



# WPONEWS

The voice of the global packaging community

Better quality of life, through better packaging, for more people

## President's Word

### From incremental to disruptive innovation: the packaging industry heats up!

**Luciana Pellegrino**  
President of WPO

#### Greetings!

We're back with another exciting update on the global packaging industry. Since our last edition, there's been a flurry of activity! Our dynamic industry is constantly evolving, and the months of April, May, and June pushed boundaries and reshaped possibilities once again.

#### Innovation fueled by collaboration

Packaging innovation thrives at the intersection of technology, sustainability, market demands, and passionate professionals. Recent months provided opportunities for global collaboration and exploring future trends. And WPO was all around promoting the connection of the global packaging community. I had a busy schedule as well, but not alone, luckily counting with Board Members from all around the globe on the ground!

**CiclePack Show in Chile:** In April it was my honor to represent WPO at CiclePack Show in Chile, organized by our packaging member, CENEM. The show gathered Latin American exhibitors and visitors to explore sustainable packaging solutions, besides some very interesting panels, and it is rewarding to acknowledge the maturity of the show and its positive impact to foster packaging advancement and business opportunities in the region.



**Propak Mena, Egypt:** Invited by Informa Markets, in May, it was a remarkable experience to join a bold delegation of WPO Board Members from the Arab and African regions, getting to know new members in person, and reconnecting with long time colleagues, counting as well with WPO's national member, the Chamber of Printing and Packaging Industries. WPO's training program took place alongside the show while Board Members participated in various panels, including a Round Table on Sustainable Food Systems organized and chaired by LibanPack and UNIDO, supported by Informa Markets and WPO.

Last but not least, since we are all driven by packaging innovation, it was an immense satisfaction to take part of the gala ceremony of the Arab StarPack Awards.



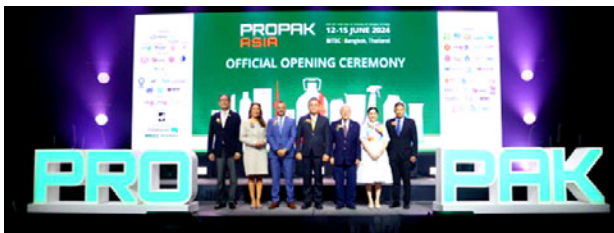
**Drupa Show:** In the meantime, WPO Board Members attended the Drupa show, experiencing groundbreaking innovations driven by AI. These advancements promise to significantly enhance accuracy and efficiency in printing and packaging processes, even offering micro-mass personalization possibilities.

**Expo Pack Mexico:** June started with Expo Pack Mexico, organized by PMMI, and it was an immense pleasure to visit the show on behalf of WPO, and to attend a panel on Women in Packaging. We explored how companies can support initiatives to empower women in reaching leadership positions, from strategic career roadmaps and social culture, building to foster childcare support infrastructure.

During this visit, I had the honor of presenting the awards at the Envase Estelar ceremony, organized by WPO's member AMEE (Mexico's Packaging Association). Moments like this strengthen our industries and empower their professionals.



**Propak Asia and WorldStar Award Ceremony:** a global celebration of packaging! Finally, these dynamic months culminated with Propak Asia in Bangkok, and WPO had a bold participation throughout the event counting with 40 Board Members, from 29 countries. WPO's participation was significant at Opening Ceremony, a Round Table with the Asian packaging bodies, innovation stage and zone with packaging samples, conferences and panels, and we launched the Networking Cocktail for WPO Corporate Partners.



This event had as well a special meaning for me as I chaired my first WPO Board Meeting, as President, alongside with WPO's Vice Presidents and the first Executive Meeting with the new Ambassadors.

To close, an unforgettable night handling the awards at the unique WorldStar Awards Ceremony, in a event counting with more than 300 participants from around the world and WPO Board Members celebrating packaging innovation on a global level.



And this is just the beginning! Enjoy this insightful edition of WPO News.

## Message from General Secretary

### Recap of the WPO Meetings at ProPak Asia



Dear members, once again it's that time of year when we come home with warm hearts after another magnificent WPO Board Meeting. This time, we had the opportunity to meet in the stunning city of Bangkok in Thailand and hold our meetings and the WorldStar Awards Ceremony in parallel with ProPak Asia.

A series of strategic meetings were held, as for our Executive Meeting, the Education, Marketing and Sustainability & Save Food Working Groups; the Roundtable discussion entitled "Enabling Sustainable Industrial Development of the Food Packaging Industry to Reduce Food Loss and Waste" and finally the grandiose WPO Board Meeting. We also used this opportunity to welcome our corporate partners to an exclusive networking event.

At our meetings, around 40 participants were brought together to discuss and plan for the future. The discussions were filled with wisdom, foresight, and a shared commitment to making positive changes. We are incredibly grateful for the thoughtful insights and visionary ideas that were shared during this important session.

Hosting the prestigious Worldstar Global Packaging Awards ceremony was a privilege. It was a breathtaking celebration of creativity, excellence, and innovation in the packaging industry. We want to extend our heartfelt congratulations to all the winners for their outstanding achievements. Your vision and commitment to pushing boundaries have set new standards of brilliance in our industry.

There was also the opportunity to discover the latest packaging innovations and trends presented at ProPak Asia. The fair presented a wide range of innovations, from sustainable packaging solutions to cutting-edge automation technologies, which WPO members were able to learn about.

We had some leisure time with good old friends where we had the opportunity to taste some good Japanese food and get to know a little better the culture of this amazing country.

Now, as we say goodbye to this incredible week in Bangkok, we want to remind you of the exciting opportunities that lie ahead. We are thrilled to announce that our next meeting will take place from November 18th to 22th in the beautiful city of Buenos Aires, Argentina. Please keep an eye on your e-mails, you will soon receive information about our next meeting.

Until we meet again, let's carry the spirit of collaboration and innovation in our hearts, and let's continue to make a positive impact on the world through packaging.

And now, enjoy some of WPO moments at ProPak Asia!



Warmest regards,



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WPO Secretariat  
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## From the Editor

# What we know about the Global Plastics Agreement: past discussions and future actions.

By Liliam Benzi\*



The Global Plastics Agreement is a hot topic internationally and it is important to be updated on the past resolutions and the upcoming steps. In April, the fourth round of discussions took place in Canada, and the debate evolved to address the entire lifecycle of plastics. Despite being an agreement still immature in some aspects, the fact is that the discussions are advancing.

To provide some context, this Agreement, formally known as the Global Plastics Treaty, is an international initiative promoted by the United Nations (UN) aimed at creating a legally binding treaty involving all UN member countries to reduce the production and consumption of plastics, promote a circular economy, and improve waste management.

Interestingly, the fourth meeting faced a significant challenge: waste management, rather than simply condemning plastic. To understand and openly discuss what this challenge means in practice and its impacts, some specialists recently shared important insights about the last meeting, in Canada, and what to expect from the next meeting scheduled for November 25 to December 1, 2024, in Busan, Republic of Korea.

They believe that the next round of negotiations will be crucial for finalizing the Agreement's text based on a lifecycle approach, from production to disposal. The experts also noted that previous negotiations, including the fourth session in Ottawa, were important steps for advancing the text of the instrument and establishing the necessary intersessional work to prepare for INC-5.

It is worth noting that urban solid waste disposal is a common problem in many countries and, therefore, the Agreement's main focus should really be on waste management, involving all stakeholders. In other words, the Agreement is an opportunity to leverage plastic disposal, reintegrating it into the chain as a valuable raw material.

Several countries, including Brazil, strongly supports the existence of the Global Plastics Agreement and advocates for plastic waste to become a raw material. For this to happen, the chain must be economically viable, which depends on consistent demand and extended producer responsibility (EPR).

