

# Diploma in Packaging Technology

## 1. The Role of Packaging in the Modern Society

**This course is part funded by**

**Design,  
Print &  
Packaging**

**Skillnet,**

[www.dppskillnet.ie](http://www.dppskillnet.ie)

  The Design, Print & Packaging Skillnet is funded by member companies and the Training Networks Programme, an initiative of Skillshots Ltd, funded from the National Training Fund through the Department of Education and Skills.



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**Design,  
Print &  
Packaging**

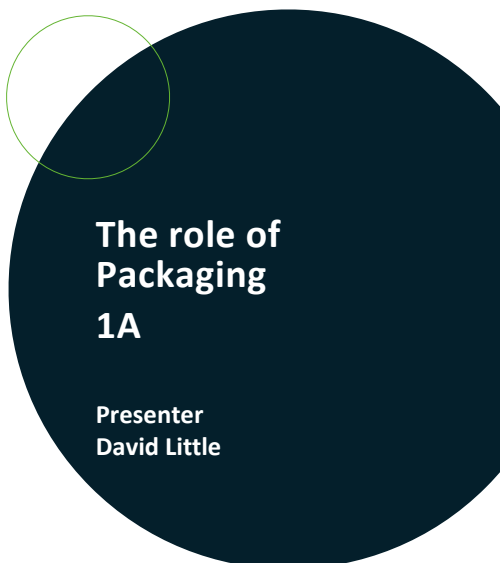
**Skillnet,**

**Diploma in  
Packaging  
Technology**

**The role of  
Packaging  
1A**

**Presenter  
David Little**


Slides courtesy of IOP / IOM3 / LLA / TIPS



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Good Morning

- Let's introduce ourselves...
- Name
- Company & Role
- Please explain why you are on the course.



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## Trainer - David Little

**Qualifications**

- Print Technologist (School of Printing - DIT)
- Packaging Technologist (Institute of Packaging)
- BPIF certificates in Costing, Estimating and Print Salesmanship
- Master in Professional Practice (TUD) (on-going)

**Current Roles**

- Managing Director - Leonard Little & Associates Ltd.
- Board Member of The Packaging Society (IOM3 - UK)
- Head Trainer IOM3 – UK (Packaging)
- Chair of TPS Education & Training Committee.
- Chair of The Irish Packaging Society (branch of The Packaging Society)
- International Trainer in Print/Packaging Technology
- Fellow of IOM3
- Packaging Course Development for Food Drink Ireland Skillnet

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### My Sector Experience

Food & Drink, Pharmaceutical and Industrial.

30 years' experience in the print / packaging sectors.

**My Substrate & Sector Experience**

**Customer Sectors**

- Food & Drink
- Pharmaceutical
- Healthcare
- Industrial.



- Corrugate
- Cartons
- Plastics (Rigid / Flexible / Shrink)
- Capital Equipment Press & Finishing sales
- Repro & Brand Management
- Pack / Filler (Procurement / Production / Marketing)

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### Leonard Little & Associates Ltd

Est. 1976 Packaging Consultants

**PACKAGING CONSULTANCY & SUPPORT**

Impartial independent advice for Packaging Users, Packer / Fillers, Retailers / Brand Owners and Manufacturers.

[Book Now](#)

**PACKAGING TRAINING COMPANY**

These courses are invaluable for any product based business as they cover every aspect and variable of packaging processes.

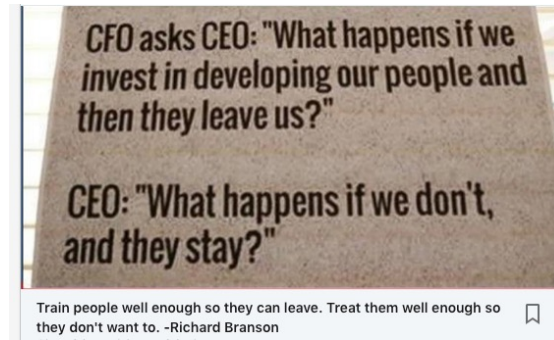
[Learn More](#)



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### Why is Training important?

***Training is good for your people and for your company.***  
*Trained people make better decisions, ask better questions, are more efficient and make companies more profitable. D. Little*



Clipped from Linked in

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### The Irish Packaging Society



[www.irishpackagingsociety.ie](http://www.irishpackagingsociety.ie)

Let's have a look.

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# Diploma in Packaging Technology

## 1. The Role of Packaging in the Modern Society

### **Unit 1**

#### **1. The Role of Packaging in the Modern Society Learning Outcome and Assessment Criteria**

##### Learning Outcome (What you need to know/understand)

1. Understand the role of packaging in the modern society

##### Assessment Criteria (What you need to do)

- 1.1 Relate the development of packaging to changes in society worldwide
- 1.2 Assess the impact of globalization and the growth of the modern retailer on packaging
- 1.3 Evaluate the impact of corporate social responsibility on packaging

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### **Unit 1**

#### **1. The Role of Packaging in the Modern Society Indicative Content**

- The development of packaging related to developments in society – changing patterns of consumption and their impact on packaging.
- How and why packaging, common packaging materials and packaging components have developed and their role in modern society.
- Packaging usage worldwide
- Consequences of globalisation for packaging use and packaging manufacture
- The development of packaging related to the growth of the modern retailer.
- The development of the notion of corporate social responsibility (CSR) and what it means
- Why does the packaging supply chain have to be concerned with CSR?

