Packaging and deposit systems: Overview of reuse systems
"Why don't you bring back deposit systems?"

Short of providing a binary answer, I believe the CNE can help analyse the stakes inherent to this question so often asked by stakeholders.

Perhaps it is good to remind people that things have changed between the time France introduced a deposit system for the reuse of household waste (in the 60s and 80s) and today.

- Consumption patterns have changed: we have transitioned from an economy in which supply insufficiently met demand, to one with excessive supply and harsh competition, in which prices have dropped and packaging contributes to product diversification (see the example of wine consumption in France on page 19).

- Distribution has changed: "modern" trade has progressively introduced pre-packaged products and caused the closure of many older retail stores.

- Production of goods has changed: goods are now largely mass-produced, contributing to a decrease in prices.

- Packaging has changed: glass and metal have given way to plastics, cartons and cardboard. The new plastic and cardboard packaging did not exist at a time when glass bottles were returnable for reuse. To illustrate this change in one set of figures: nowadays, glass flasks and bottles represent 8 billion consumer sales units (CSU) for a total of 94 billion CSUs, that is to say 8.5%.

So for a vast majority of products, speaking of a return to deposit system, simply does not make much sense.

But does this mean we should out rule them altogether? Of course not. Reuse systems are very common in the non-household packaging industry which shows that production and trade actors do not have a dogmatic attitude.

From these many cases, we can indeed learn valuable lessons on the key success factors, which do or do not make these systems a viable solution.

After that, it will be up to the different economic stakeholders to determine whether or not these factors exist in household packaging.

Michel Fontaine
CNE Chairman
The CNE’s document entitled "Packaging and deposit systems: Overview of reuse systems" demonstrates, through various examples, that deposit systems for the reuse of packaging are very common in beverage distribution in the catering industry and play an important role in industrial and commercial packaging.

The aim of this document neither consists in analysing existing deposit systems or return management systems, nor in their promotion and recommendation as viable solutions.

The observation of various existing deposit systems allows us to determine certain elements which contribute to their success:

1. A specific design for said packaging, which must be sturdy enough to ensure its endurance through several reuse cycles,
2. A design facilitating return systems for reuse (standardised, compact, easy to clean, etc.),
3. Regulated deposit fees (for certain types of packaging) enabling the return of said packaging,
4. Reverse logistics generally carried out in the same packaging (crates for instance) as outbound logistics,
5. Storage facilities and empty packaging parks with excess capacity in terms of packaging needs, known as fixed financial assets, in order to meet the seasonal fluctuation of products and cleaning necessities before reuse (case of beverages and plastic crates used in the retailing and distribution industry for instance),
6. Stakeholders integrated in an efficient logistics system based on a dense territorial network bringing products as close to consumption sites as possible,
7. A sturdy and monitored system to ensure complete packaging traceability (particularly concerning their end of life) on the one hand, and perfect sanitary security for the product on the other.

The decision to set up a packaging reuse system, instead of a single-use system, requires a complete technical, social, environmental, and economic analysis.

This analysis can be complemented by a comparative life cycle analysis (LCA) between the two solutions: one based on re usable packaging, the other on single-use packaging which is collected and recycled into new packaging.

A user or consumer-oriented study should also be carried out in order to assess their understanding of and enthusiasm for one solution or the other.
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1. OBJECTIVES/LIMITS

1.1 Objectives
The CNE’s scope of action reaches any and all packaging on the French market, be it household, industrial, or commercial packaging.

This document aims at:
- Reminding each and every stakeholder of regulation and of their associated responsibilities,
- Describing examples of packaging collection systems with deposit or gratification in France,
- Extracting ingredients of success from these examples,
- Demonstrating that many of these reuse systems already exist and were developed by stakeholders upon observing the economic, social, and environmental benefits

This document also aims to contribute and support experimental policies mentioned in the August 17, 2015 legislation n°2015-992 pertaining to the energy transition for green growth, learning from existing examples and drawing focus on critical aspects.