It is also important to understand that mechanical recycling, although crucial, has its limitations. Therefore, investment in chemical recycling is necessary, allowing for a longer cycle of plastic materials, transforming them into molecules that can be reused as if they were virgin materials, even for food contact. Thus, the development of new technologies by the chemical industry is essential.

## Inclusion of waste pickers, a fundamental pillar.

Another important voice in this debate are the waste pickers. They are seen as key players in the recovery of plastic waste and should be adequately remunerated for their work. Everyone agrees: "The fair inclusion of waste pickers is essential. They are part of the value chain and should be compensated for the environmental services they provide."

Equally important is designing plastic products based on science, aiming to ensure minimal environmental impact without losing functionality. The transformation of design is also crucial for the Agreement to rethink the entire plastic production chain.

The industry, in turn, plays a vital role in providing knowledge and developing new technologies. The participation of all actors – government, industry, civil society, waste pickers/cooperatives – is crucial for the success of the Agreement, which has the potential to transform waste management in the world, promoting a circular economy that minimizes resource waste and maximizes efficiency and sustainability.

As discussed in Canada, the main points of the Agreement are:

1. **Improvement of waste management**, including the collection, recycling, and

proper treatment of plastics to prevent them from becoming "lost" in various ecosystems.

2. **Innovation and Circular Economy**, promoting practices that involve reuse, recycling, and revaluation of plastic products, and including the development of new technologies and more sustainable materials.
3. **EPR (Extended Producer Responsibility)** to ensure that producers take responsibility for the waste generated by their products throughout their entire lifecycle.
4. **Engagement and Education** through incentives for public awareness and education about the impacts of waste on the environment, as well as the sustainable practices that can be adopted by consumers.

The time is ripe for significant advances towards a more circular economy. It is hoped that the next round of negotiations, INC5, will result in a treaty for plastics and waste in general. It is expected that after the next negotiations, the Agreement should be transformed into specific decrees and regulations that will affect the entire value chain positively.

Remembering that the need for a Global Agreement arose from the need to harmonize global efforts toward waste reduction, providing a common legal framework that can be adapted to the realities of each country, but that maintains a level of commitment and coordinated action at an international level.

Its implementation will not be easy and will face various challenges. However, the treaty will also offer significant opportunities for innovation, development of new sustainable technologies, and the creation of new jobs and business opportunities. We can conclude that the Global Plastics Agreement is an important collaborative effort to mitigate environmental impacts and promote a more sustainable future.



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## Agenda

### WPO at FACHPACK 2024



WPO is planning its participation at FACHPACK ([www.fachpack.de](http://www.fachpack.de)) that will take place in the Exhibition Centre Nuremberg (Germany), from 24 to 26 September. The show provides a compact and comprehensive insight into all relevant issues in the packaging industry.

This year the big theme will be "Transition in Packaging". In 11 exhibition halls, around 1,400 exhibitors will showcase innovative packaging solutions for industrial and consumer goods from a wide range of segments. The most pressing and simultaneously most interesting topic for the industry is the EU Packaging and Packaging Waste Directive (PPWR) that was adopted at the end of April.

Here too, FACHPACK will provide answers to questions about issues like recyclability, reusability and the use of recycled materials. Reason enough to start planning your trade fair visit now so that you can be part of the action at the end of September.

The WPO encourages everyone to take part in this event. Registrations can be made via the link <https://www.fachpack.de/en/visit> with the code **A541451**.

For more information about WPO participation, contact the Secretariat, Nathália Antoniazzi by e-mail [info@worldpackaging.org](mailto:info@worldpackaging.org).

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## Around the World

### Significant activities in Latvia

## #1 Packaging industry conference

WPO member, the Packaging Association of Latvia (LIA – [www.packaging.lv](http://www.packaging.lv)) was one of the co-organizers of the annual packaging industry conference "Sustainable Packaging: from design to recycling" together with Latvijas Zālais punkts (The Green Dot of Latvia / LZP) and the Latvia University of Life Sciences and Technologies (LBTU).



The event gathered more than 150 packaging industry specialists and several industry experts. One of the speakers was Sandra Muižniece-Brasava, the newly elected Chairperson of the LIA Board and head of the Technology and Knowledge Transfer Department at LBTU, who introduced the findings of research analyzing more than 3,000 plastic packaging items available on the shelves in Latvia regarding the problems related to packaging efficiency and recyclability.

Other topics discussed in the conference and in the panel discussion included promoting packaging sustainability through legislative and regulatory updates, sustainability in the context of "EIT Food", 100 types of plastics – how many recycling options, new polymer materials testing laboratory accelerating the transition to recyclable packaging.

## #2 TV interview

Iveta Krauja, former longstanding Chairperson of the the Packaging Association of Latvia (LIA – [www.packaging.lv](http://www.packaging.lv)) Board, a WPO member, gave an interview to the local 'Greenwashing' show. She advised on the need of packaging and its impact on the environment, and the possibilities of choosing more environmentally friendly packaging.



## #3 Roundtable

The Packaging Association of Latvia (LIA – [www.packaging.lv](http://www.packaging.lv)), a WPO member, took part in the roundtable discussion with the Ministry of Agriculture and the Latvian Federation of Food Companies on "Improving ecosystem synergies in the context of sustainable packaging". The discussion brought Ministry representatives, industry experts and food chain participants to discuss the challenges and possible solutions in developing and promoting sustainable packaging in Latvia.

## CAVENVASE renews its authorities for the 2024-2026 period



On May 21st, the Venezuelan Packaging Association (CAVENVASE – [www.cavenvase.org](http://www.cavenvase.org)), a WPO member, celebrated its Ordinary General Assembly in which the Board of Directors presented the results for the year 2023, the financial statements of the organization and the elections of authorities for 2024-2026.

Two important achievements of the Board of Directors in 2023 were highlighted: the historic milestone of the internationalization, being accepted as WPO full member, and completing the first Boot Camp in Venezuela about design, development and technology in packaging.

This was an advanced 120 hours course, completed in 16 weeks, with the mission to transmit theoretical and practical knowledge to the participants. After the Camp, professionals had the skills required in packaging design, development and technology, in order to create a competitive and sustainable packaging project.

The newly elected Board of Directors of CAVENVASE, headed by its first female President, Miren Urresti, confirmed its commitment with the Venezuelan packaging industry, working on its defense and promotion, reporting on industry advances, and training packaging specialists. CAVENVASE will continue working for its affiliated companies, for the

packaging community and, above all, for the development of Venezuela.

## Legislation in action in Ukraine

On April 17, 2024, during the Ukrainian exhibition Pack Fair 2024, WPO member, the Club Packagers of Ukraine ([www.upakjour.com.ua](http://www.upakjour.com.ua) or [www.packinfo.com.ua](http://www.packinfo.com.ua)) held the panel 'Legislative Acts in Action', which was opened by Veronika Khalaydzhi, President of the Club Packagers. She noted the importance of compliance with laws, regulations and standards related to food packaging, as one of the most important factors to ensure access of Ukrainian products to European markets.



Gennady Kuznetsov (League of Food Producers) spoke about the adoption of the law 'On materials and objects intended for contact with food products' as a step towards European Integration; Volodymyr Slabiy (Ukrainian Packaging and Environmental Coalition) presented the law project 'On packaging and packaging waste' and Svitlana Berzina (Living Planet) spoke about packaging ecolabelling.

## Seminar, in Greece, discussed the new regulation on packaging and packaging waste



Wpo member in Greece, AGMPM ([www.pac.gr](http://www.pac.gr)) and the European Organization EUROOPEN, organized on May the first introductory seminar on the final text of the new European regulation on packaging and packaging waste (PPWR).

Marzia Scopelliti, Public Affairs Manager of Europen, analyzed the critical chapters of the new regulation: criteria for recyclability of all types of packaging and the possibility of circulating packaged goods on the European market, recycled content of plastic packaging (PCR), new mandatory labeling of packaging in transit, reduction of packaging through horizontal bans of certain structures, re-use requirements, etc.