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Development of Packaging

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- Modern packaging has evolved because of developments in both material science and changes in society.



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Myth: Packaging is an unnecessary indulgence:

- Economic growth without packaging is impossible. Packaging protects practically all products from physical (crushing, bruising, shock, and vibration), chemical (rust, moisture gain or loss) and biological (bugs, microbes, mice, birds, senescence) damage.(crushing, bruising, shock, and vibration), chemical (rust, moisture gain or loss) and biological (bugs, microbes, mice, birds, aging) damage.
- Myth: "No packaging is best":
- No packaging, promotes food spoilage and widespread spread of diseases. No packaging would prevents drugs being sterile, and promote; damage to products, increase hazardous waste and increase food wastage.

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## One Definition

### A Definition of Packaging

- Packaging can be defined as

"all products made of any materials of any nature to be used for the containment, protection, handling, delivery and preservation of goods from the producer to the user or consumer"

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## Materials Development

### Packaging Layers

#### Primary



#### Secondary



#### Tertiary / Transport



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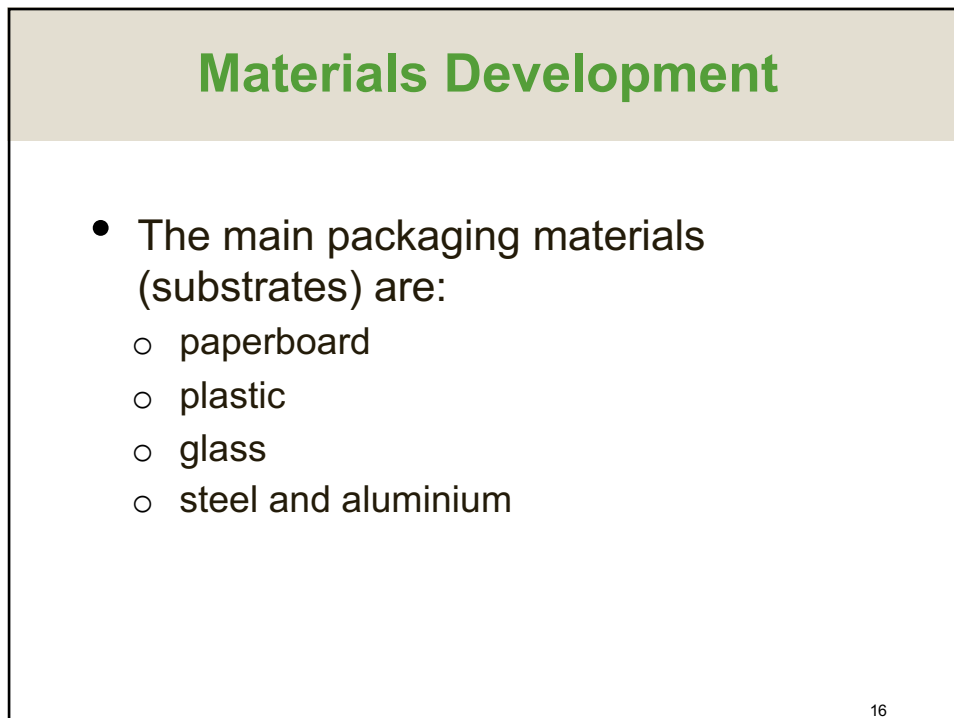
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**Materials Development**

- Materials development:
  - Early materials
  - Traditional materials
  - Modern materials

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**Materials Development**

- The main packaging materials (substrates) are:
  - paperboard
  - plastic
  - glass
  - steel and aluminium

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## Discussion

- What factors have influenced the growth in packaging usage?
  - Give one example to support each point
- Think about
  - Is packaging use still changing
  - Where will the greatest growth be

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## Market Development

- Market development:
  - Effect of globalisation
  - Societal trends
  - Demographics and psychographics
  - Environmental sustainability
  - Legislation and regulations
  - Technological advancements

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1. The Role of Packaging  
in the Modern Society

## Factors affecting packaging usage

- Lifestyle changes:



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## Factors affecting packaging usage

- Business changes:
  - Modern supermarkets



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## 1. The Role of Packaging in the Modern Society

### Factors affecting packaging usage

- Business changes:
  - Globalisation of manufacturing:



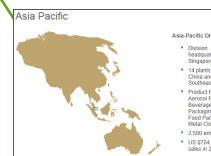
European Division

- Division headquarters in the Netherlands
- 24 years in Europe, Africa and the Middle East
- Product Portfolio: General Packaging, Beverage Packaging, Food Packaging, Retail Packaging, Medical Packaging
- 12,000 employees
- Sales of 1.2 billion net sales in 2015



