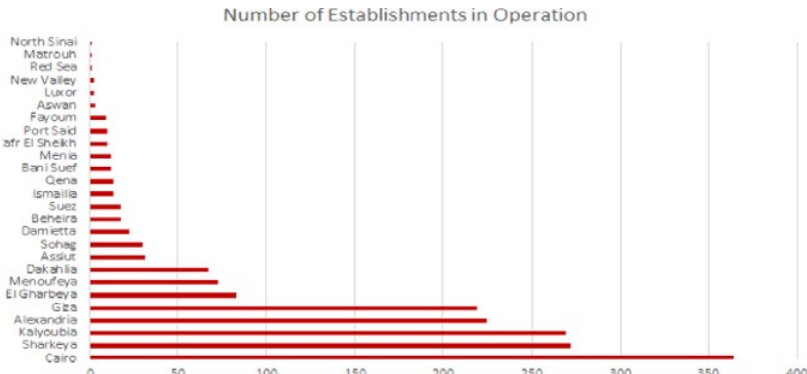


Egyptian market

Cost of packaging material as a percentage of total product cost in Egypt ranges between 5% all the way up to 50% for the more fragile fresh produce. SMEs have challenges with regard to their lead times even at these high costs, since they require smaller product batches which are often lower priority to the packaging manufacturers due to the larger orders by the large companies.

This creates pressure on the local agriculture produce exporters or manufacturers because they need to rely on imported packaging which comes in a wider variety of shapes, sizes and specifications and is more reliable with regard to standard compliance overseas.

The original Industrial Modernization Centre’s (IMC) strategy had estimated that 80% of the packaging market linked to small factories, 6% to medium size factories and 14% to big players. Yet, in more recent years, there has been a shift towards more sophisticated packaging which is dominated by larger players. For instance, the Faragallah Group, one of the top three suppliers of packaged juice and dairy products in Egypt, joined Tetra Pak to open a liquid packaging factory outside Alexandria.



Local packaging needs

There is a growing need for high quality packaging, innovative designs, improved usability (ease of opening and consuming), and functional packaging which protects the product and ensures it meets its designated shelf life intact. There is also a strong reliance for primary packaging on flexible plastic and paper (both of which suffer from raw material shortages as they rely on imports and recycling). On the other hand, secondary packaging relies more on cardboard followed by almost equitable consumption of corrugated boxes, rigid plastic paper and flexible plastic.

This utilization pattern coupled by shortages in local production results in a reliance on importing which hurts company competitiveness. Despite these challenges year on year demand and consumption of packaging continues to grow by an average of 15%.

Standards for the sector need to be enforced more aggressively and more stringently in order to elevate the quality of the output and position the industries which rely on this packaging more competitively with regard to their export markets. There remains a major gap with regard to packaging-specific technical education, while Egypt's university education with regard to packaging design remains ahead of many other adjacent states, yet this focuses on white collar job graduates.

In terms of business support services that would enrich the industry, survey respondents cited structural design services, packaging testing services, consultancy on packaging and packaging optimization and consultancy on ISO, BRC or GMP standards. Entities Involved in Packaging In terms of the existing support infrastructure, the table below showcases the various entities offering support to the end manufacturers as well as packaging manufacturers in Egypt at the moment.

Entities involved in packaging

Egyptian Organization for Standardization & Quality

Standard setting, quality assurance, conformity assessment, testing and industrial measurement.

Agricultural Research Center ARC

- 1- Conducting applied and academic research related to means of enhancing yield, reducing the cost of production and transferring new technologies.
- 2- Consultancy service to the SMEs and larger players it supports in the form of R&D support or design related support with regard to packaging/product fit.

Food Safety Authority

The entity is yet to go live and operate at its full capacity, yet its declared mandate so far indicates that it would be positioned to advise food manufacturers on packaging and labelling requirements.