During the Q&A session, a significant part of the discussion was dedicated to the availability of PCR for plastic primary packaging of food and beverages, the approval of chemical recycling and the use of bio-based polymers, and the tight time frame between the publication of the guidelines and the implementation milestones (2030).

AGMPM works and coordinates its educational actions on a weekly basis with the European Organization aiming to inform and prepare Greek companies in view of the implementation of a large number of new legislations in the European market.

For more information about the presentation of the representative of the European organization send an e-mail to [info@pac.gr](mailto:info@pac.gr).

## AIP activities during ProPak Asia

WPO member in Australia and New Zealand, AIP (Australian Institute of Packaging – [www.aipack.com.au](http://www.aipack.com.au)) continues to support the ASEAN region. Reinforcing its strong partnership with ProPak Asia, the Institute coordinated the largest educational offering of content during the show that happened in Bangkok, from June 12-15.

In total, the Institute organized five educational events that gathered 43 speakers from 18 countries - the Global Packaging Forum, two mini training courses and two workshops. In addition, the AIP had a booth at ProPak Asia to welcome visitors and also displayed the 2023 Australasian Packaging Innovation & Design (PIDA) winners in a special area.





IN PARTNERSHIP WITH:  
**PROPAK ASIA**

## AIP TO BRING 2X MINI TRAINING COURSES TO PROPAK ASIA 2024: DAY 2: 13th JUNE

*FREE TO ATTEND*



**1. INTRODUCTION TO PACKAGING SPECIFICATIONS**



**2. INTRODUCTION TO ACTIVE & INTELLIGENT PACKAGING**

## 2024 GLOBAL PACKAGING FORUM

**DAY 1:  
WEDNESDAY 12 JUNE**  
— SILK 2-4 —

**29 speakers from 18 countries**

Organised by Informa Markets & AIP, the 6th edition of the largest packaging conference at ProPak Asia annually will bring together 29 speakers from 18 countries to discuss the future of Sustainable Packaging Design and the circular economy for packaging.

\*11 CPE Points per Session

SUPPORTING ASSOCIATIONS

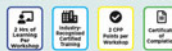
Registrations are Free and Now Open <http://aipack.com.au/event-registration/?ee=433>



IN PARTNERSHIP WITH:  
**PROPAK ASIA**

## AIP TO BRING 2X WORKSHOPS TO PROPAK ASIA 2024: DAY 3: 14th JUNE

*FREE TO ATTEND*



The AIP will once again be heading to ProPak Asia on the 14th of June to run 2x workshops covering Sustainable Packaging Design: The Future of Paper, Renewables & Compostable Packaging and Circular Economy for Plastics Packaging: Trends, Barriers & Challenges.



Registrations are Free and Now Open <http://aipack.com.au/event-registration/?ee=404>

## New President of the Italian Packaging Institute



The Assembly of members of Istituto Italiano Imballaggio ([www.istitutoimballaggio.org](http://www.istitutoimballaggio.org)), a WPO member, reconfirmed Alessandra Fazio at the head of the association for the 2024-2026.

During the event, Alessandra Fazio retraced the goals and results of her first tenure, focusing on the issues of communication, through digital marketing and social channels, PR activities and the strengthening of relations with other stakeholders in the supply chain, particularly in the international overview.

The actions undertaken included strengthening investment in the LinkedIn channel, a structured presence at trade fairs and a close collaboration with the packaging associations worldwide, as WPO.

Moreover, the Italian Institute of Packaging recently joined Europen, an important step to provide the Italian Institute with resources, knowledge, and a platform for influence that can significantly enhance its mission and capabilities.

Another topic closely followed by the President is the professional training. In the last two years, the Institute recorded interesting numbers in its training programs: 3,586 participants in more than 3,100 hours. In addition, 10 new courses and workshops were launched.

The third core topic regards the assistance to the members. The strategy for the next two years is to be engaged on new issues such as scientific support to advocacy activities, quality standards and sustainability, monitoring and analysis of new market trends, and expansion of the membership base, in particular in the less represented sectors, such as cosmetics and luxury.

## Arab StarPack honors winners in Egypt





The winners of Arab StarPack, a packaging competition recognized by WPO and organized by its member LibanPack ([www.libanpack.org](http://www.libanpack.org)), were awarded during a ceremony held in Egypt for the occasion of Propak MENA.

Around 300 people from Arab and African countries attended the ceremony, including many industrialists, companies, students, and representatives of Arab and African packaging organizations, as well as the President of the WPO, Luciana Pellegrino, and several representatives from Arab embassies in Egypt. The ceremony counted with the support of UNIDO and Informat Markets.

Arab StarPack aims to raise awareness about the latest developments and trends in the packaging sector, particularly from marketing and sustainable development perspectives, to enable Arab companies and students to enhance the competitiveness of the food industries and other sectors in our region.

Soha Atallah, Director of LibanPack and Vice President Marketing of WPO, emphasized the importance of the competition, pointing out that it aims to stimulate creativity and perseverance. She added that the 12 companies that won the Arab StarPack competition also participated in the WorldStar, the global competition organized by the WPO.

During the ceremony, Luciana Pellegrino, WPO President, expressed her delight in participating for the first time in the Arab StarPack celebration, commending the membership of Arab and African countries in the Organization.

More than 600 students and 160 Arab companies from 08 countries – Lebanon, Egypt, Tunisia, Palestine, Jordan, Oman, the United Arab Emirates, and Saudi Arabia - participated in the Arab Star Pack competition. To know all the winners, visit [www.arabstarpack.org](http://www.arabstarpack.org).



## CENEM elects new Board of Directors

On June 18, WPO member in Chile, CENEM ([www.cenem.cl](http://www.cenem.cl)), held its Annual General Assembly with voting to select the Board of Directors for the 2024-2028 period. Pamela Pavez, Chair of the CENEM Board of Directors, led the meeting alongside Mariana Soto, General Manager of the Corporation.



During the Assembly, the work carried out during 2023 was reported, the Corporation's Financial Statement was presented, and the balance for the 2023 fiscal year was approved. The Accounts Review Committee was appointed, consisting of Erika León, General Manager of Sorepa, Jorge Fuentes, General Manager of Siegwerk Chile, and Sara Navón, Sales Manager of Oxiquim.

A total of 12 candidates to be part of the Board of Directors were presented, and the seven who received the most votes became part of the Board for the next 4 years. They are: Pamela Pavez (Chilempack); Alfredo Gili (CMPC Biopackaging Corrugados); Gino Villanueva (Ampcor); Macarena Obach (BO Packaging); Diego Vial (Sun Chemical); Fernando Álvarez (Packaging Xpert); and Guillermo Toro (Cristoro).

## Ukrainian competition for the Best Packaging

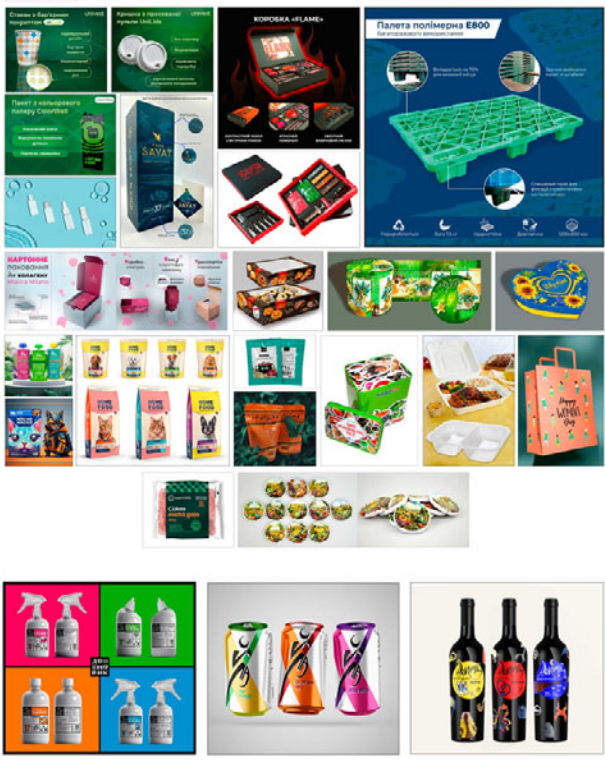
This year, 40 samples of packages and labels, from 22 companies, from eight Ukrainian cities, took part in the local competitions 'Ukrainian Packaging Star', 'Ukrainian Label' and 'Packaging of the Future', all organized by WPO member, Club Packagers of Ukraine ([www.upakjour.com.ua](http://www.upakjour.com.ua) or [www.packinfo.com.ua](http://www.packinfo.com.ua)).