Americas Division

- Corporate and Division headquarters in Philadelphia, PA
- 41 years operating in the Americas
- Product Portfolio: General Packaging, Beverage Packaging, Food Packaging, Retail Packaging, Medical Packaging
- 12,000 employees
- Sales of 1.2 billion net sales in 2015



Asia Pacific Division

- Division headquarters in Singapore
- 14 years operating in China and Southeast Asia
- Product Portfolio: General Packaging, Beverage Packaging, Food Packaging, Retail Packaging, Medical Packaging
- 2,000 employees
- Sales of 1.2 billion net sales in 2015

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### Factors affecting packaging usage

- Business/consumer interests:
  - Concern about health and hygiene:



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## 1. The Role of Packaging in the Modern Society

- **Consumer Trends - Beauty**
  - Demographics change
    - Ageing population and more focus on personal appearance
  - Nomadism / Mobile consumer
    - Practical, eg unit dose
    - Multifunctional products
  - Indulgence within depressed economies
    - Demand for fun, innovative products and packaging
  - Sophisticated consumers require sophisticated products
    - Packaging adds value and functionality
  - Growth in mass market
    - Diminishing travel retail

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- **Consumer Trends - Foods**
  - The fastest growing sectors in packaged food are
    - Noodles
    - Snack bars
    - Ready meals
    - Sauces, dressings and condiments
    - Ecommerce
  - Add value to products with packaging
  - Continued development of health orientated products
  - Smaller households and more informal eating habits lead to increased demand for single serve and convenience packs
  - Focus on global brands

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## 1. The Role of Packaging in the Modern Society

**Many drivers of packaging**

○ Minor impact  
◐ Some impact  
● Major impact

	Beverage	Food	Health	Beauty
Older population	◐	◐	●	●
Smaller households	◐	◐	○	○
Convenience	●	●	◐	●
Health awareness	●	●	●	◐
Demanding consumers	●	●	●	●
Customer consolidation	●	●	●	●
Product diversification	●	●	●	●
Retail consolidation	◐	◐	◐	◐
Increasing spending power	●	●	◐	●
Convenience channels	●	●	◐	◐
New product development	●	●	●	●

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### What are the characteristics and issues the packaging industry face?

- Large at \$900+bn, an important % of GDP
- Mature growth largely tracking GDP
- Dynamic in terms of product/market development, continuing effects of substitution
- Complex due to strong national (regional) differences in usage
- Fragmented over 100,000 companies worldwide
- Commoditized relatively few unique brands or proprietary technologies
- Regulated through the effects of legislation
- Over Competitive due to large number of players and rivalry between materials
- Cyclical due to effects of raw material cycles, consumer demand, currency exchange

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## 1. The Role of Packaging in the Modern Society

## megatrends affecting packaging

demographic trends/ ageing society	sustainability/ ethical consumerism	health and wellbeing/ health conscious	value/hl to consumerism/ premiumisation				
<ul style="list-style-type: none"> <li>• Less family packs</li> <li>• Simple solutions</li> <li>• Vitality, energy and longevity key to grey appeal</li> <li>• Easy to open packs</li> <li>• Anti ageing products</li> </ul>	<ul style="list-style-type: none"> <li>• Growing middle classes – increase in packaging required</li> <li>• Rising number of women working</li> <li>• Kid/tween power</li> <li>• Male grooming</li> </ul>	<ul style="list-style-type: none"> <li>• Small moves in eco – 'Eco Easy'</li> <li>• Excessive packaging concerns</li> <li>• Lightweight</li> <li>• Waste/recycling</li> <li>• Ethically sourced</li> </ul>	<ul style="list-style-type: none"> <li>• Recyclable packs</li> <li>• Reusable packs</li> <li>• Cheaper pack forms</li> <li>• Alternative packs/energy shortages</li> <li>• Biodegradable packs</li> <li>• Waste management</li> </ul>	<ul style="list-style-type: none"> <li>• Calorie control packs</li> <li>• Product labelling</li> <li>• Dosing/portion control</li> <li>• Self medication</li> <li>• Customised products</li> <li>• Natural/organic</li> <li>• Comfort/accosting</li> </ul>	<ul style="list-style-type: none"> <li>• Preventive vaccines/medicines</li> <li>• Tamper resistant packs</li> <li>• Anti counterfeiting</li> <li>• Medical tourism</li> <li>• Rising awareness of fitness/diet</li> </ul>	<ul style="list-style-type: none"> <li>• Balancing added value/affordability</li> <li>• Quality and moderation</li> <li>• Multi functional</li> <li>• Trading down/private label</li> <li>• Mass customisation</li> <li>• Indulgence/treats</li> </ul>	<ul style="list-style-type: none"> <li>• Conspicuous consumption</li> <li>• Rising demand for luxury and imported goods/brands</li> <li>• Personalised goods</li> <li>• Transparent packs</li> </ul>