Food Development Center

1. Quality Control - Examination of the raw materials and the end product packaging materials, which helped those companies for raising the quality and ensuring the safety of its materials and conformity to specifications for export and the local market and the necessary analysis certificates.
2. Research and Development - For improving product quality, developing new products and assisting in solving problems of quality control by using equipment of the pilot plant of Fruits, Vegetables, Oils, Fats and Bakery Products processing.
3. Training- Holding training courses in the field of analysis of water, raw material and final products. Inspections of Cans, Tinplate, Lacquer and Flexible Packaging materials.

MSME Development Agency

Role under formulation yet should support MSMEs in issues relating to access to finance, training, value chain integration and technology support.

Helwan University, Applied Arts Faculty, Printing Packaging & Publishing Department

Training & ad-hoc advisory. Starting next academic year there is a new parallel program that will specialize in packaging science (design, engineering, technology for production each material). Furthermore, it will study technology of packaging for different industries like food, pharmaceutical etc. This program is accredited from scientific research academy, and based on credit hours.

Plastic Technology Center

1. Collaborate with the produce manufacturers in the agricultural lands to help them determine the best material to get their produce to its intended destination fresh and with minimum damage.
2. Support packaging manufacturers in reaching the best possible manufacturing means for their product.
3. Training services on how to use the machinery

Special Article

National Food Waste Strategy and Fight Food Waste CRC working together to halve food waste in Australia by 2030

Nerida Kelton*

With an estimated cost to the Australian economy of around \$20 billion each year Food Waste is a serious problem that can no longer be ignored. Australian consumers throw away around 3.1 million tonnes of edible food a year with another 2.2 million tonnes disposed of by the commercial and industrial sector.

Whilst the problem of food waste requires an end-to-end Supply Chain approach, the first step to ensuring effective strategic change is having long-term policy commitment that addresses the seriousness of the Food Waste issue by the Federal and State Governments.

The first step has now been taken with the development of the National Food Waste Strategy by the Federal Government in November 2017. This strategy provides a framework to support collective action towards halving Australia's food waste by 2030.



Nerida Kelton

Over the next two years Food Innovation Australia Limited (FIAL) will receive funding from the Federal Government to develop the National Food Waste Strategy Implementation Plan, including a Voluntary Commitment Program and an evaluation framework to monitor progress. Food Innovation Australia Limited (FIAL) is an industry led, not-for-profit organisation that collaboratively fuels growth throughout the Australian food and agribusiness industry.

The Government recently appointed a National Food Waste Steering Committee which will support the implementation of the National Food Waste Strategy. FIAL has been working with the National Food Waste Steering Committee to help identify the short, medium and long-term initiatives crucial to the delivery of the strategy against the four priority areas that have been identified: policy support, business improvements, market development and behaviour change. The Implementation Plan is due in March next year and will provide the road map for Australia to meet the goal of halving food waste by 2030.

The Steering Committee have also been working closely with FIAL to identify the pathway to success for an industry-led and championed Voluntary Commitment Program. This program is a call to action for businesses that want to deliver a meaningful and collaborative reduction in food waste, through partnerships, collaboration, shared expertise and innovation.

The Fight Food Waste Cooperative Research Centre (CRC) was approved in April 2018 to receive a \$30 million grant from the Australian Government's CRC Program. The Fight Food Waste CRC involves 60 participants from around Australia and overseas, who collectively raised \$103 million in addition to the \$30 million from the CRC Program. This initiative will be an Australia-first bringing industry, government and research bodies collectively and collaboratively together to tackle the food waste problem in this country.

The CRC's mission is composed of three core aims:

1. Reduce food waste throughout the value chain
2. Transform unavoidable waste into innovative high-value products.
3. Engage with industry and consumers to deliver behavioural change.

The Fight Food Waste CRC directly supports the Federal Government's National Food Waste Strategy working on identifying priority projects for the next three years.

The Reduce Program within the CRC will focus on providing knowledge, tools and solutions to understand the weaknesses and opportunities that exist across the food supply chain. This will be delivered through four key activities:

1. Map resource flows, waste and root cause analysis
2. Review functions and consumer perceptions of packaging and processing
3. Investigate product specific supply chains and identify opportunities
4. Investigate methods to increase food donation and measure its social impact

The Australian Institute of Packaging (AIP) has already taken an active role in helping educate the packaging industry on the true role of packaging in minimising food waste by contributing to the National Food Waste Strategy, having a representative on the National Food Waste Steering Committee and as a core contributor to the Fight Food Waste CRC.