Companies from Latvia also took part in the competition for the second time. 32 packaging samples and 10 label samples developed by young designers, from seven universities and academies, from five cities of Ukraine, were submitted to the 'Packaging of the Future'.

The online jury meeting was held in April and joined well-known packaging specialists from Ukraine and abroad. The results were: 03 awards to Gualapak Ukraine, and 02 for each one of the following companies: Uninvest Marketing LLC (Fastiv city), Kaskad (Dnipro city) and TCD (Kyiv city). Other winners of the competition represented other parts of Ukraine.







**AgroFood Plastprintpack exhibition in partnership with APECI**



WPO member, Association of Packaging Professionals in Côte d'Ivoire (APECI – [www.apeci.ci](http://www.apeci.ci)), is a co-organizer of the upcoming AgroFood – PlastPrintPack West Africa exhibition (Abidjan - October 08-10), under the theme: 'Food safety, Food waste reduction, Recycling and Circular Economy'. The exhibition is organised by Fairtrade Messe and APECI will develop the concept 'AfrikEmbal'.





The idea is to showcase the entire value chain, from agro business transformation to packaging, enabling the main local, regional and international packaging players to meet, trade and network during the three days show in the Ivory Coast. It is also a good opportunity to discover global best practices in order to improve packaging developments and deliver excellent products that are both consumers and environment-friendly.

## A new cross border platform in China

WPO member in China, World Packaging Center (GPC), is proud to introduce its new cross-border platform, the World Packaging Cloud (WPC). It focuses on Southeast Asia and the purpose is to help China's packaging machinery and printing equipment, packaging containers, and auxiliary material companies to go overseas and deliver high-quality products to global packaging users.



## Well done in the ScanStar!

WPO congratulates its members in the Nordic region - Sweden, Finland, Norway, Denmark and Iceland - for the record of entries in the ScanStar ([www.scanstar.org](http://www.scanstar.org)) packaging competition that qualifies for the WorldStar Awards, the WPO global packaging award.

The jury meeting was hosted by WPO Vice President Governance, Magnus Sidling, and member from Sweden, Mikael Gällstedt.



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## From the Board

### From Thailand to Cuba!

WPO Global Ambassador, Silvio Colombo, from Argentina, flew directly from Propak Asia, in Bangkok, to Havana, to be the trainer in the packaging training course organized by WPO member from Cuba, the National Center for Containers and Packaging (CNEE).

As part of WPO packaging training programs, coordinated by Vice President of Education, Kofi Essuman, there are still 03 more scheduled to the second part of 2024: Kenya, Italy and Philippines. For more information, visit WPO webpage [www.worldpackaging.org](http://www.worldpackaging.org).



### WPO visit to IAEA facilities

On June, WPO held a meeting, in cooperation with UNIDO ([www.unido.org](http://www.unido.org)), at the International Atomic Energy Agency (IAEA – [www.iaea.org](http://www.iaea.org)) facilities in Seibersdorf (Austria). On that occasion, the WPO delegation got to know the Food Safety and Control laboratory and discussed the opportunities for future cooperation between the organizations.



WPO was represented by its General Secretary, Johannes Bergmair, and the Secretariat, Nathália Antoniazzi, that met Aleksa Mirkovic, from UNIDO, and Christina Vlachou and

## Well done Nerida!

WPO congratulates its Vice President Sustainability & Save Food, Nerida Kelton, that was awarded with the inaugural Hall of Fame Women in Packaging for Australia and New Zealand. She was recognized for being a "trailblazer and mentor for women in the region".



WPO member, the Australian Institute of Packaging (AIP – [www.aipack.com.au](http://www.aipack.com.au)) supported the inaugural Women in Packaging Awards powered by the local publication, PKN Packaging News.

## Future plans with Hispack, in Spain.



Also on June, WPO received in its headquarters in Vienna, the visit of the representatives of Market AAD, a consultancy company that supports Hispack ([www.hispack.com](http://www.hispack.com)), in the organization of conferences and content events at the packaging show in Spain.

WPO General Secretary, Johannes Bergmair, hosted Ricard Madurell and Adrià Llacuna. On the occasion, they discussed WPO's future contribution and cooperation to the next edition of Hispack.

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## Education

### Packaging program in UK

WPO member in UK, IOM3 ([www.iom3.org](http://www.iom3.org)), offers a range of courses to help upskill those in the packaging industry. The courses cover a wide range of topics and are suitable for those just starting out in the industry or simply wanting to expand their knowledge, or to those wishing to undertake learning in specific areas of packaging technology.

Many of our courses are available in person or as online distance learning, and lead to recognised qualifications from PIABC. Online learners can start our online PIABC Level 3 Certificate in Packaging and EQUIPT courses at any time.

Please note that the note that the next intake for our PIABC Level 5 Diploma in Packaging Technology blended learning course is 23 October 2024.

For a full list of packaging technology and packaging industry courses, go to: <https://bit.ly/iom3packaging>.

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## News from Corporate Partners

### TNA announces 'Packed with Purpose' initiative to support children's education in disadvantaged communities



In an unprecedented event to raise funds to enhance the lives of children in disadvantaged communities, WPO Corporate Partner, TNA Solutions ([www.tnasolutions.com](http://www.tnasolutions.com)), presents 'Packed with Purpose', a unique giveaway that gives entrants an unbelievable 1 in 200 chance to win the tna robag® worth USD 200,000. The initiative is under the company's philanthropic arm, the Nadia and Alf Taylor Foundation.

To participate, the first 200 people will have the opportunity to donate the equivalent to USD 1,500 or more, after which the entries will be closed and 100% of the proceeds will be given directly to fund deserving projects.

The grand prize draw will take place on 25 July 2024, and the winner will receive the world's fastest VFFS solution, the tna robag®. The equipment offers unrivalled speeds of up to 250 bags per minute combined with wastage as low as 0.1%. It provides superior flexibility and enhanced serviceability for maximum up-time, and bags just about any type of food application faster and more efficiently than anyone else.



Dave Everett OAM, CEO of the Nadia and Alf Taylor Foundation, said: "At a 1 in 200 chance, the odds of winning the tna robag® are unbelievable! The important point here is that by donating, you are making a big difference to underprivileged children around the world who would otherwise go without the chance of a decent education. There is no downside that we can see, just a chance to contribute directly to a great cause and win TNA's market leading packaging system in the process."

If the target is not reached, the Foundation will refund the donations.

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## Worldstar Awards

### WorldStar Award and WorldStar Student Ceremony 2024 celebrated the global packaging excellence in Bangkok



WPO organized the prestigious WorldStar Awards and WorldStar Student Award Ceremony and Gala Dinner during ProPak Asia 2024, on June 15. The event was hosted by the show organizer, Informa Markets Asia, and was attended by around 300 packaging professionals from 42 countries and WPO Board Members, counting as well with Informa Markets and UNIDO representatives. Once again, WorldStar and WordStar Student entries showcased the pinnacle of innovation and dedication in the packaging industry.

