THE REQUIREMENTS OF SUSTAINABLE ECONOMY AND ITS IMPLICATIONS FOR PACKING

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SUSTAINABLE DEVELOPMENT

Since 1987, sustainable development has been taken to mean activity that takes three elements, or 'pillars' into account: environmental protection, social equity and economic prosperity.

Packaging embodies all three. Without it, resource and product wastage would be much worse, health risks would increase dramatically, and the economy would be much less efficient.

SUSTAINABLE DEVELOPMENT

In 1987 the Brundtland Commission developed the most commonly applied definition of Sustainable Development:

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This involves addressing economic, social and environmental factors and their interdependence in an organization's decision-making and activities".

The Three Pillars of Sustainability

I. **Planet – Environmental protection**
"Safeguard the earth's capacity to support life in all its diversity, respect the limits of the planet's natural resources and ensure a high level of protection and improvement of the quality of the environment. Prevent and reduce environmental pollution and promote sustainable consumption and production to break the link between economic growth and environmental degradation".

II. **People – Social equity and cohesion**
"Promote a democratic, socially inclusive, cohesive, healthy, safe and just society with respect for fundamental rights and cultural diversity that creates equal opportunities and combats discrimination in all its forms".

III. **Profit – Economic prosperity**
"Promote a prosperous, innovative, knowledge-rich, competitive and eco-efficient economy which provides high living standards and full and high-quality employment throughout the European Union".

Packaging

Packaging's value lies in its association with products. The methodologies used to measure packaging's environmental impact are often based solely on single criteria.

This approach tends to overlook what is by far the biggest environmental benefit of packaging: the role it plays in preventing waste.

Packaging & Packaging Waste (Directive 94/62/EC)

This Directive is a harmonisation measure, meaning that it establishes common rules for packaging to facilitate the free movement of packaging and/or packaged goods throughout the EU. It has twin objectives: to help prevent obstacles to trade and to reduce the environmental impact of packaging.

The Essential Requirements of Directive 94/62/EC:

- to keep packaging weight and volume to the minimum amount needed for the safety, hygiene and consumer acceptance of the packed product;
- to keep noxious or hazardous constituents to a minimum;
- to ensure that packaging can be reused and/or recovered once it has been used.

EUROPEN in its Vision of Packaging's Contribution to Sustainable Development states that packaging should:

- be designed holistically with the product in order to optimise overall environmental performance,
- be made from responsibly sourced materials,
- be designed to be effective and safe throughout its life cycle,
- meet market criteria for performance and cost,
- meet consumer choice and expectations, and
- be recovered efficiently after use.

The Role of Packaging

The fundamental role of packaging is to deliver the product to the consumer in perfect condition.

Functions of Packaging

Protection

- Prevent breakage (mechanical protection)
- Prevent spoilage (barrier to moisture, gases, light, flavours and aromas)
- Prevent contamination, tampering and theft
- Increase shelf life

Promotion

- Description of product
- List of ingredients
- Product features & benefits
- Promotional messages and branding

Functions of Packaging

Information

- Product identification
- Product preparation and usage
- Nutritional and storage data
- Safety warnings
- Contact information
- Opening instructions
- End of life management

Convenience

- Product preparation and serving
- Product storage
- Portioning

Functions of Packaging

Unitisation

- Provision of consumer units
- Provision of retail and transport units

Handling

- Transport from producer to retailer
- Point of sale display

Waste reduction and recycling and reuse of by-products

- Enables centralised processing and re-use of by-products
- Facilitates portioning and storage
- Increases shelf life
- Reduces transport energy

Conventional materials for Packaging

Glass,
produced from sand, limestone and soda ash, makes impermeable containers that are easy to open and reclose. In most countries, bottles and other glass containers are either returned to be refilled or are recycled at a high rate.

Plastics,
made from oil or biomass, come in a number of specialised varieties. Polyester (PET), polyethylene (PE) and polypropylene (PP) are used to make bottles and other lightweight containers as well as flexible packaging. Plastic packaging can be reused, recycled or used for energy recovery. Certain types of plastics can also be composted.

Wood,
used mostly for pallets and crates, is also used for some niche products such as wine cases. The wood generally comes from managed forests and is frequently reused for a number of transport cycles.

Conventional materials for Packaging

Metal

is used to make containers, foils and closures. Tinned steel is used for food cans and some beverage cans. Aluminium is used for most beverage cans, foils and closures. Both types of cans are recycled at high levels with significant environmental benefits. Foils are often used in laminates with paper and plastic materials to make flexible packaging and beverage containers.