convenience/ on the go lifestyles	concerns about product safety and security	growing ethnic diversity/ rapid urbanisation			
<ul style="list-style-type: none"> <li>• Single unit dosing</li> <li>• Easy open/close</li> <li>• Longer shelf life</li> <li>• Simplified formats</li> <li>• Temp control packs</li> <li>• DIY beauty/spa</li> </ul>	<ul style="list-style-type: none"> <li>• Emergence of impulse shopping</li> <li>• Shift towards eating out culture</li> <li>• Ready to eat/cook</li> <li>• Alternative distribution channels/vending</li> </ul>	<ul style="list-style-type: none"> <li>• Anti counterfeiting</li> <li>• Child resistant packs</li> <li>• Compliance</li> <li>• RFID (security packs)</li> <li>• Blister packaging</li> <li>• Intelligent packaging</li> <li>• Time strips (expiry)</li> </ul>	<ul style="list-style-type: none"> <li>• Concerns about food security</li> <li>• Increased demand for pharma packs</li> <li>• Transparent packs</li> <li>• Clear labelling and instructions</li> </ul>	<ul style="list-style-type: none"> <li>• Greater choice of products/variants</li> <li>• More ethnic foods</li> <li>• Product saturation/category blurring</li> <li>• Packs stand out</li> <li>• Authenticity/provenance</li> </ul>	<ul style="list-style-type: none"> <li>• More efficient use of packaging</li> <li>• Greater use of returnable packs</li> <li>• Burden on resources</li> <li>• Better logistics</li> <li>• New products</li> </ul>

■ Impact on developed markets

■ Impact on emerging markets

Data source Rexam Annual Report 2011

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The End Use Sector Dynamics			
Difficult Sectors		Opportunity Sectors	
Sector	Reason	Sector	Reason
Bread/Bakery	Staple Food, Retailer Discounting	Pharmaceutical	Demographics, Technology Changes, Barriers to Entry.
Dairy(Milk, Fats, Cheese)	Staple Food/Drink, Retailer Discounting	Cosmetics	Demographics, Lifestyle Changes, Growth, Margins.
Meat/Poultry	Staple Food, Retailer Discounting	Toiletries	Demographics, Lifestyle/ Technology Changes, Growth.
Canned Food	Staple Food, Discounting Lifestyle Changes.	Beverages	Demographics, Technology, Lifestyle, Growth.
Frozen Food	Staple Food, Discounting Lifestyle Changes.	Convenience Foods (Ready Meals, Sauces etc)	Demographics, Lifestyle, Technology Changes, Health Concerns.
Electronics/Electrical Goods	Discounting, Technology Changes, Manufacturing Sources.	Media (CD, DVDs, Downloads -I Tunes)	Demographics, Lifestyle, Technology Changes.
Food Service	Commodity, Stock Items.	Tobacco	Legislation / Regulations, Advertising Restrictions.

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## 1. The Role of Packaging in the Modern Society

Packaging Sector Dynamics			
Difficult Sectors		Opportunity Sectors	
<u>Sector</u>	<u>Reason</u>	<u>Sector</u>	<u>Reason</u>
Flexible Packaging (Europe)	Poor Economies, Fragmentation, Polymer Costs.	PET Containers	Can/Glass Replacement, Technology, Growth.
Extruded Film	Poor Economies, Fragmentation, Overcapacity, Costs.	Co extruded Containers	Can/Glass Replacement, Technology, Growth.
Corrugated Packaging (Europe)	Poor Economies, Overcapacity, Substitution.	Blister Packs	Pharma Growth, Rigid Pack Replacement, Demographics.
Glass Containers (Europe)	Poor Economies, Overcapacity, Substitution, Energy Costs	Special Closures	Demographics, Legislation, Technology.
Food Cans (Europe)	Poor Economies, Raw Materials Cost, Substitution.	Aseptic/Retortable Cartons	Can/Glass Replacement, Technology, Cost.
Blow Moulded Plastic	In-house Production, Overcapacity, Polymer Costs.	Retort Pouches	Can/Glass Replacement, Technology, Cost.
Extruded Plastic Sheet	Poor Economies, Price Pressure, In-house Production, Costs.	Stand-up Pouches	Can/Glass Replacement, Technology, Cost.
Wet Glue Labels	Price Pressure, Old Technology.	POS Packaging	Retail Trends, Marketing Changes, Cost
Folding Cartons	Mature Markets, Substitution, Fragmentation, Overcapacity.	Active Packaging	Technology, Legislation.
Stock Thermoform Trays	Standard Products, Stock Items, Easily Imported.	Intelligent Packaging	Technology, Legislation.
		Takeaway/Food Service ("On The Go")	Lifestyle, Demographics, Technology.

