Hispack 2015

Barcelona 21 - 24 ABRIL
RECINTO GRAN VIA

Fira Barcelona

Reducing food waste through innovation in packaging technologies

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Trendpack AREA

21-24 ABRIL 2015

Barcelona / Recinto Gran Via

36 international activities

965 companies

552 technical assistance

111 advice legislative

447 sensory studies

12.000 consumers

ACTIVITY

1.512 hours of training

754 services offered

89.500 essays

500 companies

More than **100** accredited lab techniques

In **2012** ainia laboratories were recognized as the top **five centres in Europe** in pesticide residues.

60% of total income

209 projects

16 patents

18 European projects

6 Leader ainia

DATA 2012

- Product formulations
- Ingredients and raw materials
- Food, health
- Security, authenticity and control
- Hygiene and hygienic design
- Packaging
- Industrial process automation
- ICT applications
- Sustainability
- Pre-normative research

R&D&I

- Food legislation
- Food Safety
- Consumer studies
- Food Alerts
- Specialized and In company training
- Competitive intelligence
- Energy audits
- ICT solutions: Lexainia, I-watch, C-watch, LIMS, Guiaenvase
- Design, development and implementation of R&D&I plans
- Implementation of quality and security systems: BRC, IFS, ISO, Food Alert
- Technology offers and requests
- Guides, studies, publications. Expertises

Consulting and management support

- Ingredients: composition, authenticity, functionality
- Pollutants
- Additives
- Allergens, gluten, etc.
- Pesticide residues, drug residues, etc.
- Microbiological hazard i dentification
- Microbiological shelf life
- Sensory shelf life
- Materials: migration, package-product interaction
- Water
- Processing equipment cleaning and hygiene
- 24-hour alerts' service
- Highly specific analytical tests
- Development of new analytical methods

Analysis, laboratories, control

Support for industrial processes

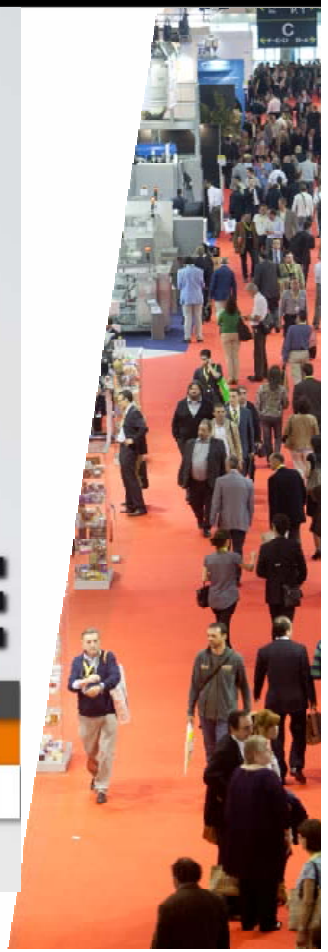
Bioprocess

SCF toll manufacturing

Industrial processes

SOLUTIONS ORIENTED TO IMPROVE THE BOTTOM LINE

ainia technology centre - **ongoing innovation**



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Fira Barcelona

Objectives

- Preliminary vision of food waste
- Packaging and food waste
- Packaging solution for avoiding food waste
- The challenge of packaging industry

Preliminary vision of food losses/waste

1/3 of produced food for human consumption is lost or wasted globally, which amounts to about 1.3 billion tons per year (1).

Over 100 million tones of food are wasted annually in the EU (2014 estimated). If nothing is done, food waste is expected to rise about 126 million tones in 2020 (2).