Paper & board

is based on organic fibres from wood and other biomass sources. Paper is readily recycled and high recycling levels are achieved. For product packaging, paper is frequently used in combination with coatings, foil, wax or plastic materials to provide barrier properties and sealability. For secondary and tertiary packaging, corrugated board is commonly used and generally has significant levels of recycled material.

New in packaging

➢**Bio-Flex F 2201 CL** - contains a high content of renewable resources
The biopolymer's mechanical properties exhibit a high elongation and flexibility along with good puncture resistance.
Due to its good interply strength, the biopolymer is recommended as a mid-layer in a coextruded structure. The biopolymer is a clear but stiff material with properties comparable to PP.

➢**Plastarch material (PSM)** - is one of the best biodegradable materials on the market for packaging. It is made primarily from corn starch.
Due to the mixture of materials used (all of them biodegradable), Plastarch material (PSM) is heat resistant. It is this heat resistance that makes PSM so versatile as a packaging material. PSM doesn't soften until 125 degrees Centigrade, and melts at 156 degrees. PSM also absorbs moisture. For use in packaging materials, PSM is made into a foam and then into packing peanuts or other materials.

Figure 1 shows the typical steps in the life cycle of a packaged product.

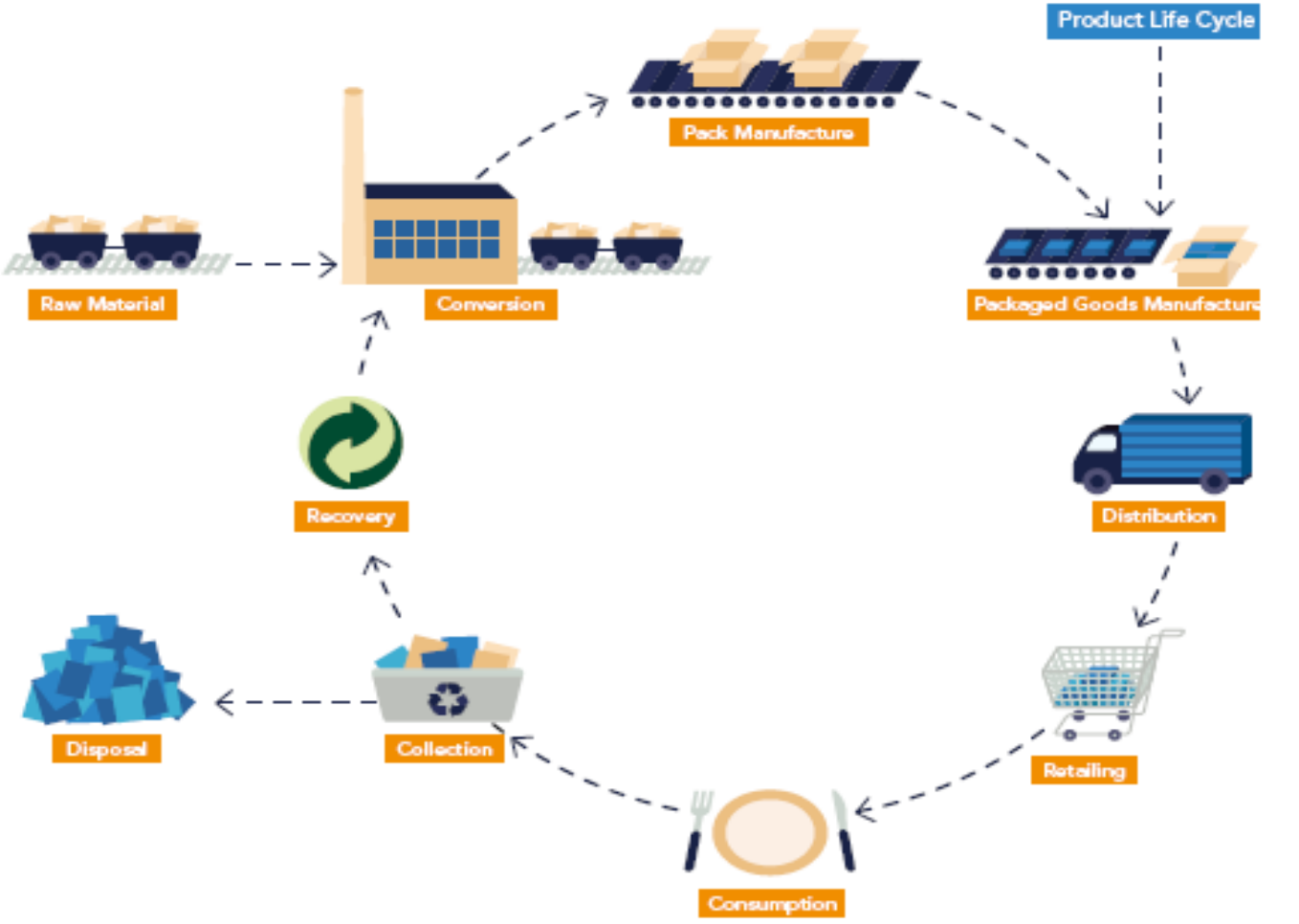

Figure 1: The Packaged Product Life Cycle

Packaging's Role in Sustainability

Packaging makes a valuable contribution to economic, environmental and social sustainability through protecting products, preventing waste, enabling efficient business conduct, and by providing consumers with the benefits of the products it contains.

Measure Environmental Impacts – Use of Life Cycle Analysis

Conducting a life cycle analysis (LCA) provides one of most holistic approaches to understanding the environmental impact of your product. Again it should be used to feed back into the strategy cycle to measure and evaluate progress on an ongoing basis.

LCA is generally practiced at two levels:

- screening LCAs make use of average data and reasonable estimates to calculate a smaller range of environmental impacts with results available within a matter of weeks;

- detailed LCAs pay great attention to data quality and sensitivity studies and a wider range of impact categories is generally considered. Detailed LCAs can take several months to complete.

LCAs meeting the requirements of ISO 14044 can support comparative environmental claims.

Measuring Economic Impacts

Economic metrics for the cost and benefit of incorporating sustainability within corporate strategy are generally easier to develop, more quantitative and therefore more objectively measurable than social and environmental impacts.

Examples of economic indicators could include:

- Product profitability
- Changes in insurance cost
- Logistical efficiency
- Product availability
- Your share price

Measuring Social Impacts

Social measures may need a different and less numerical data approach.

