METHOD FOR STRATEGIC DESIGN IN THE FOOD PACKAGING SYSTEM

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1. Project abstract

A research study was conducted in order to understand the food packaging system in Chile. The findings of this research were inputs for the creation of a method for strategic design within the food packaging system. This method, with a focus on one of its tools: Packaged Product Life Cycle, is the topic of this poster.

Literature was reviewed about the topics of packaging, food, product life cycle, environmentally responsible design, and design methodologies. A series of interviews were conducted to experts within the industry of packaged food products, across its value chain and from all food product life cycle stages. Observations were made in factories and other diverse scale food and

packaging operations. The data collected was analyzed using qualitative techniques.

The results show a number of characteristics of the food packaging system that should be considered when designing any solution within it.

This knowledge is good for the food producer in order to make efficiencies, reduce waste and money spending, minimize the environmental impact of their products, and facilitate compliance with a new extended producer responsibility, or EPR, legislation. Based on the findings, a method for the strategic design within the food packaging system was created.

This method uses a life cycle approach. It is intended to be used during food packaging related planning, decision making and design processes. It includes a set of tools to gather information that is relevant for the understanding of the food packaging system, and to strategically plan and advance towards design solutions that are efficient for the business, environmentally responsible and a good experience for the users. The method can be used mostly by design consultants, design teams within packaging and food companies, companies and academia. The potentially most benefited with the use of this method are food and packaging producers.