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Geographical Dynamics		
<u>Area</u>	<u>Opportunity</u>	<u>Threat</u>
India	Lowest per capita consumption of packaging. Low cost labour.	Govt Regulation, Overcapacity in film.
China	Very low per capita, High growth, Low cost labour.	Overcapacity in plastics. Low profit margins.
Latin America	Comparatively low per capita. High growth.	Political and Economic instability.
Europe	Per capita lower than North America. High growth in E.Europe.	Govt Regulation, Slow Economies. Labour Cost.
North America	More disciplined and homogenous market than Europe.	Migration of businesses to Far East.
Japan	Highest per capita in the world. Sophisticated Market.	Overcapacity and poor profit margins.

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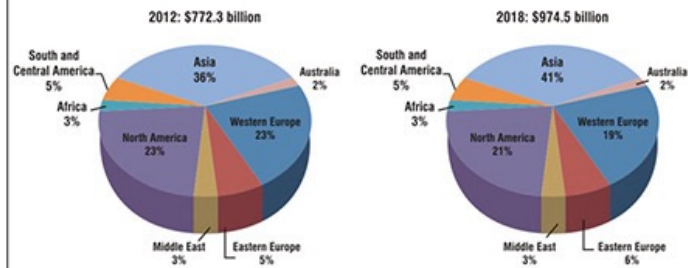
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## 1. The Role of Packaging in the Modern Society

### Global Packaging Market by Geography

excludes bulk/secondary and industrial packaging?

**Figure E.2 World Packaging Consumption by Region, 2012 vs. 2018 (\$ billion)**

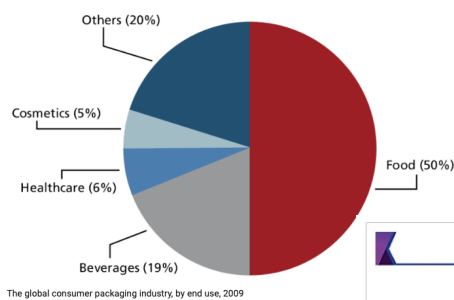


Source: Smithers Pira

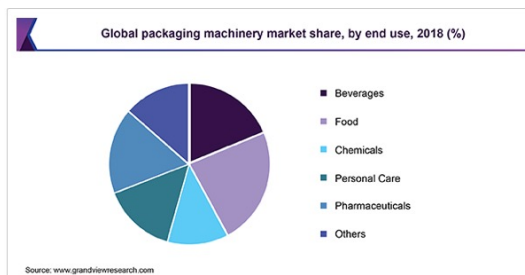
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### Global Packaging Market by End Use



The global consumer packaging industry, by end use, 2009



Source: www.grandviewresearch.com

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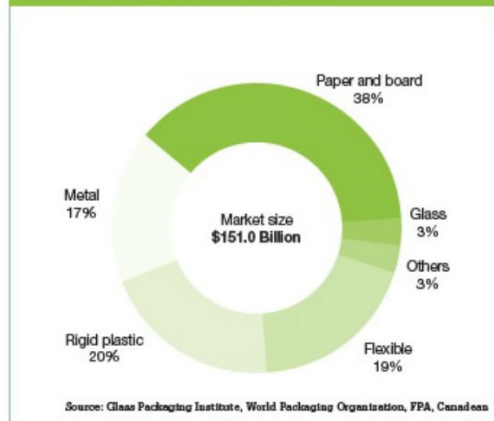
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## Global Packaging Market by Materials

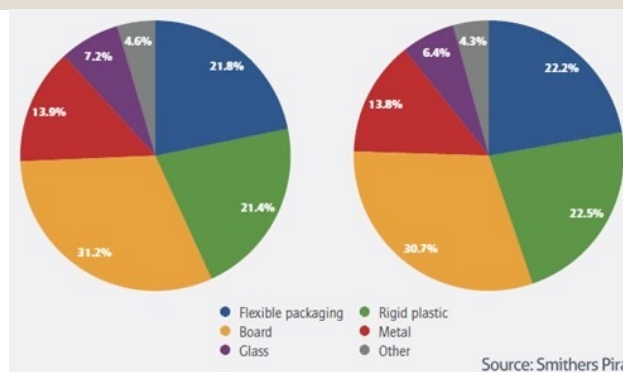
Figure 1. Market share of various packaging materials by value, 2014



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## Global packaging sales by type 2015 vs 2020