The evening kicked off with an authentic cultural performance, celebrating the rich heritage of Thai culture. Besides the 90 winners present in the Ceremony, representing 77 companies across 31 countries, the night also awarded two winners of WorldStar Student, from Ghana and the USA, and the Lifetime Achievement Award in Packaging, delivered to Gyorgy Viskel, from Hungary, honoured for his lifelong contributions to the packaging industry.





The WorldStar Special Categories were also acknowledged during the night as the best packaging innovations in Sustainability, Packaging that Saves Food, and Marketing. Last but not least, the President's Award was presented by WPO President, Luciana Pellegrino, celebrating the most innovative and impactful packaging solution.

Luciana Pellegrino expressed her pride and vision for the future stating: "The WorldStar Awards ceremony celebrates the best of the best in packaging innovation from around the globe. And a special evening like this, gathering the global packaging community, strengthens our industry and inspires us push collaboration and solutions for a greater positive impact."

Soha Atallah, WorldStar Coordinator and WPO Vice President for Marketing also shared her excitement, saying: "It is an honour to LibanPack to organize the WorldStar, on behalf of WPO, for the third consecutive year. Seeing the pride and the bright shine in the eyes of the winners makes all the efforts worthwhile. This year, we celebrated the 56th edition of WorldStar and we are thrilled to have it in the vibrant city of Bangkok, during Propak Asia."

Both Luciana Pellegrino and Soha Atallah expressed their appreciation for Informa Markets team for hosting WorldStar Ceremony and for their warm hospitality for WPO activities – Board Meeting, Working Groups and Executive Meeting – for a week (June 10-15), during ProPak Asia.

The complete list of WorldStar Winners is available on WorldStar website [www.worldstar.org](http://www.worldstar.org) and the list of WorldStar Student is available at [www.worldstarstudent.org](http://www.worldstarstudent.org).

The new edition for Worldstar 2025 was opened for entries on July 10, 2024. For more information on WorldStar Awards, contact the Coordinator, Soha Atallah, by e-mail [s.atallah@worldpackaging.org](mailto:s.atallah@worldpackaging.org).

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## Trends Report

### WorldStar Awards and WorldStar Student Packaging Trends Report is available for download!

The latest edition of the WPO Packaging Trends Report, based on the winners of WorldStar Awards 2024 ([www.worldstar.org](http://www.worldstar.org)) and WorldStar Student ([www.worldstarstudent.org](http://www.worldstarstudent.org)) 2024, is available for free download in WPO webpage [www.worldpackaging.org](http://www.worldpackaging.org).



The document includes, among other details, the global packaging trends for 2024:

- Consumer Awareness & Preferences
- Single-Use Plastics Regulations
- Extended Producer Responsibility
- Recycled Content Requirements
- Labeling Legislation
- Design for Recovery
- Substance Restrictions

The Report also analyzes each WorldStar category and connects them with the main trends identified in the winning packages. The Packaging Trends Report was produced by WPO Press & Communication Liaison Officer, Liliam Benzi.

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## Special Interview – Pierre Pienaar

### The importance of being the first Lifetime CPP in Australasia

The AIP (Australian Institute of Packaging – [www.aipack.com.au](http://www.aipack.com.au)), a WPO member, congratulates the recipient of the first Lifetime Certified Packaging Professional in Australasia, Pierre Pienaar MSc FAIP, FIPSA, CPPL, Education Director, AIP and former WPO President.

Let's hear what he has to say about the CPP program that has been



accepted as the global recognition as a packaging professional and has become the leading mark of excellence internationally, and a must-have recognition of industry proficiency and achievement for packaging professionals.



### **1. How long have you been in the industry? What are your areas of expertise?**

**Pierre:** I commenced in the industry in 1984 after studying pharmacy and joining a large pharmaceutical manufacturer. After a year of doing drug analysis an offer came up to become involved in packaging. I jumped at the opportunity of getting out of the laboratory and venturing into the world of packaging. I was asked by the CEO to find a university somewhere in the world to do a post graduate degree in Packaging. I found Brunel University in London where I completed a Master's Degree in Packaging Engineering.

It is because of my undergraduate studies that I have developed an affinity for pharmaceutical packaging. I enjoy packaging problem solving in a production environment because in my early years in pharma where I spent 6 years in the manufacturing of liquid, parentals and solids and where the packaging was diverse and there was lots to learn in packaging when it came to output on the diverse filling machines. It was during these years in production that I completed a Master's Degree in Production from University of Hertfordshire, UK.

### **2. What made you originally apply for the Certified Packaging Professional (CPP) Designation?**

**Pierre:** Whilst involved in the WPO as Vice President Education, I wanted the WPO to have an international recognised accreditation because we had no idea of the various qualifications of the wide variety of people involved in the WPO. At that time, the WPO President, Tom Schneider, tasked me to find such a reputable accreditation that would fit with the needs of the WPO and was internationally recognised. At the same time, the AIP was also in discussions with IoPP (Institute of Packaging Professionals – [www.iopp.org](http://www.iopp.org)), WPO member in the USA, to launch the program into Australasia.

WPO used the AIP development of the program as a test case for how it could work for the rest of the world. The WPO program was borne out of the AIP program. At this early stage, the AIP became involved in supporting the development of the WPO program and they became first association to offer the CPP outside of the USA. I attained my CPP through the AIP and I became the first person to become a CPP in Australasia. The AIP had the tenacity to become the first association to offer the program for Australasia and they now have many CPP's in the region and support those around the world to undertake the designation.

### **3. Why was it so important for you to attaining the CPP designation?**

**Pierre:** It is important that when the global packaging community comes together, we can easily recognise other professionals that are equally qualified in the various disciplines in packaging. The CPP designation gives us all a sense of belonging to a bigger global community.

Recognition however must go to the AIP for all of their hard work in becoming the first association outside of the IoPP to offer the program and for taking the lead in the WPO Members. The AIP supports the WPO CPP program and works with many people around the world today to help guide them to attain the designation. In fact, the General Secretary of the WPO, Johannes Bergmair, undertook his CPP through the AIP.

### **4. How important is the CPP designation for the greater recognition of people in the packaging industry?**

**Pierre:** It is the ultimate and only method of ensuring that you are recognised internationally in the packaging industry, through this CPP accreditation program. The CPP is also recognised in over 64 WPO Member countries which will help you to look for jobs overseas. Just knowing this is so encouraging and inspiring.

### **5. Were there any new learnings or takeaways that you gained from the experience?**

**Pierre:** It has reminded me just how diverse packaging really is, all encompassing, where the left and right brain is required to solve the myriads of options and opportunities. It is a field where on-going studying and learning, be that in conferences, classroom, reading, discussions, webinars, seminars are all truly necessary, so as to stay abreast of developments.

### **6. What does it feel like to be the first Lifetime CPP in Australasia?**

**Pierre:** If it inspires others to gain their CPP in packaging, then it has been worthwhile. Like anything there always has to be a first, I just happened to be in the right place and at the right time and nudged at the beginning by Nerida Kelton to attain the CPP designation.

### **7. What advice would you offer anyone in the industry looking to become a Certified Packaging Professional?**

**Pierre:** What has driven me is to ensure that growth in education persists. It is encouraging to witness this enhancement and growth of the packaging industry over these ensuing years.

This highly regarded Certified Packaging Professional (CPP) program is really gaining momentum across all nations in the packaging professional space. The AIP is intentional

about education and ensuring that it remains current giving the industry the advantage of access to cutting-edge packaging developments globally, and the CPP program is part of that education.

If your intention is to remain in the packaging industry, and you want to ensure on-going learning, then the CPP program is for you. It certainly gives you a sense of belonging and a great personal sense of achievement.