United Kingdom 1st

Germany 2nd

The Netherlands 3rd

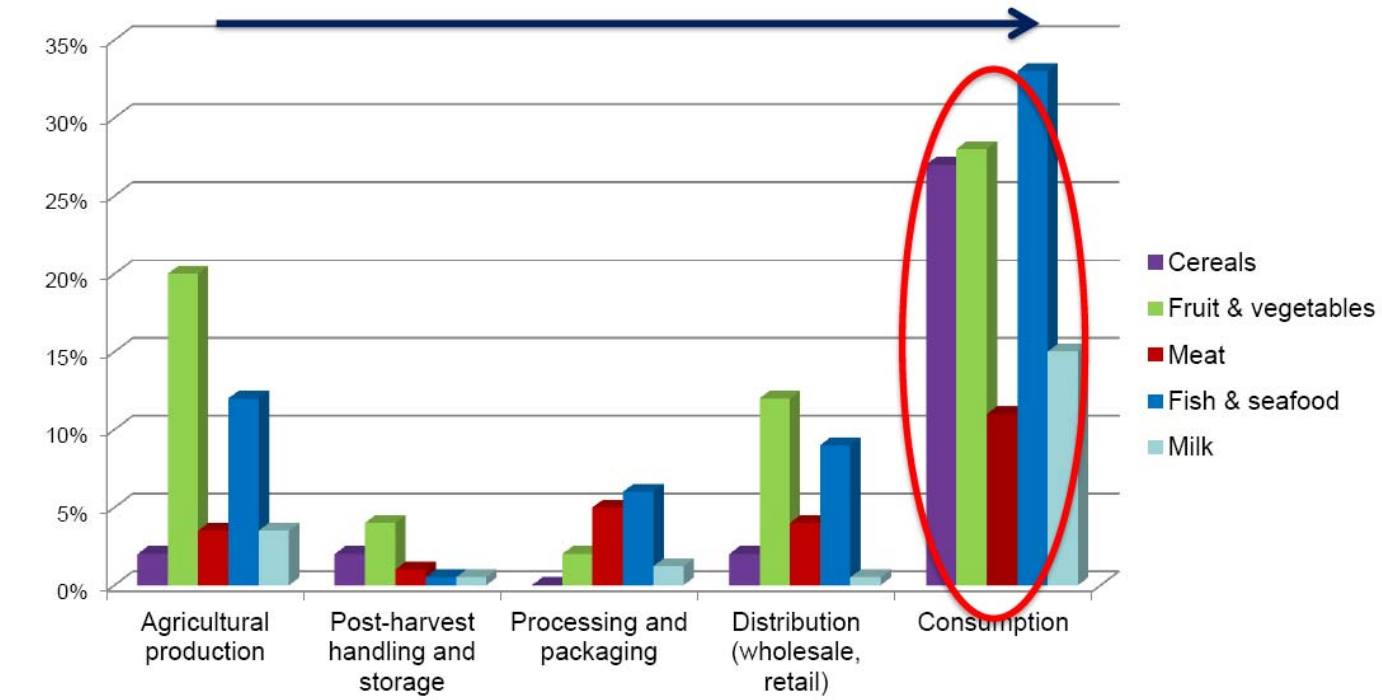
France 4th

Spain 6th

Total Food Waste Generation in EU MS: Best estimate by Member State

	Manufacturing	Households	Other sectors	Total
EU27	34 755 711	37 701 761	16 820 000	89 277 472
Austria	570 544	784 570	502 000	1 858 000
Belgium	2 311 847	934 760	945 000	4 192 000
Bulgaria	358 687	288 315	27 000	674 000
Cyprus	186 917	47 819	21 000	256 000
Czech Republic	361 813	254 124	113 000	729 000
Denmark	101 646	494 914	45 000	642 000
Estonia	237 257	82 236	36 000	355 000
Finland	590 442	214 796	208 000	1 013 000
France	626 000	6 322 944	2 129 000	9 078 000
Germany	1 848 881	7 676 471	862 000	10 387 000
Greece	73 081	412 758	2 000	488 000
Hungary	1 157 419	394 952	306 000	1 858 000
Ireland	465 945	292 326	293 000	1 051 000
Italy	5 662 838	2 706 793	408 000	8 778 000
Latvia	125 635	78 983	11 000	216 000
Lithuania	222 205	111 160	248 000	581 000
Luxembourg	2 665	62 538	31 000	97 000
Malta	271	22 115	3 000	25 000
Netherlands	6 412 330	1 837 599	1 206 000	9 456 000
Poland	6 566 060	2 049 844	356 000	8 972 000
Portugal	632 395	385 063	374 000	1 391 000
Romania	487 751	696 794	1 089 000	2 274 000
Slovakia	347 773	135 854	105 000	589 000
Slovenia	42 072	72 481	65 000	179 000
Spain	2 170 910	2 136 551	3 388 000	7 696 000
Sweden	601 327	905 000	547 000	2 053 000
United Kingdom	2 591 000	8 300 000	3 500 000	14 391 000

(1) FAO. 2011. Global food losses and food waste Extent, causes and prevention
(2) European Commission. http://ec.europa.eu/food/safety/food_waste/index_en.htm
(3) European Commission BIO IS Preparatory Study on Food Waste across EU 27 (October 2010)