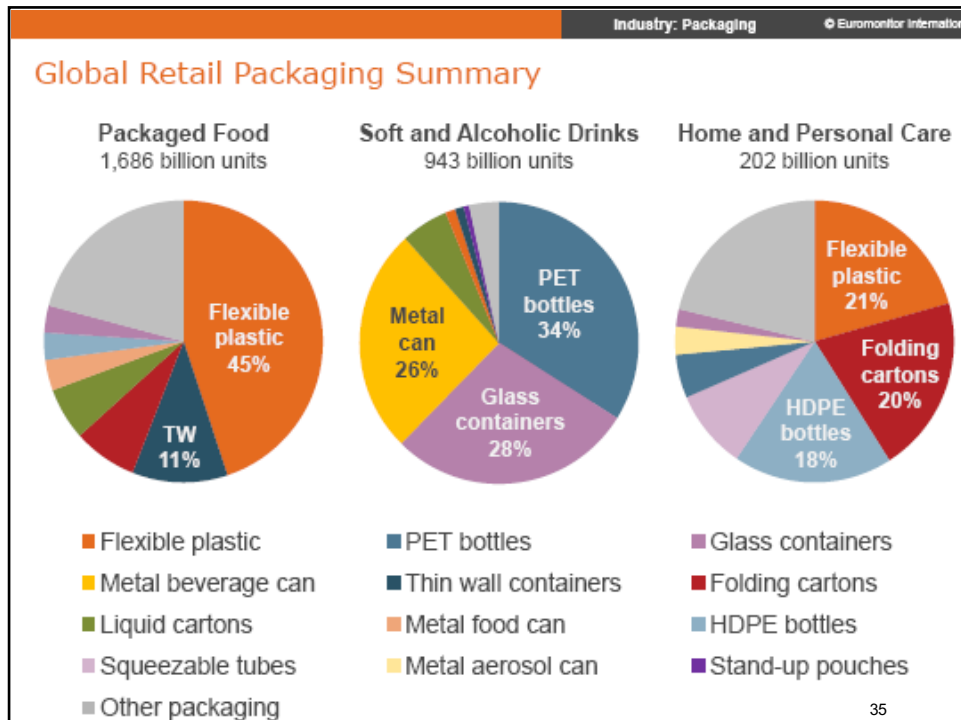
- In its flagship report [The Future of Global Packaging to 2020](#), Smithers Pira data charts how a market value forecast at \$839 million in 2015, will undergo healthy year-on-year growth at 3.5%, reaching \$998 million in 2020.
- Expansion will not be uniform however. Emerging countries will expand beyond the market average, creating new opportunities for material suppliers and converters. Simultaneously more established regions are undergoing significant business and demographic changes that will transform value chains in the packaging segment.

<http://www.smitherspira.com/resources/2016/february/global-packaging-material-outlooks>

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Corporate Social Responsibility

Question

- What is Corporate Social Responsibility (CSR)?

The graphic features a bright yellow background. In the upper right, there is a white speech bubble with a black outline and a large black question mark inside. Below the speech bubble, several light-colored wooden blocks are stacked, resembling a Jenga tower. On the left side, there is a vertical green bar.

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### Corporate Social Responsibility

Two definitions:

Corporate Social Responsibility (CSR) can be described as the decision-making and implementation process that guides all company activities in the protection and promotion of international human rights, labour and environmental standards and compliance with legal requirements within its operations and in its relations to the societies and communities where it operates.

or

Corporate social responsibility (CSR) is about how businesses align their values and behaviour with the expectations and needs of stakeholders - not just customers and investors, but also employees, suppliers, communities, regulators, special interest groups and society as a whole. CSR describes a company's commitment to be accountable to its stakeholders.

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### Corporate Social Responsibility

- Areas which come under the banner of CSR include
  - Human rights
  - Labour
  - Environmental sustainability
    - Water and energy usage policies
    - Packaging sustainability
  - Business ethics / responsible sourcing
  - Community support programmes

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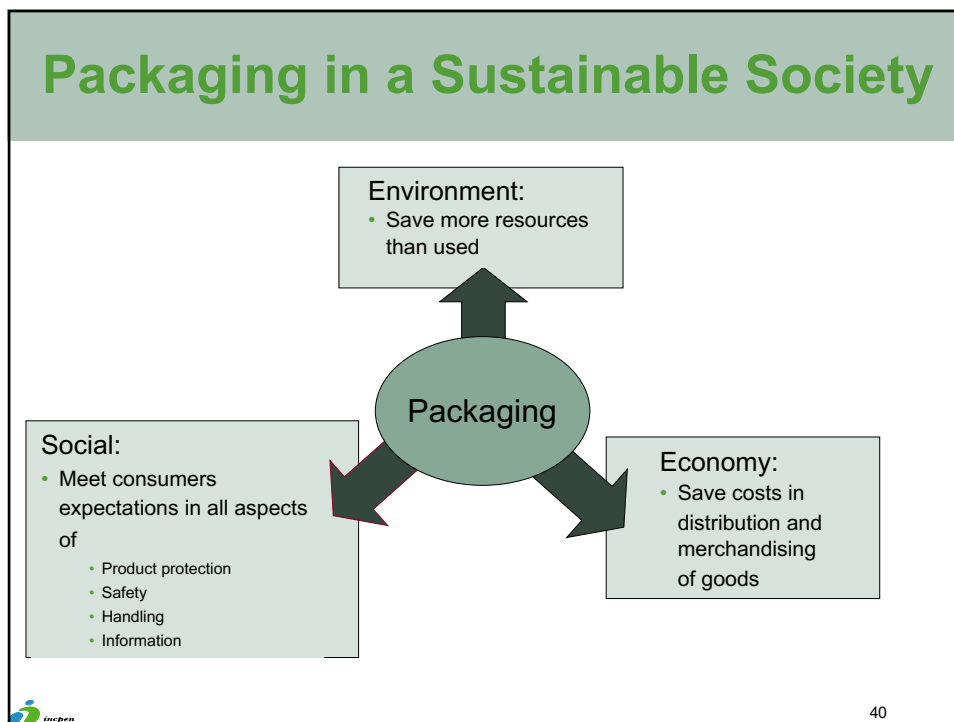
## 1. The Role of Packaging in the Modern Society