The Institute has also recently launched a new training course 'The Role of Packaging in Minimising Food Waste' which has been run in Sydney, Melbourne, Auckland and Thailand so far this year. The AIP is the first packaging institute in the world to develop the global Save Food Packaging Design awards. The AIP have also been working on [key criteria and guidelines](#) for packaging technologists and designers to use as the standard for Save Food Packaging Design.

Long-term objectives of the AIP are to:

1. Encourage all packaging technologists and designers to use Save Food Packaging key criteria and guidelines across the globe. The key criteria includes, but is not limited to "re-sealability, openability, improvement of barrier packaging and extension of shelf-life, portion control, better understanding of Best Before vs Use By dates, improved design to reduce warehouse and transport damages and losses, better use of active and intelligent packaging and Life Cycle Assessments".
2. Ensure that all packaging technologists and designers are utilising Lifecycle Analysis Tools within their Save Food Packaging framework. Today there is a strong focus on the environmental aspects of food packaging, to ensure that at the end of its life (after use of the product contained) that it can be reused, repurposed, recycled or composted.
3. Encourage Manufacturers to actively engage in designing innovative Save Food Packaging and communicating these initiatives to their customers and consumers.
4. Recognise a wider range of Save Food Packaging innovations through the Packaging Innovation & Design (PIDA) Awards and the international WorldStar Packaging Award program.
5. Showcase Best Practice Award-Winning Save Food Packaging innovations across Australia and New Zealand.
6. Contribute to consumer education and engagement projects to change the narrative around packaging's roles in minimising food waste. Consumer education is needed to help them better understand the true role of Food Packaging: "protection, preservation and promotion of product, shelf-life extension, tamper resistance, barrier from external elements all the while ensuring safe delivery of food."

The National Food Waste Strategy and the establishment of the Fight Food Waste CRC have enabled for the first time the bringing together of an extensive range of like-minded industry professionals, who are working collaboratively across the entire Supply Chain for a common goal: "halving food waste by 2030". Every business has a role to play...do you know yours?

Has your business developed a Fight Food Waste Strategy? Are you designing any Save Food Packaging? If so, what criteria are your packaging technologists using? Are you ensuring that LCA is incorporated in your design tools? Have you enrolled your packaging technologists in the new training course 'The Role of Packaging in Minimising Food Waste'? Contact Nerida Kelton at the Australian Institute of Packaging (AIP) for further information nerida@aipack.com.au

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member. She also holds a position on the Australian Federal Government Department of Environment and Energy's National Food Waste Strategy Steering Committee for Fight Food Waste and is the AIP lead for the Fight Food Waste Cooperative Research Centre. She is the ANZ Board member for WPO and is on the WPO Sustainability Committee.

Position Paper

Packaging and Trade

Kofi Manso Essuman*

Trade which is the exchange of goods, services and capital between two or more parties either within a country or across international borders has been going since time immemorial. Trade plays a critical role in the level of prosperity in a country because it creates job opportunities and higher-earnings for many people. A comparison of developed, 'developing' and 'under-developed' countries reveals that countries with a high level of trade tend to be more prosperous than countries with limited trade opportunities.

Trade fuels competition, innovation, and economies of scale and allows individuals, companies, regions, and countries to take advantage of competitive prices and increased choice for economic growth and wealth creation in the world. Consequently, billions of people around the world have, through trade, escaped the challenges of subsistence life and poverty that was characteristic of many people throughout history. One factor that has greatly enabled trade is Packaging.

Today trade contributes significantly to the gross domestic product (GDP) of countries and is a reflection of the level of development. A century ago world trade in merchandise was less than 20% of world economic output, today it is over 50%.