Attaining the CPP designation is an excellent investment in your professional development and the credential defines the packaging professional and allows organisations to seek out and hire the right professional based on verified knowledge, skills and industry contributions. Using the CPP program to assess and evaluate one's professional competency validates you as internationally proficient as a packaging professional; a cut above your peers.

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## Special Article – Sustainability

### Standout sustainable packaging at Anuga FoodTec 2024

By Nerida Kelton\*

For the first time, WPO decided to exhibit and participate in three speaking sessions during Anuga FoodTec, a 04 days show that joined almost 40,000 people, from 133 countries, in Cologne (Germany). On the occasion, I had the opportunity to visit some of the exhibition stands, talk to a number of exhibitors and see what is new, innovative, and intuitive.

I was particularly looking for packaging that is recycle ready, offers improvements to packaging to provide lower environmental impacts, new advancements in paper and renewable materials, and any save food packaging design. And here is the result of my search!

#### SIG Alu Free cartons

SIG Alu Free cartons are an aseptic carton with no aluminium layer. The carton is FSC certified paperboard, is fully recyclable and produced with 100% renewable energy. The SIG Alu free carton has a carbon footprint up to 27% lower than standard SIG packaging material, thanks to a unique composite with no aluminium layer. It is designed for liquid dairy products such as plain white UHT milk, cream, and other oxygen-insensitive products. The carton is made from up to 82% renewable paperboard, with ultra-thin polymer layers to contain and protect products over long periods of time without the need for refrigeration.



SIG also recently added the option to link to 100% forest-based renewable materials via a mass-balance system. The SIG Alu free carton is another step to remove aluminium from aseptic cartons but still maintain shelf life and barrier for products.

[www.sig.biz](http://www.sig.biz)

#### Sea6 Energy developing seaweed-based films



Seaweeds, characterised by their efficient utilisation of solar energy and minimal resource requirements, offer a promising solution to address the pressing challenges of resource scarcity and environmental degradation.

Headquartered in Bangalore, Sea6 Energy believes that there is a critical need to design innovation strategies to meet the escalating demand for raw materials, particularly within the packaging industry.

Sea6 Energy are developing seaweed based, compostable films that can be used for packaging of FMCG goods and fast foods. These films, when discarded into the environment, will compost in a few months

and are available in Food and Non-food grades.

The utilisation of seaweed biomass extends beyond traditional boundaries, encompassing the production of bio stimulants for agriculture and horticulture, food and feed ingredients, and the development of innovative biomaterials tailored for the packaging industry. Sea6 Energy is actively engaged in research and development efforts to formulate seaweed-derived biomaterials such as coatings, and extrusion compounds for flexible films and rigid. These biomaterials offer several advantages, including biodegradability, renewability, and reduced environmental impact, positioning them as sustainable alternatives to traditional packaging materials. The commercialisation of first materials is targeted within the next 12 months. I look forward to watching Sea6 Energy developments in the future.

<https://www.sea6energy.com/solutions/bio-plastics/>

## PaperBoard – formable paper by Multivac

The PaperBoard series has been designed to eliminate single use plastics, reduce the use of plastics and improve recyclability of the packs. The material can be run on packaging systems in the form of rolls, pre-cuts, or trays. Paper fibre and cardboard composites with different grammages and functional layers are available. The use of functional layers makes it possible to produce paper-based packs that meet the barrier property requirements of the respective product.



What I personally like about the PaperBoard series is that the design is a step ahead of many other available solutions in the market for separability of the components for recycling. Many consumers get frustrated by some of the packs on the market as they can't easily separate the film from the paper. This in turn means that the separable components end up in the wrong disposal bin and the pack that has been promoted as reducing single use plastic and being more sustainable is not meeting sustainable design standards.

The PaperBoard design however does separate easily as I tested multiple packs. The design features are intuitive and ensure that the paper and the film can in fact be easily and quickly separated by a consumer.

[www.multivac.com](http://www.multivac.com)

## G. Mondini Paper2Skin



Another paper-based solution that I saw on the G.Mondini stand was Paper2Skin which is a unique and innovative paper top skin web technology designed to take packaging to the next level. The pack has been designed to eliminate single use plastics, use less material at the start and ensure that the materials can be separated and recycled easily.

The Paper2Skin material is FSC/PEFC certified, is designed to be able to separate the components for recyclability and is easily openable and separable for the consumer. The pack offers a uniquely shaped window and the laser cutting of paper allows each brand to be able to create several window shapes depending on the product shape and size.

<https://www.gmondini.com/>

Anuga FoodTec has always been on my bucket list of global trade shows that I have wanted to see, and it did not disappoint. Unfortunately, I didn't get to see as many exhibition stands as I had wanted as it is a very large exhibition with thousands of stands.

I have no doubt that there were many other innovative packaging designs on display that I missed but the ones I have mentioned are just some that I wanted to share with you.

If you are planning to attend the next edition of Anuga FoodTec on the 23rd to 26th of February 2027 I would recommend that you allow at least two days to walk around the show. I also look forward to returning to Anuga FoodTec in 2027 to see even more advancements in sustainable packaging and recycle ready packs. Imagine what we will see in three years!

\***Nerida Kelton** is Executive Director of WPO member AIP (Australian Institute of Packaging – [www.aipack.com.au](http://www.aipack.com.au)) and WPO Vice President Sustainability & Save Food [nerida@worldpackaging.org](mailto:nerida@worldpackaging.org).

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## Special Article – TNA

### TNA revolutionises potato product supply for the Egyptian Army





TNA Solutions ([www.tnasolutions.com](http://www.tnasolutions.com)), a WPO Corporate Partner, has implemented a ground-breaking project for the Egyptian Army. Tasked by the Egyptian National Services Projects Organisation (NSPO) in 2020, TNA has delivered two cutting-edge complete production lines for potato products. Specifically designed for Hash Browns and Rosti, the first line is capable of producing two metric tonnes per hour, while the second line, dedicated to French Fries, wedges and disks, produces up to 10 metric tonnes per hour.

Production efficiency is maximised as TNA provides every element of the production process, from potato washing and de-stoning to packing products in bags. In addition, TNA's unrivalled expertise has enabled the integration of state-of-the-art distribution and arctic packaging systems, specifically tailored for frozen potato products.

In collaboration with Optima Solutions, formerly Getec Partners LLC, TNA secured this prestigious contract to support the Egyptian Ministry of Defence in achieving self-sufficiency in meeting the needs of the armed forces, the local markets, and export products. TNA's industry-leading reputation for delivering exceptional projects solidified its position as the chosen partner. The project was a true testament to the dedication of TNA's solutions specialists and global team of experts.

The Egyptian President, Abdel Fattah El-Sisi, championed an inaugural ceremony at the factory, at which he emphasised unwavering commitment to advancing the industrial landscape in Egypt, simultaneously advocating for the preservation and protection of the environment and the implementation of eco-friendly factory designs.

Thiago Roriz, TNA's Chief Operations Officer, was invited to address the gathering. On behalf of TNA's founders, including co-founder & Director, Nadia Taylor, who takes immense pride in her Egyptian heritage, Thiago expressed heartfelt gratitude to the President and reaffirmed TNA's commitment to supporting the venture and sharing its unparalleled expertise in potato production: "TNA is a leading provider of potato production lines – having supplied more than 14,000 systems across 120 countries globally. We are proud to have an opportunity to support this project and to offer expertise in food processing and packaging to deliver the highest possible quality."

TNA's cutting-edge machinery, state-of-the-art technology and extensive process experience empowered the company to deliver the two complete lines on schedule, ensuring the efficient production of premium worldwide quality products while adhering to energy consumption, CO2 emissions and other sustainability related goals. Thiago continued: "TNA is immensely proud and honoured to be an integral part of this project. We extend our sincere appreciation to President El-Sisi, the Egyptian government, and our trusted strategic partner, Optima Solutions, for making this resounding success possible."