1.2 Limits
The work group has expressed the will to gather more information on a number of existing systems using data obtained from contributing participants.

This document focuses on systems in use on the French market. It does not aim to draw any comparisons with other European countries.

The examples set forth in this document are not associated with life cycle analysis but with quantitative or qualitative data used to illustrate and comment on them based on documented facts.
2. DEFINITIONS

Semantics are of paramount importance here, as the concept of "deposit" is very common in public discussions, but it often relates to different systems and interpretations depending on different parties.

A number of terms are listed below; most are defined according to regulation. The concept of reuse is defined in various legislative and regulatory texts, on a French and European level. Alas, these definitions vary from one text to another and are sometimes contradictory. For a better understanding, this work group has arbitrarily chosen to use the definitions set forth in the French Environmental Code. This choice does not take into account potential standardisation and regulatory evolution, and these definitions are likely to change.

**Deposit system**

"A deposit system for returnable packaging defines a system in which the buyer pays a certain amount of money, the deposit, which is returned when they return the packaging. A deposit system can be used to increase packaging return rate either for refillable packaging or recycling purposes."

**Gratification**

Sum of money given to users/consumers to ensure they return the packaging (regardless of its destination). It can come in various forms: coupons, charity donations, etc.

**Reuse**

"Reuse: any operation during which substances, materials, or products which are not considered as waste are used again in the same way they were designed to be used."

**Reuse (in the sense of « Réutilisation » in French)**

"Any operation during which substances, materials, or products which are not considered as waste are used again."

"Preparing for reuse: any monitoring, cleansing, or repair operation in which substances, materials, or products which have become waste are prepared to be reused without any other pre-treatment in view of their recovery."

**Recycling**

Recycling includes "any recovery operation in which waste, including organic waste, is reprocessed into a substance, material or product intended for their original use or other uses."

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1 ADEME data sheets: deposit for beverage packaging - November 2011.
2 Article L 541-1-1 of the French Environmental Code.
3 Article L 541-1-1 of the French Environmental Code.
4 Article L 541-1-1 of the French Environmental Code.
Packaging

Definition of Packaging

Packaging\textsuperscript{5} is any object, whatever the nature of its components, intended to contain and protect goods, to allow their handling and transport from producer to consumer or user, and to guarantee their presentation. All "disposable" goods used for the same purpose must be regarded as packaging.

Packaging\textsuperscript{6} consists solely of:

1° Sales packaging or primary packaging (I), i.e. packaging intended to constitute, at the point of sale, a product intended for the consumer or end user;
2° Grouped packaging or secondary packaging (II), i.e. packaging intended to constitute, at the point of sale, a set of a certain number of goods, either to be sold to the consumer or end user, or to be used for decorating display shelves at points of sale. It may be separated from the goods it contains or protects without changing their features;
3° Transport packaging or tertiary packaging (III), i.e. packaging intended to facilitate the handling and transport of a certain number of goods or grouped packaging in order to prevent physical handling and damages related to transport. Transport packaging does not include road, rail, river, sea, or air transport containers.

For more information, the reader could report to the Commission Directive 2013/2/EU\textsuperscript{7}.

Editor’s Note:

• Primary packaging can be constituted of several elements. It protects the product and its features over the entire chain until the product’s consumption (ex: packing bag, box et clingfilm).
• The article can be understood as a primary sales unit or a consumption unit.
• The group can be understood as a gathering of a certain number of primary sales unit.

The packaging system\textsuperscript{8} generally combines three kinds of packaging, but the primary packaging can in some cases fill the function of the two other types. The packaging system must be capable of responding to all operating characteristics of these subsystems.

\textsuperscript{5} Environmental Code (Volume 5, Title 4, Chapter 3, Section 5, Article R543-43).
\textsuperscript{6} Directive 94/61/EC on packaging and packaging waste
\textsuperscript{8} Complete packaging system: it encompasses primary, secondary, and tertiary packaging. CNE - December 2010.
Depending on the final holder and its end of life, packaging is also classified into:

- **Household packaging**, which applies to all packaging that, after consumption of the product in the home or outside the home, is discarded by households.