Unlike the 20th century, huge quantities of machinery from Germany, toys from China, computers from Japan, fruits from Chile, T-shirts from Bangladesh, wine from New Zealand, cocoa from Ghana, pharmaceuticals from India, flowers from Kenya and tomatoes from Spain are freely traded across the globe today due to several factors including improved infrastructure, good transport, reduced trade restrictions and better technology. The value of world merchandise exports has grown from about USD 60 billion in 1948 to nearly USD 16 trillion in 2015. Merchandise exports from North America, Europe, Asia and Africa in 2015 were 14%, 37%, 26% and 2.4% respectively. Manufactured goods constituted about 70% of the total merchandise exports.

Trade involves the movement of goods from the source of production to the point of consumption. A product has little value unless it is delivered to the final customer unspoiled, undamaged and functional for its intended purpose. For this reason one can conclude that packaging - defined as the technology of enclosing or protecting products for distribution, storage, sale and consumption - has greatly facilitated the growth and transformation that has occurred in merchandise trade in the last 50 years.

Packaging is used in a wide range of industries across the food and drink, healthcare, cosmetics, and other consumer goods. Packaging is also used for handling a wide range of industrial goods and agricultural commodities. A wide range of materials are used to manufacture packaging. The types include flexible plastics, rigid plastic, flexible foil, glass, metal, paper and paperboard, wood and composite materials. Packaging is usually available as primary (the first level package for containment of the product), secondary (the second level package which holds several primary packages together) or tertiary (this groups and protects several packages for handling and shipping).

The demand for and usage of packaging has been growing rapidly and is closely linked with the performance of global trade. For example world merchandise trade which has been growing steadily from 2005 dropped in 2009 as a result of the global financial crises. Similarly global sales of packaging which has been growing since 2000 declined by 10% in 2009 due to falling demand for packaged merchandise.

The value of packaging consumed globally in 2012 was USD 772 billion. Asia's share of this demand was 36%, with North America and Western Europe accounting for 23% and 22% respectively. Packaging consumption in Eastern Europe, South and Central America and Africa were 6%, 5% and 2% respectively. It is estimated that by 2018 global demand for packaging will reach USD 974 billion and consumption in Asia will be a little over 40%. North America and Western Europe will account for 21% and 19% respectively. Packaging demand in Eastern Europe, South and Central America and Africa will be 6%, 5%, and 3% respectively.

The largest application segment of the packaging industry in global trade is the industrial, bulk and transport sector worth over USD 300 billion with a market share of 40% of total packaging. The major end-user industries of industrial packaging are chemicals, pharmaceutical, lubricants, bulk food and beverages, building and construction. Trade related factors driving demand for industrial packaging include rising consumption which stimulate industrial activities, increasing demand in the chemicals and pharmaceutical market and increased infrastructure and development work.

The global non-bulk food packaging market is valued at nearly USD 250 billion representing over 30% of the global packaging market. The food packaging market can be classified into sectors such as convenience foods, confectionery items, dairy items, fruits and vegetables, meat and sauces and dressings. The main reason for increasing preference for processed food is the shifting population dynamics towards urban centres from rural areas. Other major application segments of the global packaging industry are drinks, healthcare and cosmetics.

Packaging ensures successful national and international trade in many ways:

- Goods reach their final destination in perfect condition because the package prevents damage by providing physical protection of contents from mechanical shock, vibration, electrostatic emissions, compression and temperature variations during storage, transport and distribution.
- The package prevents spoilage by acting as a barrier that protects contents against oxygen, water vapour, dust, insects and microorganisms. Active packaging, modified atmosphere and controlled atmosphere packaging are innovative technologies that help to extend the shelf life of goods especially fresh produce.
- Labelling, marking and coding on packages help to communicate product usage, transport, storage, handling and disposal instructions. Barcodes for example can be used to speed up sales at the checkout and also for traceability.
- Packaging plays an important role in reducing the safety and security risks of products along the supply chain. Tamper evidence features on packages for example help to reduce the risks of theft and manipulation.
- Packaging has become an effective tool to encourage the purchase of products because the unique identity of the product and brand's message are effectively communicated by the physical design of the package and graphics on the label. Packaging thus promotes fast moving consumer products by providing distinct merchandising visibility and on-shelf differentiation.
- Packages have features that provide convenience in distribution, handling, stacking, display, sale, opening, reclosing, using, dispensing, reusing, recycling, and ease of disposal to meet the changing population dynamics such as growing urban settlers, increasing number of the elderly especially in developed countries and reducing family size.
- Enables compliance with international, regional and local regulatory requirements including traceability, health, safety and environmental impact.