The completion of both production lines in June 2023 marks the beginning of a transformative era. Discussions are already underway to expand operations to include new potato products, sweet potatoes and the processing of various agricultural products. [As TNA continues to spearhead innovation, its new solutions are set to reshape the potato processing industry, improving efficiency, quality and sustainability.](#)

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## Special Article

# Smart packaging technologies: enhancing product traceability, consumer engagement, and supply chain transparency.

By Jopack, WPO member in Jordan\*

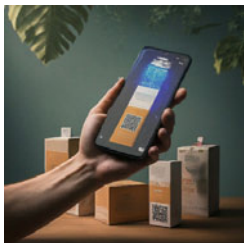


Smart packaging, an innovative intersection of packaging and technology, is transforming how products are tracked, consumed, and managed across the supply chain. Incorporating NFC tags, QR codes, and sensors into packaging offers sophisticated solutions that improve product authenticity, consumer interaction, and operational transparency. This paper delves into the mechanisms, benefits, and implications of these technologies in modern packaging systems.

## Mechanisms of smart packaging technologies

### NFC Tags

NFC technology allows for wireless communication between the packaging and a smartphone or NFC reader. NFC tags embedded in packaging can store information such as production dates, ingredient sourcing, and logistical data. When consumers scan these tags with their smartphones, they gain instant access to this information, thereby enhancing product authenticity and transparency.



### QR Codes

QR codes are two-dimensional barcodes that can be scanned by a smartphone to retrieve data stored within the code. These codes can link consumers to websites that provide detailed product information, including manufacturing processes, shipping history, and storage conditions. QR codes serve as a bridge between physical products and digital information, facilitating comprehensive product tracking and consumer engagement.

### Sensors

Sensors integrated into packaging can monitor and report real-time conditions such as temperature, humidity, and light exposure. These sensors help in maintaining the quality and safety of perishable goods by alerting stakeholders to any deviations from optimal storage conditions. Sensor data can be transmitted to supply chain managers, ensuring proactive measures are taken to prevent spoilage and maintain product integrity.



## Benefits of smart packaging technologies

### Enhanced product traceability

Smart packaging technologies enable precise tracking of products from production to consumption. NFC tags and QR codes provide a digital trail that can be monitored in real-time, ensuring that products reach consumers in the intended condition. This traceability is crucial for quality control, inventory management, and regulatory compliance.

### Improved consumer engagement

By offering interactive experiences, smart packaging technologies increase consumer engagement. NFC and QR code-enabled packaging can provide access to promotional content, usage instructions, and loyalty programs. This not only enhances the consumer experience but also strengthens brand loyalty and drives repeat purchases.

### Supply chain transparency

Smart packaging contributes to greater transparency within the supply chain. Sensors provide real-time data on environmental conditions during transit, allowing companies to ensure that products are handled correctly. This transparency helps in identifying and addressing issues promptly, reducing waste and improving overall supply chain efficiency.

## Challenges in implementing smart packaging

### Cost implications

The integration of smart technologies into packaging can be costly. The initial investment in NFC tags, QR codes, and sensors, along with the necessary infrastructure for data management, can be significant. These costs may be prohibitive for smaller companies, limiting the widespread adoption of smart packaging technologies.

### Technical and logistical barriers

Implementing smart packaging requires overcoming technical challenges related to data security, interoperability, and scalability. Ensuring that the technology works seamlessly across different platforms and environments is critical for its success. Additionally, logistical challenges such as maintaining the readability of QR codes and NFC tags under various conditions must be addressed.

### Future directions

The future of smart packaging looks promising, with ongoing advancements in the Internet of Things (IoT) and artificial intelligence (AI) poised to further enhance its capabilities. Emerging technologies such as blockchain can complement smart packaging by providing immutable records of product history, thereby further improving traceability and trust. Moreover, as the cost of smart technologies decreases, their adoption is expected to become more widespread, driving innovation and efficiency in the packaging industry.

## Conclusion

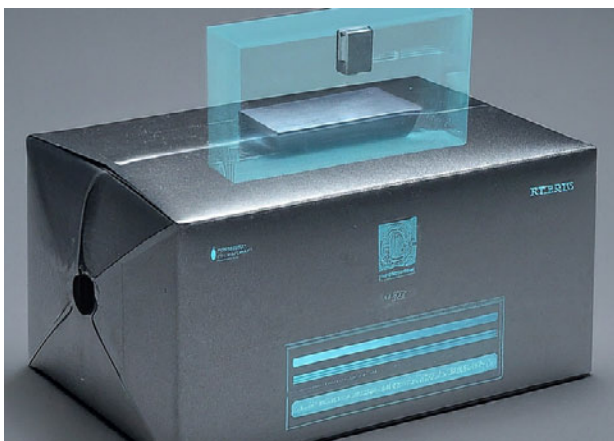
Smart packaging technologies represent a significant leap forward in the packaging industry, offering innovative solutions that enhance product traceability, consumer engagement, and supply chain transparency. While challenges related to cost and implementation exist, the benefits of smart packaging are substantial and far-reaching. As technology continues to evolve, smart packaging is set to play a pivotal role in shaping the future of product management and consumer interaction.

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## Special Article

### Packaging for e-commerce: balancing protection, cost, and sustainability

By Jopack, WPO member in Jordan\*



E-commerce has transformed the retail landscape, offering consumers convenience and a wide range of products at their fingertips. However, this shift has also brought new challenges in packaging. Unlike traditional retail, e-commerce requires packaging that can withstand the rigors of shipping while maintaining cost-effectiveness and environmental sustainability. This article delves into the critical aspects of e-commerce packaging, exploring strategies to achieve an optimal balance between protection, cost, and sustainability.

## Challenges in e-commerce packaging

### 1. Protection

**Impact resistance** – Products sold online must be packaged to withstand various physical stresses during transit, including handling, stacking, and transportation. Insufficient protection can lead to product damage, resulting in customer dissatisfaction and increased return rates.

**Environmental factors** – E-commerce packages are exposed to varying environmental conditions such as temperature fluctuations and humidity. Packaging materials must be chosen to protect products against these factors, ensuring they arrive in perfect condition.

### 2. Cost

**Material costs** – The choice of packaging materials significantly impacts the overall cost. While premium materials offer better protection, they can be expensive. Finding a cost-effective solution that does not compromise on quality is essential for maintaining profit margins.

**Shipping costs** – E-commerce packaging must also consider dimensional weight pricing. Bulky or heavy packages incur higher shipping costs, making it crucial to design packaging that is both lightweight and compact without sacrificing protection.

### 3. Sustainability

**Environmental impact** – With increasing consumer awareness of environmental issues, there is a growing demand for sustainable packaging solutions. Businesses must balance the need for protective packaging with the imperative to reduce their environmental footprint.

**Regulatory compliance** – Various regulations and guidelines mandate the use of sustainable materials and practices in packaging. Companies must stay compliant with these regulations while meeting their operational needs.

## Opportunities in e-commerce packaging

### 1. Innovative materials

**Biodegradable and recyclable materials** – Innovations in materials science have led to the development of biodegradable and recyclable packaging materials. These options

reduce environmental impact while providing adequate protection for products.

**Lightweight alternatives** – New lightweight materials, such as molded pulp and air pillows, offer protection without adding significant weight. These materials can help reduce shipping costs while maintaining product integrity.

## 2. Smart packaging

**Track and trace** – Smart packaging technologies, such as RFID tags and QR codes, allow for real-time tracking of shipments. This enhances transparency in the supply chain and improves customer satisfaction by providing accurate delivery information.

**Temperature control** – For perishable goods, smart packaging with temperature sensors can monitor and maintain optimal conditions, ensuring product quality upon arrival.