- **Industrial and commercial packaging**, which applies to all packaging that is not household packaging: packaging for industrial activities (packaging B2B, multi-packaging and transport packaging), packaging used outside the home (Horeca), etc.

**Definition of acronyms:**

- **LCA**: Life Cycle Analysis
- **OHC**: Out-of-home Consumption
- **CHR**: Cafés-Hotels-Restaurants
- **BIB**: Bag in Box®: Cubitainers
- **IBC**: Intermediate Bulk Container
- **RVM**: Reverse Vending Machine
- **RG**: Returnable glass

**cl**: Centiliter

**hl**: Hectoliter
Some Figures

In 2012⁹, 12.3 million tons of packaging were put on the market, 7.5 million tons thereof were non-household packaging or 61% is non-household packaging, where this document demonstrates, by examples that returnable packaging systems are existing at a large scale.

![Packaging tonnage put into the market in 2012](source: ADEME(French Environment and Energy Management Agency)

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Non-household packaging:

<table>
<thead>
<tr>
<th>Material</th>
<th>Metal</th>
<th>Paper/Cardboard</th>
<th>Plastic</th>
<th>Glass</th>
<th>Wood</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Steel kgs, etc.</td>
<td>Boxes, trays, bags, containers, insert trays, dividers, corner pieces, pallets, etc.</td>
<td>Kegs, boxes, pallets, cling film, etc.</td>
<td>Returnable bottles (cafés, hotels, restaurants)</td>
<td>Pallets, crates, etc.</td>
</tr>
<tr>
<td>Examples</td>
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⁹ Source: Industrial, commercial and household packaging - 2012 data - Ademe.

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3. RETURNABLE PACKAGING SYSTEMS

This chapter introduces an overview of existing returnable systems for packaging, with or without deposit, for industrial, commercial, or household packaging, illustrated with examples.

Based on a so-called “deposit” system or other specific organisation, these "return" systems can be set up in order to:

- Reuse packaging
- Recycle packaging material

The objective is to show that stakeholders have been able to develop such systems upon the realisation of these as viable solutions to their logistic needs, given the economic, social, and environmental circumstances.
3.1 Re-using industrial and commercial packaging

3.1.1. Crates and pallets
In industrial and social packaging, crates and pallets make up a large part of returnable or closed-loop cycle packaging. This system is generally carried out by a chain of actors. See examples below.

3.1.1.1 Wooden pallets
The French pallet inventory is estimated at 250-300 million units.
In 2011, 52 million new pallets were sold and 102 million were reconditioned.
These figures show the importance of the return system for pallets in the overall flow: pallets are typically reused many times in a circular economy supported by involved actors. Technically, the reuse of wooden pallets is not based on a deposit system. But similar systems, such as rental, have been developed by wooden pallet suppliers.

Depending on the situation, the reuse system can be optimised to fit different options: reconditioning of all collected pallets from "closed" pools (exchangeable Euro pallets for instance) or "open" pools (economical pallets designed and identified by different industries or inventory managers), managing flow and physical or virtual relocation, or rental systems.

Life cycle of a wooden pallet

Source: French Wood Federation
Source: ADEME: Industrial, commercial, and household packaging - 2012

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"Closed" pool examples

✔ VMF pallets
These are designed for the transportation of bottles in the glass industry. This 1000mm x 1200mm pallet is designed for a 1000kg payload. It is a registered pallet, branded with the following information: glass manufacturer identification number, manufacturing year, manufacturer's brand. Around 10 million units are currently in use. Around 1.5 million units were produced in 2011.

✔ Europallets
Standardised in 1954 by the International Union of Railways (UIC), this reusable 800 x 1,200 mm pallet is subject to quality control in each country by an approved certification body. It displays the EUR brand in an oval shape. Since 1995, the EPAL association is responsible for the quality control of manufacturing and repairs (choice of regulatory bodies) and for the support of the EUR brand, on an international scale. Nowadays, EUR pallets display both the EUR and EPAL brands. In this case, the return system is based on a "one for one" exchange system, provided the acceptance of a potential "wear rate" to be negotiated between parties. This rate depends on the recorded wear, staining, damage, or rotation rhythm of the pallets, or on the contrary according to a particular quality standard demanded by one of the parties.