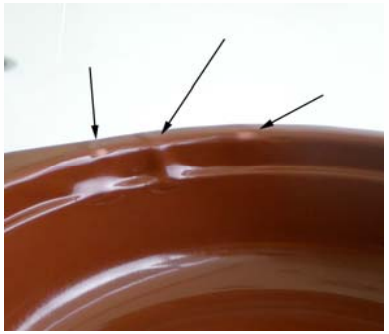


FAO. 2011. Global food losses and food waste extent, causes and prevention

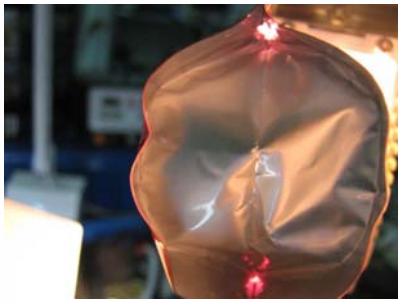
Packaging and food waste.

		FAO	EC	Wrap (UK)	Karlstad University (Sweden) and others
Manufacturing sector	Technical malfunctions		Packaging damage		Recycling food waste
At retail stage	Product spoilage	Leak resistant packaging			
At consumption stage	To much preparation	Portion control packs Ready to eat	Portion Sizes	Portioning	Good Manageability
	Spoilage	Resealable packaging Vacuum or modified atmosphere	Packaging issues	Resealing Active materials (antimicrobial, scavenger etc)	Easy to reseal
	Direct cause				Easy to empty
	Not consumed prior to expiration date	Shelf life extension Freshness preservation	Labelling issues	Communication	

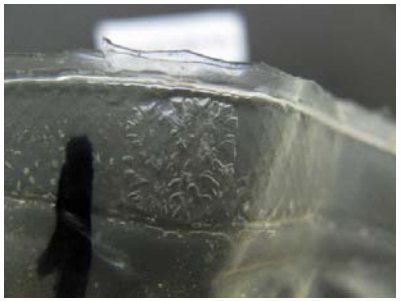
Packaging damage



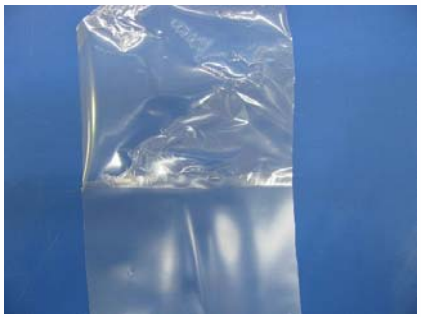
Bad thermoforming process



Problems at the package manufacturing process



Burnt in the sealing area



Delamination at retort process

Recycling food waste

whey pack
PHB-based packaging from whey

Project reference: WHEYPACK LIFE13 ENV/ES/000608

www.wheypack.eu

Reduction of CO_2 emissions by the PHB use obtained from whey: demonstration in dairy products packaging

✓ Project funded by the 6th Environmental Policy and Governance project application [LIFE+ 2007-2013].

✓ Budget: **1.188.777 €** % EC Co-funding: **584.888 € (50%)**

✓ Duration: 30 months (June 2014 – November 2016)

✓ Partnership: 4 partners (Spain and Portugal)

Recycling food waste

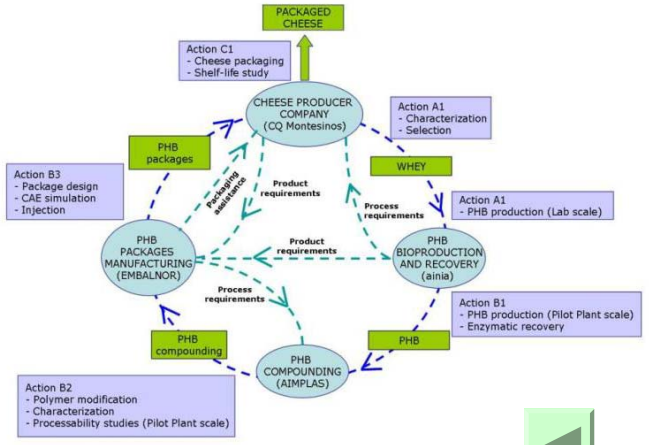
whey pack
PHB-based packaging from whey

www.wheypack.eu

BACKGROUND and AIMS:

WHEYPACK project aims to **demonstrate** environmental, technical and socio-economic **benefits of a biodegradable food packaging material with a lower environmental impact** through the reduction of greenhouse gas (GHG) emissions **in comparison with** current **petrol-based food packaging materials**.