Corporate Social Responsibility

- Where does CSR impact on packaging
  - Local sourcing of raw materials to reduce distance travelled
  - Use materials from renewable resources
  - Reduction in 'carbon footprint' / energy used through light/right weighting of material or increasing recycled content
  - Reduce amount of waste to landfill (by use of reusable / returnable packaging)

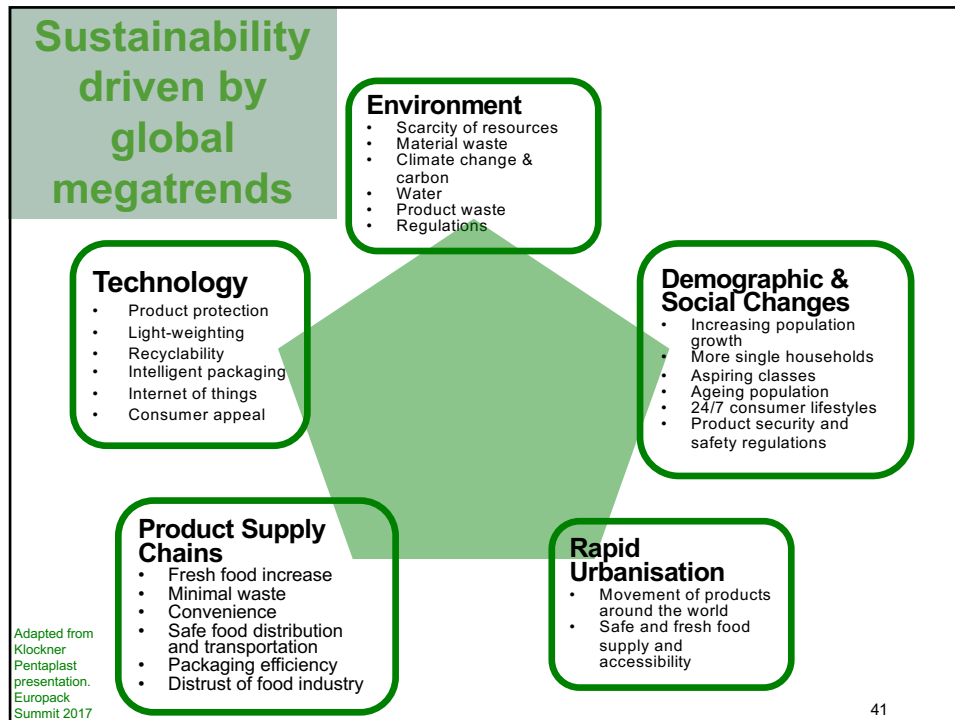


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### Climate Change.

2021 IPCC 6<sup>th</sup> report Intergovernmental Panel on Climate Change

<https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/>

The report provides new estimates of the chances of crossing the global warming level of 1.5° C in the next decades, and finds that unless there are immediate, rapid and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5° C or even 2° C will be beyond reach.

"It has been clear for decades that the Earth's climate is changing, and the role of human influence on the climate system is undisputed," said Masson-Delmotte – Co-Chair of IPCC working Group.

The report also shows that human actions still have the potential to determine the future course of climate. The evidence is clear that carbon dioxide (CO2) is the main driver of climate change, even as other greenhouse gases and air pollutants also affect the climate.

"Stabilizing the climate will require strong, rapid, and sustained reductions in greenhouse gas emissions, and reaching net zero CO2 emissions. Limiting other greenhouse gases and air pollutants, especially methane, could have benefits both for health and the climate," - IPCC Working Group I Co-Chair Panmao Zhai.

**Climate-vulnerable island nations call on world to save 'our very future'**

RTE.ie Updated / Tuesday, 10 Aug 2021 09:34

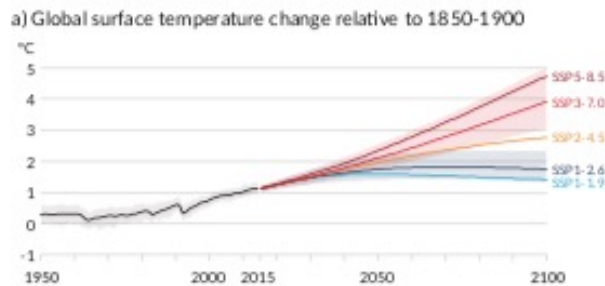
*"The stark fact is that if we keep warming to 1.5C we are still facing half a metre of sea level rise. But if we stop warming from reaching 2C, we can avoid a long term three metres of sea level rise. That is our very future, right there."*

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## 1. The Role of Packaging in the Modern Society