Relocating pallets
Certain manufacturing and reconditioning actors offer flow management solutions for certain types of pallets, such as the 800mm x 1200 mm or 1000mm x 1200 mm pallets, using exchange, property transfer and/or virtual relocation systems in order to avoid the physical transportation of empty pallets. These services, offered regardless of the quantity of pallets and the collection sites, can be provided for new or reconditioned pallets. The average life cycle of an EUR or rental pallet is approximately 8 years, depending on the conditions of use it was destined for, and the maintenance it was subjected to; the average number of use cycles are 3.5 per year, which amounts to 28 cycles in a pallet's average life cycle.

Reuse
In standard conditions of use, the breakage rate for wooden pallets is under 10% for new pallets and around 30% for reconditioned pallets. A wooden pallet has the advantage of being easily repairable: damaged components can be removed and replaced with new ones (blocks, boards, etc.) without any particular difficulties. Repairs are carried out in compliance to existing specifications, reference documents and standards: EPAL-EUR, VMF, NF EN ISO 18613, etc. Repairs for reuse play an important social (employment) and economic role in reviving regions.

Key Success Factors
✔ A sturdy design enabling return and reuse,
✔ A design enabling the standardisation of pallet formats,
✔ Existing standards, references, specifications, certifications, etc. which guarantee quality repair services and a consistent inventory,
✔ A national network of collection sites near storage sites, and repair/reconditioning centres ensuring product availability, interchangeability in France and abroad, and a physical or virtual system to balance flows according to stakeholders' needs,
✔ Repair operations considerably expanding life cycles,
✔ Rental costs which encourage reuse.
3.1.1.2 Pallets, crates and other plastic "logistics" packaging

Pallets, crates and other "logistical" packaging are used in all industries, from food-processing to automotive.

Different packaging types can be used according to the situation at hand: crate, foldable crate, bottle case, pallet, divider pallet, crate, or box pallet. Although it is possible and sometimes necessary to create dedicated packaging, reusable and single-use packaging manufacturers and their clients have been working on unifying packaging shapes and sizes to streamline logistics for over 20 years (payload stability, reducing logistics-based losses).

In fact, the system based on reused packaging is used either in the industrial sector where it provides elements between networked industrial entities (automotive industry) or in the distribution sector for certain food products subject to regular and daily deliveries for significant volumes of identical products.

3.1.1.3 Reuse in the automotive industry

Some industries, such as automotive for instance, have defined a standardised format. It should be noted that in such cases, using standardised formats can require interior design specific to each piece.

Example: reusable packaging in a KANBAN management system:

By extension, the word Kanban is also used for the reusable industrial packaging cycle. In the automotive industry, so-called "internalised management" systems have reusable packaging circulating between the car manufacturer and one or more of its OEMs. The packaging can be owned by either the manufacturer or an independent entity who manages it on a company's behalf.

At the end of each use, plastic packaging is prepared for the next cycle, including cleaning when necessary. Average lifetime for this type of packaging ranges from 5 to 10 years. At the end of their life cycle, containers are recycled to produce new packaging or for other uses.

In most cases, packaging is purchased by clients who manage their own pallet and crate inventory. To ensure the efficiency of return systems, some groups charge packaging in every step of the logistics chain, including between different entities within the same group. Packaging which cannot be reused is collected by packaging manufacturers who replace it with new items.

Some examples from the automotive industry:

Key Success Factors

- A sturdy design (shock and humidity-resistant) compliant to health standards and reuse requirements,
- A design facilitating return for reuse (foldable packaging),
- A design enabling the standardisation of packaging formats to streamline reuse between different parties.