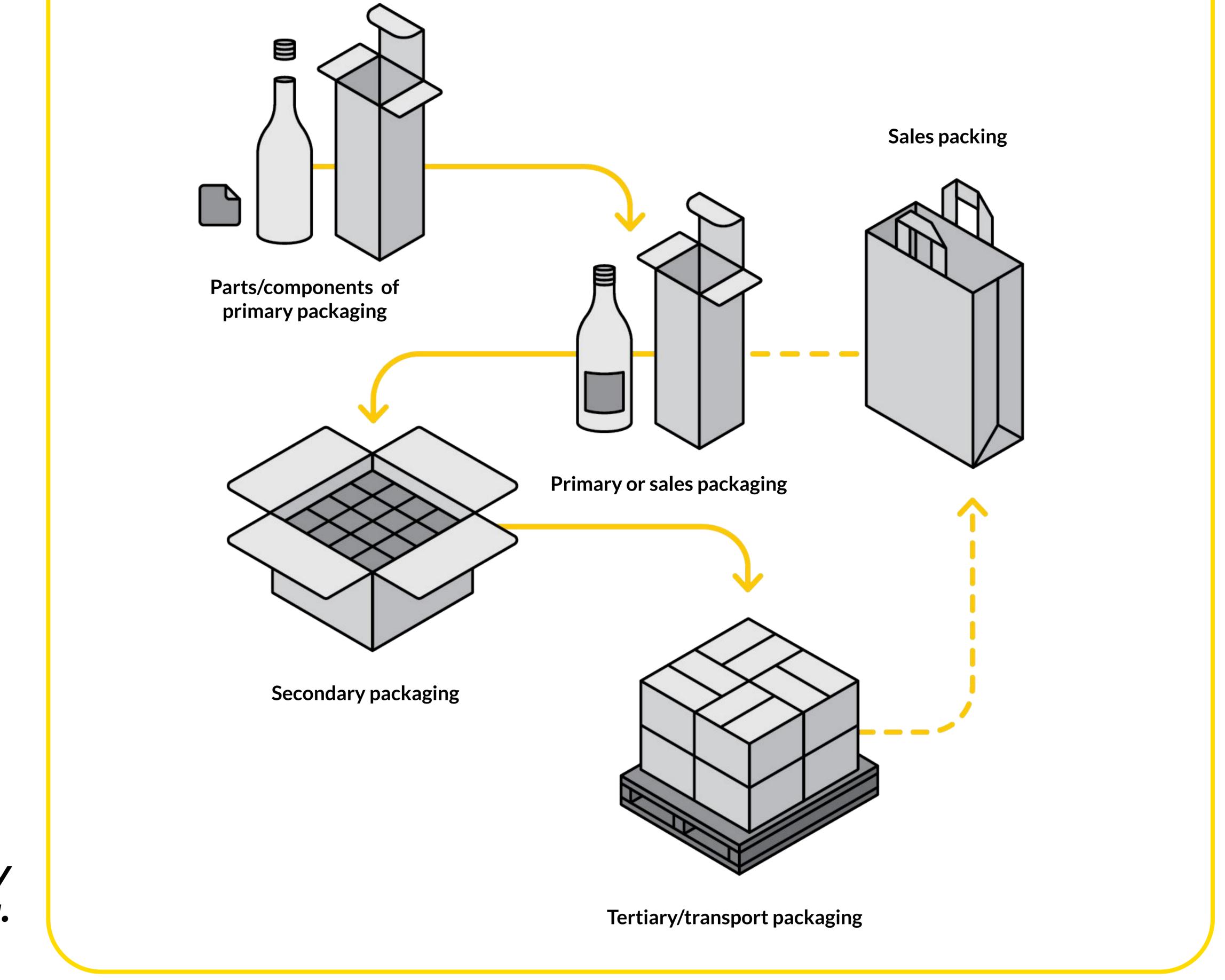


Figure 1. Primary, secondary and tertiary packaging.