An effective packaging system is therefore a pre-requisite for efficient logistics and shipping of merchandise over long distances. For fast moving consumer goods in particular, the package enhances the value of the product through attractive presentation and act as a means of communication with consumers about its benefits. Packaging is today a powerful marketing tool and the brand ambassador of many consumer products.

Another impact of packaging on global trade today is the reduction in the cost of goods across the globe compared with five decades ago. For example it is estimated that while a customer would have paid USD 420 to get the SS Warrior to ship a tonne of goods across the Atlantic in 1954, today you might pay about USD 50. This is the result of improved packaging and the introduction of containers which has led to reduction in theft, reduction in labour cost, reduction in insurance cost, reduction in damage and spoilage, reduction in the delivery time, improved inventory management, improved supply chain efficiency and increased competition.

Packaging is thus the bridge that connects countries, markets, businesses and people, allowing them to buy and sell goods on a scale that was not possible in the past. Thanks to packaging, goods from all parts of the globe are readily available in local shops and markets in the remotest parts of countries and consumers can access them without restriction.

Packaging comes in different forms, shapes and material to suit the product being packaged either for storage, transport, distribution, retail or consumer use. Recent changes in lifestyles, consumption patterns, population growth, urbanization, income level and demography have resulted in the design and development of innovative packaging to meet different needs of people in different parts of the world.

Increasing global concerns on the impact of packaging waste on the environment has

resulted in the introduction of a number of international trade regulations on packaging. The EU, US, Japan and other developed countries have strict packaging regulatory requirements such as the Directive 94/62/EC on packaging and packaging waste. These regulations are aimed at ensuring the reduction, reuse or recycling of packaging used for merchandise. A number of technical regulations and standards, including packaging, marking and labelling requirements have also been introduced to protect human, animal and plant life or health.

Unfortunately some of these requirements have become technical barriers to international trade especially for developing countries and has affected their capability to export manufactured goods. Building the capacity of countries to harness the advantages of better packaging will contribute to changing this trend and help companies in developing countries to increase their share of exports of high value manufactured goods.

Packaging has significant economic value and influences the Gross Domestic Product (GDP) of countries because it offers opportunities for promoting international trade. Lower GDP is often associated with countries where the packaging industry is not well developed because in the absence of proper packaging manufacturers are unable to add value and ship products from source through the supply chain to markets. A product in a poorly designed package cannot withstand the hazards of the transit journey, maximise shelf impact and positively influence the consumer purchase decision. The product becomes uncompetitive in the market and affects contribution to the GDP of the country.

Clearly packaging facilitates trade by making the movement of goods between countries more effective and efficient to meet the needs of rapidly growing world populations everywhere. This has benefitted consumers by making goods available, created choice, kept costs down, boosted economies and created employment. This is in line with the primary goal of the World Packaging Organization - "Better Quality of Life through Better Packaging for More People".

***Kofi Manso** Essuman is Consultant of FAO (Food and Agriculture Organization of the United Nations)

Position Paper

Packaging Technology and Design

Pierre Pienaar*

Introduction

Packaging is used in almost every aspect of our lives, you can't really get away from it, even if you tried. It's used to protect products in transport, keep food fresh, entice us to purchase, to provide warnings and to relay legal and safety information. Any product that is designed and made available to the public will need to be packaged and there is a variety of materials to choose from and many rules to follow.

Packaging is the technology of enclosing or protecting products for distribution, storage, sale, and use. It refers to the process of designing, evaluating, and producing packages that can be described as a coordinated system of preparing goods for transport, warehousing, logistics, sale, and end use. Packaging contains, protects, preserves, transports, informs, and sells. In many countries, it is fully integrated into government, business, institutional, industrial, and personal use.