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13 Source: Elipso
14 The KANBAN system is mainly used in logistics and "just-in-time" production which aims at reducing inventory the amount of products in-production.
3.1.1.4 Pallets and crates rental

In some industries such as the food-processing or retail and distribution industry, companies who use pallets or crates can call upon the services of rental companies. The rental company has its own packaging inventory and provides the manufacturer with the amount of pallets or crates matching their specific needs in terms of format and model. The manufacturer then sends its products to the client on pallets and informs the rental company of the final delivery destination. Finally, the rental company collects and reconditions the packaging to return them to circulation for other clients, cleaning the packaging beforehand if necessary.

The rental company owns the inventory they make available to other companies. They charge rental and management fees, and organise collection in their clients' delivery sites. These systems exist for certain wooden, plastic or cardboard pallets, and for returnable plastic crates in the fruits and vegetables sector.

A logistics chain relying on this type of reusable packaging implies the manufacture and circulation of a more important stock of packaging compared to the actual amount of packaging used for conditioning products at a given time.

Generally speaking, rental systems imply five main steps: the purchasing of brand new packaging by the rental company for making up its rental park, providing users with said packaging, collecting it once it has been used, cleaning and/or reconditioning it (including potential inspection and repairs), and managing the flows.

Packaging standardisation inherent to reuse systems also implies a necessary increase in packaging weight and/or volume:

- to guarantee its resistance for reuse,
- to transport different types of products in the same packaging format (which may imply lower payloads per pallet for certain products).

Key Success Factors

- A sturdy design (shock and humidity-resistant) compliant to health standards in force and reuse requirements,
- A design enabling return systems (foldable),
- A "local" logistics chain with affordable return costs,
- A design enabling the standardisation of packaging formats facilitating reuse between different parties.
3.1.2 Cans, kegs and plastic IBCs

Kegs and IBCs are mainly used to package liquid or viscous products in the food and chemicals industry. Including smaller plastic cans, it is estimated that about 150,000 tons of brand **new packaging** are brought to the market every year. Every year, over 20,000 tons of kegs and IBCs are washed by government-certified agencies and put back on the market to package the same or a different product, in compliance with health regulations. The product category is paramount in determining if packaging can be reused. No reconditioned packaging can be used for food products, except in the case of a short and monitored cycle (packaging of an identical product, for the same company). This is called shuttle packaging. Certain categories of dangerous products imply an energy recovery from the packaging which can neither be recycled nor reused.

In the case of IBCs, made up of a plastic bag, a metal cage and a pallet, the bag can sometimes be recycled whereas the other components are reused. For several years now, packaging manufacturers have developed a return system for these large used packages directly or through partners, to ensure their circulation in the market.

Kegs are generally collected by government-certified companies who treat packaging waste. Depending on the keg's condition and the product it contain, they decide whether to prepare it for reuse, recycling or energy recovery. Reuse works without a gratification system with operators collecting packaging waste for free or even buying it.

Reuse is generally more interesting from an economic point of view for kegs over 60 litres; smaller containers are often destined for material or energy recovery. Some exceptions remain: large quantities of cans with a nearby cleaning facility, plastic-lined cans, etc.

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**Key Success Factors**

Reusing kegs and IBCs does not require financial compensation from packaged product suppliers. Packaging is designed to be reused, taking into account the cleaning and disassembling requirements and even the standardising of different formats,

- A sturdy design (shock and humidity-resistant) compliant to health standards and reuse requirements,
- A design facilitating return for reuse (standardised formats which can be disassembled and/or cleaned)
- In a short cycle, refillable with the same product.

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15 Source: Elipso
3.2 Re-using packaging through deposit systems

3.2.1 Beverage packaging in OHC
The consumer products mentioned above are sold on the food market (retail and distribution industry) and the out-of-home consumption (OHC) network: the used packaging type (format, material, grouping, etc.) depends on the mode, time, and place of consumption. It also depends on industrial choices made by the market's stakeholders.

Catering is defined as the economic sector allowing consumers to eat outside of their homes. Catering includes traditional restaurants, fast food restaurants, cafeterias, cafés (who provide beverages to be consumed on site), places of entertainment, canteens and other catering services.