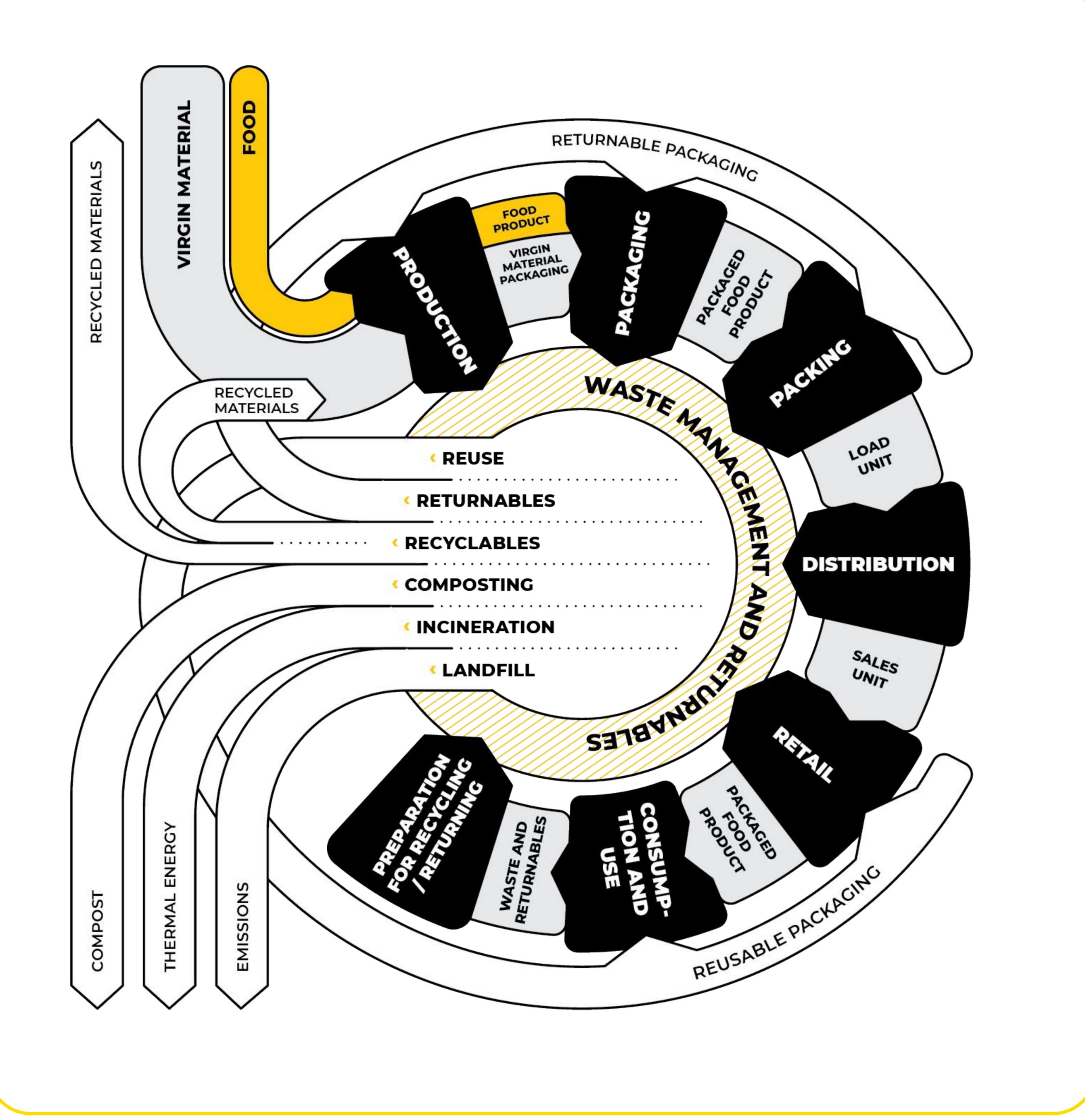


Figure 2. Packaged Food Product Life Cycle Diagram

2. Introduction to the food packaging system

For the purpose of this study, a food packaging system is understood just as ISO defines a product system¹ in the 14.044 Standard, but with the product being packaged food. Thus, it includes all life cycle stages of this product. The packaged food system is made of primary, secondary and tertiary packaging; making packaging products and materials; operations to pack products; distribution and sales; consumption and use; preparation for recycling, reuse and delivering returnables; and final disposal of waste.

Packaging plays a fundamental role in the food industry. It has become indispensable for containing the product, protecting it, preserving it, transporting it, and delivering it in optimal condition to the consumer².

Primary packaging is the one that contains the product, food in this case, or complements this one, finally being sold as a single unit - sales unit. Secondary packaging contains several units of primary packaging which contain products. Tertiary packaging consolidates several units of secondary packaging for heavy handling and distribution (see Figure 1).

Even though the final consumer of the food product only sees the primary packaging, secondary and tertiary packaging exist for every product and carries with it costs, environmental impact and need to comply with legislation.

1 Product system: collection of unit processes with elementary and product flows, performing one or more defined functions, and which models the life cycle of a product (ISO, 2006).

2 Consumer, in this case, means who consumes the food product. To be consumed means to be ". . .converted by chemical reaction into energy and by-products." according to Braungart, 1994, p1 (see bibliography).

3. Method for strategic design in the food packaging system

Being aware of every kind of packaging should be important for the food producers, because they pay for all the packaging used, are responsible for the environmental impact derived from it, and should comply with EPR legislation. Then its use should be optimized. For this to happen, the packaging system must be designed as a whole, rather than just designing or purchasing primary packaging.

A method for strategic design in the food packaging system was developed in order to help with this task. The method comprises six tools aimed at describing, analyzing, planning and briefing in the food packaging system. Among these tools, one is especially relevant to the topics addressed by the Life Cycle Management conference. This is the Packaged Product Life Cycle Tool.

PACKAGED PRODUCT LIFE CYCLE TOOL

This tool is used to collect information from each of the packaged food product's life cycle stages. The purpose of its use is to establish dependency relationships among the processes of the different life cycle stages and visualize the corresponding inputs, outputs, byproducts and waste.

The Packaged Product Life Cycle tool requests:

• To identify the components of the packaging system, and to describe each life cycle stage with the resulting processes and products;

• To identify supplies, waste and returnables of each stage, and to identify post-consumer management of each part or component of the packaging system, as well as the management of waste and returnables.

The information must be added within the boxes defined for each topic, for which you can use sticky notes (post it type) or write with pencil so corrections can be made.

If the product does not have packaging or it is a new product, the tool can be used to model the future life cycle starting with the information of an initial packaging proposal.