Packaging engineering, also package engineering, packaging technology and packaging science, is a broad topic ranging from design conceptualisation to product placement. All steps along the manufacturing, distribution, marketing and consumption process, should be taken into account in the design of the package for any given product. Package engineering includes industry-specific aspects of industrial engineering, marketing, materials science, industrial design and logistics. Packaging engineers must interact with research and development, manufacturing, marketing, graphic design, regulatory, purchasing, planning, etc. The package must sell and protect the product, while maintaining an efficient, cost-effective process cycle.

Packaging engineers design and develop packages from a wide variety of rigid and flexible materials. Some materials have scores or creases to allow controlled folding into package shapes. Packaging involves extrusion, thermoforming, moulding and other processing technologies. Packages are often developed for high speed fabrication, filling, processing,

and shipment. Packaging engineers use principles of structural analysis and thermal analysis in their evaluations.

Packaging Technology Drivers

We continue to move towards environmental conservation, an aged population, and highly networked information, the packaging industry is required to review the social significance of packaging for development and improvement in harmony with society. Our need for food safety and reassurance, environmental consideration, and universal packaging design is now increasing more than ever before. There is a growing tendency to consider the social and environmental compatibility of packaging among consumers as well as among people of industry, government agencies, and academics. We are in the century of the environment. It is becoming very important to convert our present society systems based on mass production, consumption and waste into a recycling oriented society system based on recycling and reuse. Significant work has been done these past 15 years on Recycle, Reuse, Reduce, Refuse and Repurpose in packaging and other industries. The participation of local municipalities and consumers as well as people in industry is extremely vital in addressing these tasks. We need to teach our children and grandchildren. It needs to become a way of life by all of us.

There is a greater consideration for seniors and disabled people which is becoming a great movement in society along with the environmental issue. The packaging industry began full-scale efforts a few years ago. The packages created from these efforts are called universal design packages, which have been used for food and toiletries.

Along with the two streams of environmental compatibility and universal packaging designs, the development of packaging technologies specified for ensuring food safety and reassurance has been advancing in recent years. In our society created by advanced computer network technology, quickly promoting the traceability of food and developing packages that indicate information about the food including expiration dates are required.

In our society, the development or improvement of packages has started to respond to the five streams of environmental conservation, consideration for seniors and disabled people, and food safety and reassurance.

We need to develop specific packaging technologies which includes packaging materials because, package design must help a product differentiate itself from the masses on the retail shelf, stimulate sales volume of mature product categories, and leave the consumer with a positive experience. The package is the "silent salesperson" sitting next to the competition; it must not only get the busy consumer's attention, but shout, "buy me!" To be successful in the market today, one must not only achieve this type of reaction with the package design, but the package must also function well and provide a positive, memorable experience for the consumer.

Those packs that have been developed for reducing the environmental load include Eco Inks (Aroma-free Ink, Aqueous Printing Ink, and Soy Ink), and biodegradable plastics that decompose due to microorganisms in the ground or compost. In general, packaging materials complying with the needs of society are mainly created by improving or advancing existing technologies rather than by developing new technologies. What types of packages should be developed to address the 5R's by defining the recycle ratio and setting the numerical target goal for each product becomes a challenge that each enterprise is to address as a priority.

Since consumer participation becomes extremely important in environmental considerations, packaging technologies must be developed or improved in accordance with standardisation efforts, such as establishing related laws and regulations, and the quantification of the LCA technique. Although we may not want laws to inhibit pro-activity, we do need them for control, adherence and consistency.

Technologies considering seniors and disabled people

Packaging considering seniors and the disabled, as represented by universal or accessible design, must be designed for everyone to easily use, irrespective of age, capability and lifestyle. Packaging has responded to these requirements by improving or advancing existing technologies, such as convenience for everyone to use e.g., notched paper containers for drinks, easy-to-grip bottles provided with an indentation for easily grasping the plastic bottle, and package containers with notched sides so users can differentiate similar package containers from each other to prevent improper use.

Another equally important aspect is improving the technology for tamper-proof seals that can easily detect the breaking of the seal or opening of the package to guarantee a hermetically sealed packaged container, and child-resistant technology to prevent children

from easily manipulating packages consciously or unconsciously.