Commercial catering is divided into two subgroups: traditional catering (with table service) and fast food service (takeaway orders, walk-in service).

According to the Fast Food Professions Observatory, the fast food industry accounts for 25,000 establishments in France.

It is a particularly dynamic industry with an average turnover increase of 5% per year in the years 2000. Its turnover growth curve surpassed that of traditional catering in 2010. The turnover increase in the fast food industry is associated with a growth in the number of restaurants: in 1993, 1 in 6 restaurants was a fast food restaurant and in 2009 this ration reached 1 in 3.

These statistics show that traditional table service is losing ground to an on-the-go consumption, reflecting a change in lifestyle and consumption habits which affect the type of packaging involved.

**Key figures in OHC beverage packaging**

Beverages sold in OHC establishments are served in two types of containers:

- **Refillable "returnable" packaging** (glass, metal kegs)
- **Single-use "lost" packaging** (recyclable packaging such as glass, PET, cardboard, steel or aluminium boxes, cubitainers)

The collection and reconditioning of OHC packaging circuit represents over 2 billion **packaging cycles every year**, and several million tons of reused packaging stocked in packaging parks. This circuit is based on **two refillable packaging types** subject to deposit in OHC establishments and which enable a 500,000 tons reduction in packaging waste every year.

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16 Source: Commercial catering: economic data DGCCRF ECO n°28 July 2014
17 Source: French National Beverages Association (FNB).
3.2.1.1 The beer market\textsuperscript{18}

Elements of the sociological context of consumption
- Total beer volume (food market and OHC): 19.956 Mhl\textsuperscript{19}. The beer market has decreased by 30% in 30 years, but has stabilised in the last two years: this drop is due to a general reduction of alcohol consumption in France since 1960.
- Average individual consumption of 30 litres per year, with standard beers decreasing by 6% every year over the last 10 years and the rise of so-called special and specialty beers (abbey, white, flavoured, etc.: +15% per year).
- 660 breweries by the end of 2014 compared to around 30 in the 80s: 50 new breweries every year between 2011 and 2013, and 100 per year in 2014 and 2015.

Reasons for the decrease in use of returnable packaging
- Sociology of consumption: for many years now, times and places of consumption have been changing. There are explanatory factors: a larger range of products in supermarkets in the early 1970’s; the decrease in the number of companies in the hotel and catering sector (companies with a beverage license) in which returnable packaging is offered: from 200,000 companies in the 1960’s to less than 30,000 today; and the emergence of new consumption trends (nomadism, events, etc.).
- On-the-go consumption: increase in the number of takeaways (cf. p16) in which single-use lightweight packaging (metal) is largely used as it is adapted to the use, place and time of consumption.
- Limited number of industrial packaging lines for economic reasons.

\textsuperscript{18} Source: Brasseurs de France 
\textsuperscript{19} Mhl: millions of hectolitres.
Steel beer barrels

A few figures

- In 2014, consumption in France of beer in returnable drums amounted to 3.448 Mhl, i.e. 17% of the total volume vs 30% in the past.
- The inventory of steel beer barrels with volumes between 20 and 50 l is estimated at 3 million units.
  - Over an average lifetime of 15 years, this type of packaging is used on average 53.5 times.

**Key Success Factors**

- Standardised dimensions,
- A specific design resulting in a robust and resistant barrel which can be re-used over a long lifetime,
- A France-wide network of wholesale distributors in the out-of-home consumption sector that ensure local collection services and the increase in inventories,
- A requirements specification that applies to all organisations involved in a deposit-return system,
- Regulated deposit (means by which bottles are returned) (30 euros).

Glass bottles

- Around 200 million glass bottles with average lifetimes of between 5 and 10 years. Bottles can be re-used between 4 and 5 times a year.
- The volume of beer sold in returnable bottles accounts for 0.239 Mhl, i.e. 1.2% of the total volume in 2014.