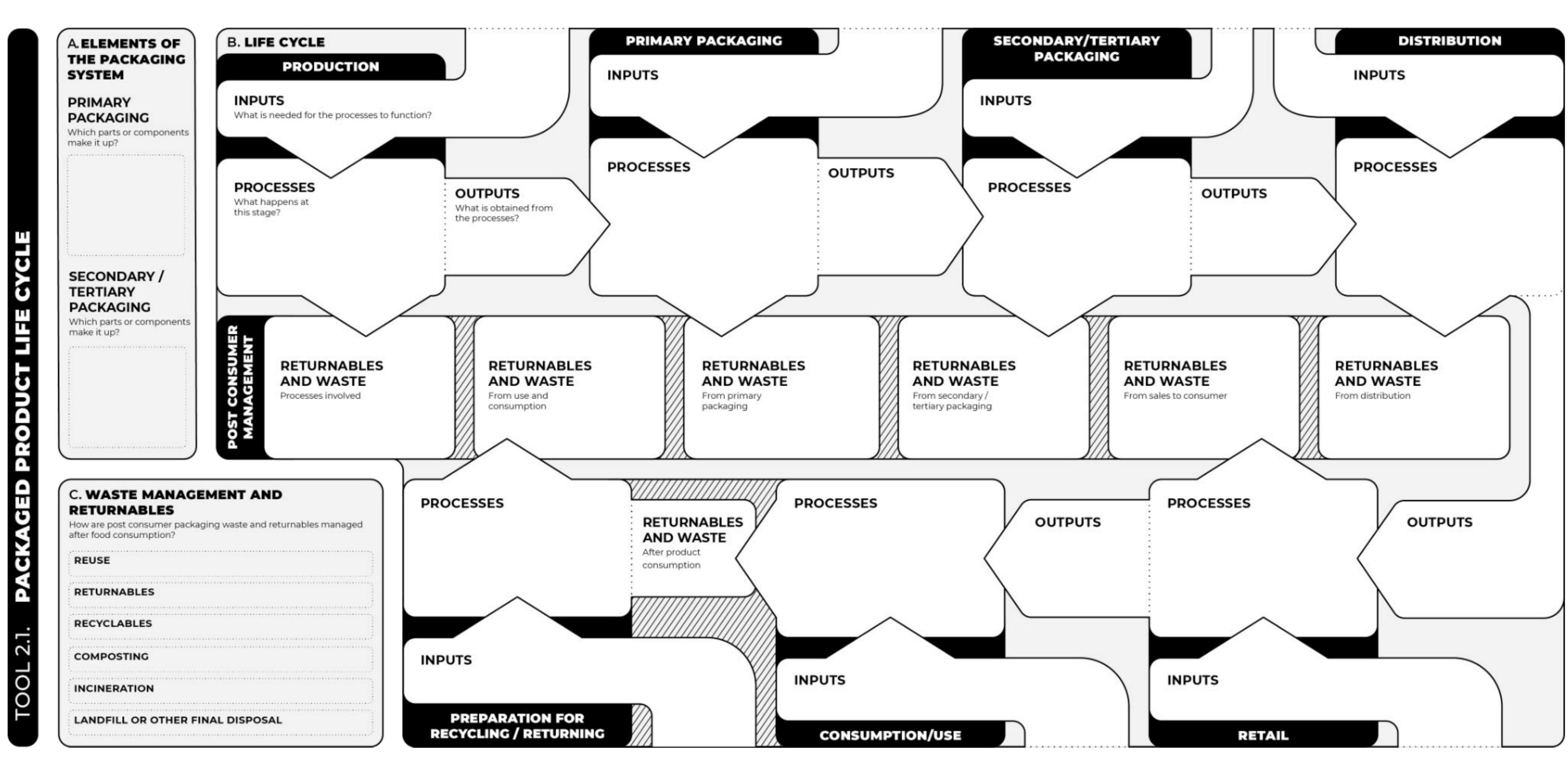


Figure 3. Tool 2.1 Packaged Product Life Cycle

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