The evaluation method for universal and accessible designs and the standardisation of design guidelines considering seniors and disabled people are now important elements for developing or improving packages.

More recently accessible designs have done extremely well on the world stage, this trend will continue along with packaging that focusses on Save Food. The global community is the driver of these developments and is most encouraging.

Technologies for highly functional packages

There are many highly-functional packages developed particularly for food safety and reassurance.

In paper manufacture and paper boards, the development or improvement of technologies is advancing for producing paper containers which can be used for liquid, replacing conventional cans, bottles, and plastic bottles. The same for producing paper-made cushion materials, paper-laminated cans, heat insulating paper cup, paper containers water-proof-processed at edge faces, non-staple cardboards, pulp moulds, and micro flute packaging. In transport packaging, functional cardboard is under development including cardboard that is recyclable, excludes moisture, conducts electricity, and is waterproof, corrosion proof, and insect proof.

The development of technologies concerned with food safety and reassurance is remarkable in plastics. Representative technologies relate to active and intelligent packages. The active package itself reacts with the environment to change its attributes, thus improving the quality, safety, expiration date, and usability of packaged contents. The intelligent package has mechanical, electrical or scientific monitoring and is able to display changes in the quality of its packaged contents over time. The technological development or improvement of packaging is advancing with light-blocking film, transparent and evaporated film, nanocomposites, passive packages, microwavable containers, retort-related containers, and more.

In metal products, an embossed can has been developed which has a rugged part on the can body to make it distinctive in terms of both design and printing. In addition, the developed products include resin laminated cans, diamond-shaped pattern cans, and resealable cans.

In glass products, the representative packages are ultra-lightweight bottles developed as a container friendly to the environment and compatible with our recycling society, and UV-cut transparent bottles that protect their contents by blocking harmful ultraviolet rays. The development of technologies for these packages is still progressing. The greatest attention in this field is focused on the manufacture of bottles using cullet made from recycled broken bottles with a ratio of over 90%.

The advancement or improvement of other packaging technologies is well under way to respond to the various streams of environmental conservation, considering seniors and disabled people, and food safety and reassurance. Further improvement has been made in the technologies of the existing aseptic fill system, foreign-matter-detection, soft-X-ray inspection, marking, in-mould labels, in-line blow fill, shrink labels, and blow-off.

Packaging technology education

Education is fundamental to development. It is both a human right and an investment for sustainable development. Education enables people to live healthier and more productive lives: a path to maximise individual potential, extend freedoms, build capabilities and open up opportunities. The benefits of education within the packaging industry remain particularly strong. Evidence highlights that for education to enhance economic growth, students are to be in a place of learning. Some packaging engineers have backgrounds in other science, engineering, or design disciplines while some have college degrees specialising in this field.

Formal packaging programs may be listed as package engineering, packaging science, packaging technology, etc. BE, BSc, MSc, M.Tech and PhD programs are available. Students in a packaging program typically begin with generalised science, business, and engineering classes before progressing into industry-specific technology related topics such as shelf life stability, corrugated box design, cushioning, engineering design, labelling regulations, project management, food safety, robotics, quality management, package testing, packaging machinery, tamper-evident methods, recycling, computer-aided design, etc.

Education is also an essential part of responding to current and future challenges, rising inequalities within and between countries.

Conclusion

To be in the forefront of packaging design, it is imperative to consider cost effective packaging. To remain at the forefront and set the benchmark, one needs to be resolute in a lateral thinking approach.

It is also important to remember that packaging is a medium that invades our homes. It is something we see perhaps many times over long periods. It can therefore be a good medium to promote information about a whole host of issues from positive, general well-being messages about healthy eating, to warnings about poor habits. Many packs use wit to arrest attention through clever use of illustration and typography. Packaging drives innovation with packs that aid the cooking experience – such as its steam cuisine range – and promoting the provenance of its food by putting farmers and chefs on the pack.

Finally, there are two simple questions one can ask oneself and that is to judge whether packaging design is different or whether it's relevant.

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