**Compared weight**: returnable glass bottle vs single-use glass bottle

For 25cl or 33cl glass bottles: returnable glass bottles are between 12 and 24% heavier, which is necessary to ensure their resistance when re-used.

**Palletisation**

9% more product on a pallet of single-use bottles (in liters) than a pallet of returnable bottles in crates (due to the use of crates with standard dimensions).

**Amounts invested** for a line of returnable glass bottles at the rate of around 30,000 bottles/hour.

<table>
<thead>
<tr>
<th>Specific machines</th>
<th>Amount (in € million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unpacker+ Packer</td>
<td>Between 1 and 1.4 for all</td>
</tr>
<tr>
<td>Bottle-cleaning machine</td>
<td>1.5 to 2</td>
</tr>
<tr>
<td>Empty-Bottle Inspector (EBI)</td>
<td>0.4</td>
</tr>
<tr>
<td>Conveying system/ Crate storage</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**Amount invested in a park of returnable crates**: Around 4 million euros (base: 1.3 million crates)

**Key Success Factors**

- A specific design resulting in robust bottles, which ensures reuse,
- Specific facilities (washing, control) for refilling,
- A France-wide network of wholesale distributors in the out-of-home consumption sector that ensure local collection services and the increase in inventories,
- A large returnable packaging park taking into account the seasonal consumption of the product,
- Regulated deposit (means by which bottles are returned).

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20 Source: Brasseurs de France.
21 Source: Fédération Nationale des Boissons (FNB) (French Beverage Association).
22 Source: Heineken Entreprise.
23 EBI: Empty-Bottle Inspector.
24 Source: Heineken estimations for 100,000 hl of beer and on a basis of two rotations a year.
3.2.1.2 Wine market

Background information on the sociology of consumption

Wine is rather considered as a “cultural” product, and its consumption has become occasional. For around fifteen years, this trend affected the number of wine consumers. But, in recent times, the proportion of French people who say they drink wine has increased. Indeed, 67% of French people are regular or occasional drinkers, compared with 62% in 2010. However, the average volume drunk is sharply dropping. Indeed, a Frenchman/woman drinks on average 42 liters of wine a year, compared with 104 liters in 1975.25

Wine sales on the internet have been steadily increasing since 2007. With more than 387 e-commerce websites in France, 9% of wine sales are made through this distribution channel. 30% of wine buyers have already purchased at least once on the internet.

Distribution in France

Source: http://www.vinetsociete.fr/chiffres-cles (in French)

Out of 10 bottles of still wine consumed in France: 5 will be commercialised by large-scale distributors, 1 will be sold on the wine estate, 3 will be drunk in restaurants and 1 will be sold by a wine shop.

Packaging typology

The 75cl single-use glass bottle is perhaps the main type of packaging used, but there are many other containers: glass bottles of 50cl, 37.5cl and 25cl and less commonly of 1.5l (magnum) or more; wine fountains (bag-in-box®) of 2, 3, 5 or 10 litres; PET bottles (mainly 25cl); returnable glass bottles (mainly 1 litre in the hotel and catering sector); or less commonly “cubitainers”.

Breakdown in volume of wine consumed in France and of types of French wine26

![Consumption trends and habits in France](chart1.png)

Consumption trends and habits in France

![The three categories of French wines](chart2.png)

The three categories of French wines

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25 Source: France Agrimer

Spotlight on returnable bottles in the hotel and catering sector

Returnable wine bottles are still significantly used in the hotel and catering sector. Although wine is mostly provided to the hotel and catering sector in 75cl single-use bottles, cubitainers are becoming increasingly popular and mainly at the expense of returnable bottles.

Consumption habits in the hotel and catering sector are changing massively in terms of the container served at the table. According to the 2014 France Agrimer study, the following containers are used in the hotel and catering sector:

Thus, 47% of wine consumed in the hotel and catering sector is served in a container (glass, jug, carafe, etc.) other than what was used for its packaging, i.e. cubitainers (increasing since 2000) and returnable bottles (decreasing).