### Global Temperatures

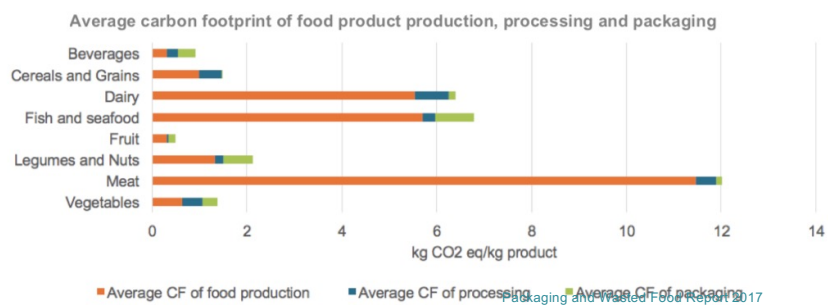


*2021 a year of record temperatures, floods, drought, fire, landslides and water shortages?*

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### What can we do, as a food and packaging manufacturers and users?



State of Oregon  
DEQ Department of Environmental Quality

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## 1. The Role of Packaging in the Modern Society

### Course focus is on Packaging

(Why is it so complex?)

- Different substrate categories: Paper, Plastics, Aluminium, Steel, Glass
- Different material types within the category: e.g. PS, PP, PE, PET etc.
- Different thicknesses: Caliper and grammage
- Different production processes and machinery
- Different printing processes and consumables
- Different make-ready times, set-up wastage, speeds, etc.
- Different Units of Measurement: KG, Area, sq meter, liner meter, ton, etc.

*Understanding these, is important for accurate CO2e calculations, but we can start by looking at where we are, and to materials and formats, to increase sustainability.*

*Designing of new products, and examining or redesigning the existing packs, for improved circularity is of course key.*

Question: How many of you think plastics is a necessary packaging material.

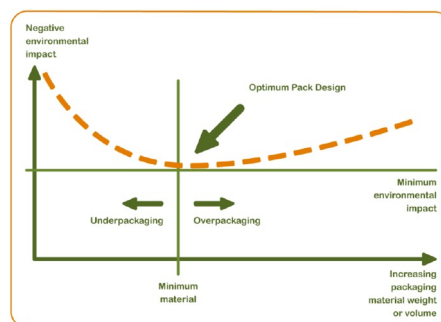
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### Design Optimisation for Sustainability

By using Design for Manufacturing along with Design for Sustainability, it is possible to minimise the environmental impact over the life cycle.

Possible additional benefits:

- Lower material costs
- Lower production costs
- Continued compliance with legislation
- Trust – Improved environmental credentials and Supplier and Customer relationships.

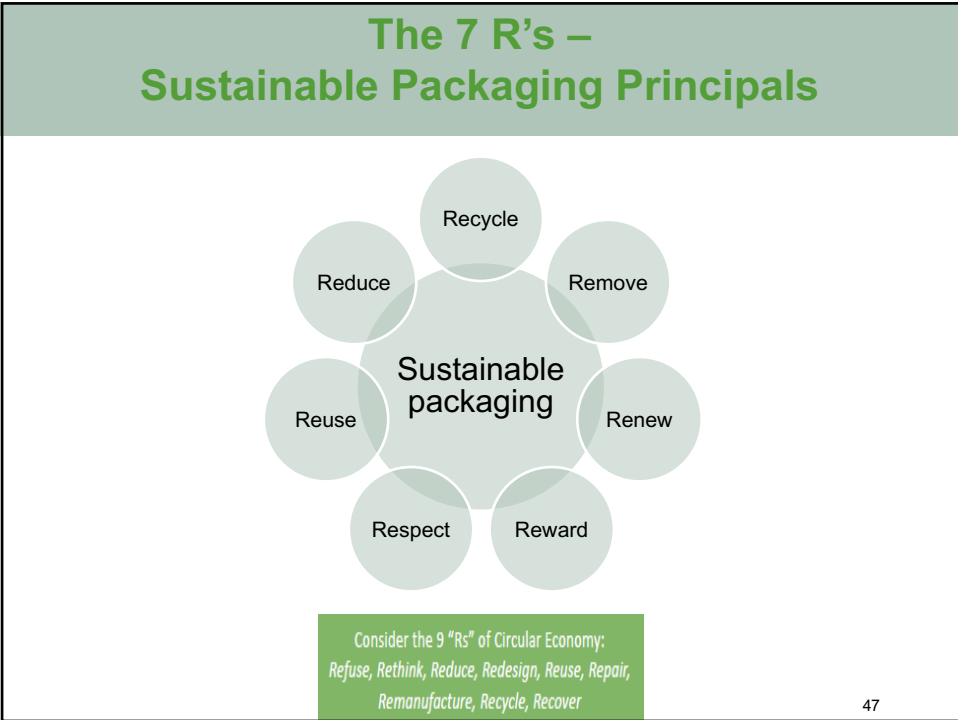


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Design,  
Print &  
Packaging

Skillnet,

Thank you for  
your time.

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