The material selected is Polyhydroxybutyrate (**PHB**) that will be obtained **from a by-product (whey)** that comes from the cheese industries; PHB will be produced **using a process of microbial fermentation**.



Leak resistant packaging. Sealing area properties

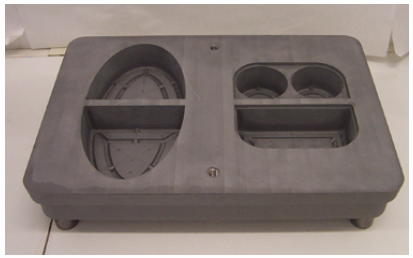
Package with a hole by a chicken bone

Same product using a terpolyamide (Source: UBE)

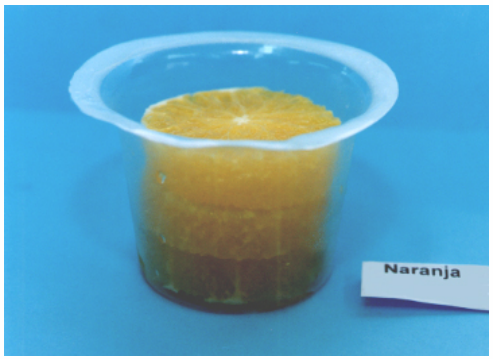
Leak identification

Product in the sealing area

Portion control packs. Ready to eat.

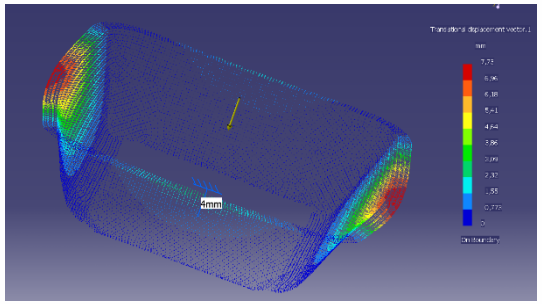


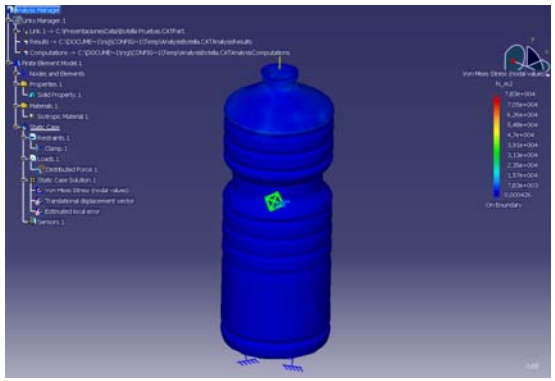
Development of a multi-package for IV gamma fruit



Good manageability

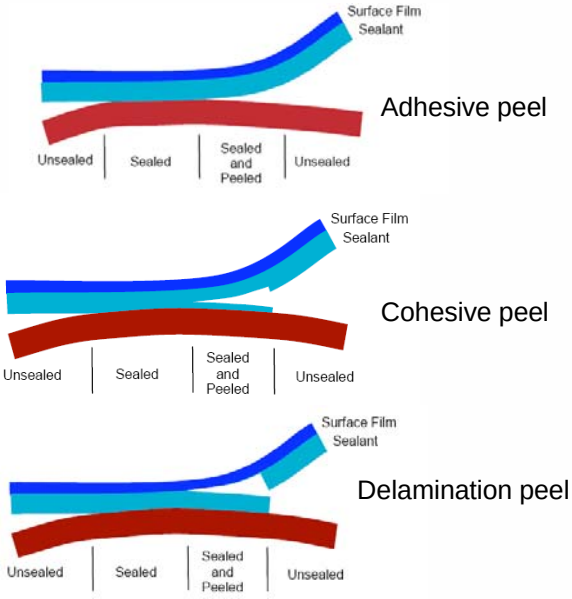
Development of packages for people with special requirements (older, blind, etc.)





Design of packages considering theirs mechanical requirements.