## 3. Customization and branding

**Personalized packaging** – E-commerce provides an opportunity for businesses to use packaging as a branding tool. Customized packaging that reflects the brand's identity can enhance the unboxing experience and build customer loyalty.

**Eco-friendly branding** – Emphasizing sustainability in packaging design can attract environmentally conscious consumers. Using recycled materials and highlighting eco-friendly practices in branding can differentiate a company in the competitive e-commerce market.

## Strategies for balancing protection, cost, and sustainability

### 1. Design optimization

**Minimalist design** – Adopting minimalist design principles can reduce material usage and waste. This involves designing packaging that uses the least amount of material necessary while still providing adequate protection.

**Right-sizing** – Right-sizing packaging to fit the product snugly minimizes excess space, reducing the need for additional protective fillers and lowering dimensional weight for shipping.

### 2. Material selection

**Hybrid solutions** – Combining different materials can optimize the balance between protection, cost, and sustainability. For example, using a sturdy outer layer with a biodegradable inner layer can offer both protection and environmental benefits.

**Recycled content** – Incorporating recycled content in packaging materials reduces the demand for virgin resources and minimizes environmental impact.

### 3. Process improvements

**Automation** – Implementing automated packaging solutions can increase efficiency and reduce labor costs. Automated systems can also ensure consistent quality and reduce material waste.

**Return packaging** – Designing packaging that can be easily reused for returns can improve sustainability and customer convenience. Returnable packaging solutions reduce the need for additional materials and lower overall environmental impact.

## Conclusion

Packaging for e-commerce presents unique challenges that require a careful balance of protection, cost, and sustainability. By leveraging innovative materials, smart technologies, and optimized design strategies, businesses can meet these challenges head-on. As the e-commerce market continues to grow, the importance of sustainable and cost-effective packaging solutions will only increase. Companies that prioritize these aspects will be well-positioned to succeed in the evolving retail landscape.

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## Special Article

### Food packaging for aerospace

By B R Guduri<sup>1</sup> and A Banerjee<sup>2\*</sup>

#### Introduction

With the increasing prevalence of commercial space flight and the prospect of future travels to Mars, many individuals are embarking on long-duration space missions. However, the expedition exposes them to medical issues that arise due to the conditions of the





space environment. Therefore, selecting appropriate packaging in this particular setting is crucial owing to several aspects like weight limitations, preservation requirements, ensuring the safety of nutrients in microgravity conditions, and achieving waste reduction goals. The weight factor is crucial for



minimizing energy consumption [6], while preservation is essential for maintaining freshness over a more extended period and ensuring the desired nutritional content. Space organizations and academics must thus find and strategize for appropriate food packing due to the demanding and isolating circumstances of the demanding and isolated environment.

## Literature Review and Discussion

Literature shows that technological advancements have revolutionized packaging techniques, particularly for the space environment. The development is necessary because of the unique characteristics of the space environment, such as microgravity, which impact astronauts' ability to taste and smell [6]. Occasionally, space organizations have acknowledged the potential benefits of using packaging techniques that are lightweight, small, and durable enough to endure the rigours of space flight [2]. Packing materials must be developed to decrease weight and consider recycling or reusability to reduce the overall bulk of the packaging. Moreover, the packaging structure should be meticulously constructed to minimize the risk of microbial contamination. Space equipment must endure rigorous circumstances such as high temperatures, radiation, and vacuum, necessitating packaging that can withstand these harsh environments. The table below presents an overview of food-packing techniques used in space exploration missions.

Type of food	Comments	Examples
Bite-size food	Easy to consume and does not require any preparation packed in flexible packaging	Nuts, dried fruits, and granola bars
Rehydratable food	Dehydrated and requires water to be added before consumption packed in plastic containers	Soups, stews, and pasta dishes
Thermostabilized food	Cooked and then sealed in a container such as retort flexible pouches or cans to prevent contamination	Canned or retort pouch foods
Intermediate moisture food	Moisture content - 15% to 50%. Preserved using drying, salting, or adding preservatives in flexible packaging	Jerky and dried fruits
Irradiated food	Exposed to ionizing radiation to kill bacteria and other microorganisms in cans	Meat, poultry, and spices

The Russian space program uses cans and tins for food packaging. Moreover, in order to heat these packages, they use electro-resistive methods [1]. However, NASA uses retort pouches or freeze-drying [8]. The organization closes its space food in hermetically sealed canisters made to fit tightly into trays, and the canisters themselves are tiny. There are straps on the bottom of the trays to enable their fixing in a specific position on a fixed object. Furthermore, the trays have provisions for holding a beverage pouch or utensils in the microgravity environment. Laminated films and flexible pouches decrease the weight and size of packing materials, whereas self-heating food packaging uses a chemical process to warm the food [3]. Space packaging also embraces materials that prevent the ingress of oxygen and moisture to avoid oxidizing the food.

Modified atmosphere methods are used to package rehydratable and bite-sized foods. Before the final seal, each package undergoes three nitrogen flushes and is sealed under a vacuum of 21 to 29 inches of Hg. Metalized sheets and laminates protect food from radiation and temperature variations [4]. Space missions utilized bite-size food cubes in Gemini. They also used spoon-bowl rehydratable packages and thermostabilized flex pouches in Apollo. Tear-top commercial food cans and polyethylene beverage containers were essential in Skylab. These missions examine packaging limitations and compare various food packaging materials.

After the Space Shuttle Era, NASA entered the 'Space Station Era' with the International Space Station (ISS) in 2011. The transition witnessed NASA using a packaging method for rehydratable and bite-size foods. The packaging comprised five layers: nylon, ethylene vinyl alcohol, polyethylene tie layer, linear low-density polyethylene, and aluminum foil laminate. It was vacuum sealed and overwrapped with aluminum foil before being transported to the ISS. Beverages were protected using foil and plastic laminations to give them a more extended shelf period. NASA also had thermostabilized and irradiated foods in commercial pouches [4], which they would then package together.

## Future Scope

Space food packaging has immeasurable prospects for the future. The requirement for packaging solutions that can be sustainable, beneficial to the ecology, and recyclable or reusable in space has been on the rise [1]. Hence, various organizations involved in space research, like DRDO, JAXA, and NASA, aim to overcome the difficulties of serving food in space [3]. All these organizations are concerned with the importance of design and new materials that are more friendly to the users. Their designers have included features that allow for temperature monitoring, gas content, and quality of foods in what they call "smart packaging." These technologies ensure safe food since they have minimized opportunities for contamination.

Moreover, 3D printing can be dubbed as a significant advancement in packaging space food. This technique helps in the creation of tailored packaging solutions but reduces the amount of wastage and increases effectiveness [2]. Sustainable initiatives are on the rise, especially with edible packaging made from starch, cellulose, and protein. Future advancements in space food packaging are directed toward addressing nutritional inadequacies and health issues. They intend to emphasize compact, bite-sized, readily digested, and long-lasting solutions [17]. NASA's intention to cultivate fruits and vegetables in temperature-controlled greenhouses on space farms will be enhanced by incorporating these advanced packaging technologies [5]. This integration will contribute to the mission's success and promote the general health and welfare of astronauts.

## Conclusion

Food packaging is crucial in space exploration missions as it extends shelf life, guarantees sustainability, and maintains food attraction. The primary objective of the evolution of packaging was to decrease the weight and optimize storage in spacecraft while preserving the quality and flavor of the food. Some contemporary space food packaging methods include aluminum cans, flexible pouches, and retort food trays. These materials are constrained in terms of weight, volume, and sustainability. Exploration of alternative materials is underway; they include edible packaging, innovative packaging, and 3D printing. Interestingly, any advancements in packaging undergo scrutiny and get authorization from food regulatory authorities before their use. Specialized packaging techniques provide efficient protection against moisture, gasses, and odors, extending space food's shelf life. The future of space food packaging is expected to use a mix of conventional and cutting-edge materials and technology.

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