Examples of other social indicators could include:

- Adherence to labour laws
- Performance of health and safety management systems
- Health and safety impacts
- Impacts on surrounding communities

Key Performance Indicators (KPIs)

DO

– The launch of this phase may vary from company to company depending on the changes being minor or radical paradigm shifts. Either way, ensure that appropriate resources, processes and systems are in place to deliver the strategy and to meet the targets which have been set.

CHECK

– Once you have put your strategy in place, ensure regular reviews are conducted to check the validity of your targets. Monitor and measure performance and share this information internally or externally. This will allow greater transparency of objectives and possible improvement during the course of the sustainability journey through shared knowledge.

ACT

– This phase should take the learnings from the **CHECK** phase and address the effectiveness of your sustainability systems. During this phase **ACT** to determine whether your policies, objectives or other systems are relevant to your goals and repeat the cycle for continuous improvement.

Indicators

Environmental

1. Chain of custody
2. EMS use
3. Energy audits
4. Material waste
5. Packaging composting rate
6. Packaging energy recovery rate
7. Packaging landfill rate
8. Packaging recycling rate
9. Packaging reuse rate
10. Packaging to product weight ratio
11. Packaging weight
12. Packaging weight reduction
13. Recycled content
14. Renewable content
15. Selling unit cube efficiency
16. Total material input
17. Toxicants concentration
18. Transport packaging cube efficiency
19. Virgin material content
20. Water used from stressed resources

Indicators

Life Cycle Indicators

1. Acidification potential
2. Climate change
3. Cumulative energy demand
4. Cumulative energy demand renewable
5. Eutrophication potential
6. Freshwater ecotoxicity potential
7. Ionizing radiation (human)
8. Land occupation
9. Ozone depletion
10. Particulate emissions
11. Photochemical ozone creation potential
12. Resource depletion
13. Toxicity (cancer)
14. Toxicity (non cancer)
15. Water consumption

Indicators

Economic

1. Life cycle embodied energy protection
2. Packaged product wastage
3. Packaging service value
4. Total cost of packaging

Social

1. Child labour
2. Community investment
3. Discrimination
4. End-of-life communications
5. Excessive working hours
6. Forced or compulsory labour
7. Freedom of association and/or collective
8. Occupational health
9. Packaged product shelf life
10. Product safety
11. Remuneration
12. Responsible work place practices
13. Safety performance

Conclusions

✓ Ignoring KPIs is likely to lead to sub-optimal packaging, consumer disappointment, and to damage your corporate reputation.

✓ Strive for continuous improvement and review your strategy and targets periodically to ensure they still drive true sustainability.

✓ Taking the time and effort to develop sustainability will protect the future of your business, enhance the reputation of your company or brands, and build trust with your customers – sustainability is good business.

Thank you for your attention !