Resealable packaging



(Source: Rollprint)

Resealable packaging (Source: Bemis)

Use of an adhesive label (Source: ULMA)

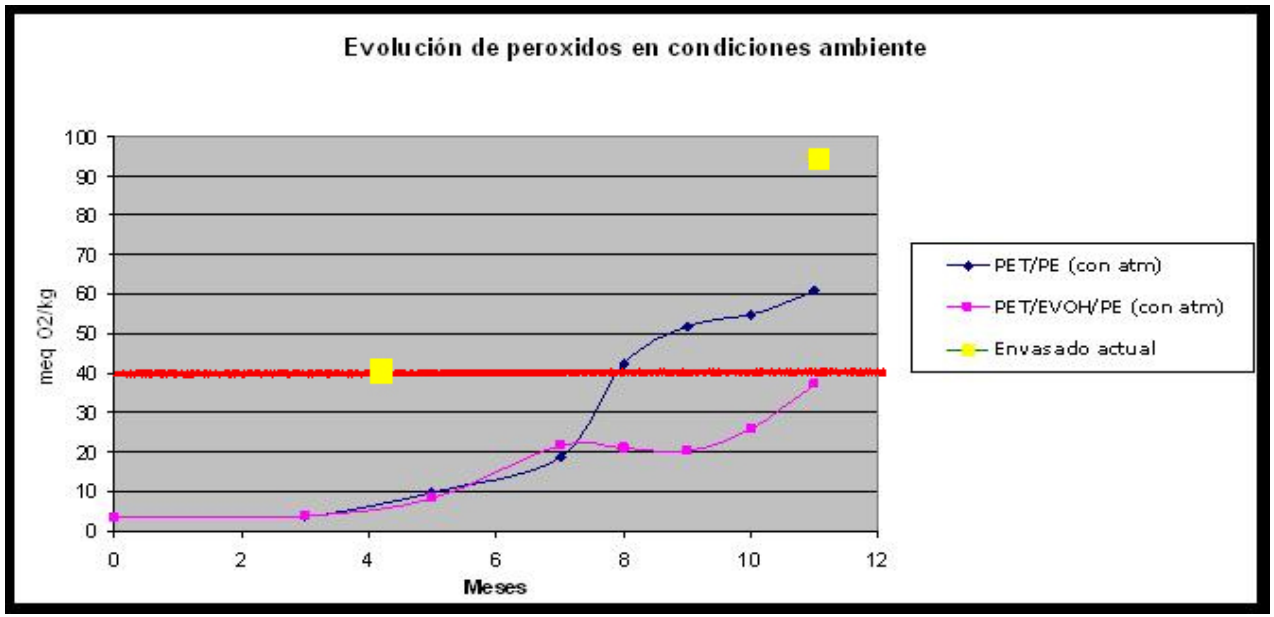
Vacuum or modified atmosphere

MAP PACKAGING

Air removal from inside the container and replacing it with a mixture of gases.

VACUUM PACKAGING

Air removal from inside the container **and sealing it.**



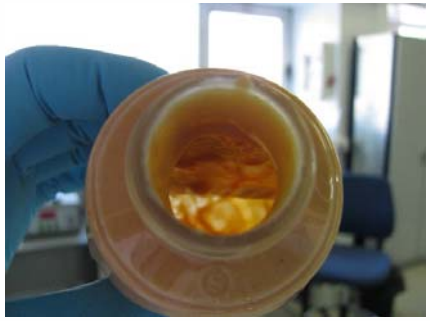
Active materials

Regulation (EC) No 450/2009: **active materials and articles** mean materials and articles that are intended to extend the shelf-life or to maintain or improve the condition of packaged food; they are designed to deliberately incorporate **components** that would release or absorb substances into or from the packaged food or the environment surrounding the food.

- Shelf life increases 20-30 %

(fresh meat 1-2 days)

Easy to empty



Development of materials, designs and new systems

	Sauce extraction using current system	Sauce extraction using current system strongly press
Product left (%)	9,08%	4,81%

Factors determining the product preservation

Food composition and characteristics

- Water activity, basic components (carbohydrates, fats, ...)

Sanitary status

- Cleanliness and initial microbiological contamination

Storage temperature

-Effects of temperature on specific microorganisms

Atmosphere composition and moisture

Package material and packaging technology

Labelling issues

The challenge of packaging industry

Economic Cost

Life Cycle Costing (LCC)

Environmental Impact

Life Cycle Assessment (LCA)

Food Waste

Social Life Cycle Assessment (SLCA)

Evaluation of different FW Packaging Prevention Options

Conclusions

1 **It has been identified that a big quantity of food waste is produced in different steps including the packaging and the consumption process.**

2 **Packaging produces a wide range of solutions to prevent and reduce food waste at national, regional and local level in the EU.**

3 **The challenge of packaging industry is to produce packaging solution considering the economic cost, environmental impact and food waste from a global vision.**

Thank you for your attention

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