Lifecycle of returnable glass wine bottles

Between 1938 and 1989, returnable bottles that could be directly reused were mandatory in the hotel and catering sector, but they are becoming progressively less popular. Their use has fallen to 33% of wine volumes (Ademe 2011 – continued decrease since 2011) in favour of single-use packaging (glass bottles or cubitainers).

Lifecycle of returnable wine bottles in the hotel and catering sector

Details of sorting operations of returnable bottles in local warehouses

It should be noted that single-use glass bottles have become less heavy, with glass packaging manufacturers offering specific ranges of lighter bottles. These bottles are around 8 to 10% lighter and now replace the classic model in some instances. As a result of the reduction in weight, the quantity of glass used for wine fell by nearly 17,000 tonnes and for beer\(^2\) by 14,000 tonnes between 2007 and 2012.

### Key Success Factors
- A specific design resulting in robust bottles (heavier), ensuring their resistance and rotations for reuse,
- Specific facilities (washing, control) for refilling (additional cost of approximately 25% vs single-use glass bottle packaging line),
- Regulated deposit (means by which bottles are returned),
- Bottles are returned in the same packages (crates) as those in which they were delivered (turnkey service offered to clients in the hotel and catering sector),
- A France-wide network of wholesale distributors in the out-of-home consumption sector that ensure local collection services and the increase in inventories,
- A large returnable packaging park (crates and bottles).

\(^2\) Source: Eco-Emballages.
3.2.1.3 Water market

Background information on the sociology of consumption:
In 2014, the consumption of bottled water in France\(^29\) was estimated at:
- 118 litres per inhabitant per year
- 7.7 billion litres for the whole French population.

The 2013 Gira study estimates that:
- 748 million litres of bottled water are distributed out-of-home,
- I.e. 9.7% of the total volume of bottled water.

Typology of water packaging in the out-of-home consumption sector:
  - PET packaging is the market leader, with 80.3% of sales
  - Glass packaging: 18.2% of sales
  - Beverage-boxes: 1.5% of sales.

It should be noted that the weight of single-use plastic bottles has been decreasing for more than 20 years: the weight of a 1.5L bottle of water decreased on average from 45.5g in 1994 to 29g in 2012, resulting in around 40,000 tonnes less packaging between 2007 and 2012. In addition, the production of plastic bottles is based on the blowing of preforms, which enables low volume packages to be transported in an optimal way.\(^30\)

Glass bottles in out-of-home consumption\(^31\)
Example of Danone Eaux France

Compared weight:
Returnable glass bottle vs single-use glass bottle:

<table>
<thead>
<tr>
<th>Volume</th>
<th>Weight of the glass bottle (grams)</th>
<th>Returnable bottle</th>
<th>Single-use bottle</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 cl</td>
<td></td>
<td>620</td>
<td>N/A</td>
</tr>
<tr>
<td>75 cl</td>
<td></td>
<td>N/A</td>
<td>410</td>
</tr>
<tr>
<td>50 cl</td>
<td></td>
<td>380</td>
<td>N/A</td>
</tr>
<tr>
<td>33 cl</td>
<td></td>
<td>N/A</td>
<td>224</td>
</tr>
</tbody>
</table>

By extrapolation of these figures: for a given volume, on average, a returnable bottle is approximately 12% heavier than a single-use bottle, which is the result of efforts to ensure its resistance for reuse.

Lifetime/number of rotations a year/breakage rates for a returnable bottle

<table>
<thead>
<tr>
<th>Volume</th>
<th>Lifetime (years)</th>
<th>Number of rotations/year</th>
<th>Rejection rate/rotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 cl</td>
<td>8 years</td>
<td>2.2</td>
<td>6%</td>
</tr>
<tr>
<td>50 cl</td>
<td>7 years</td>
<td>1.5</td>
<td>7%</td>
</tr>
</tbody>
</table>

Due to the seasonal nature of the product, bottles are rotated only twice a year. The number of rotations is also affected by the volume of safety stock at clients that freeze rotation between January and June.

\(^29\) Source: CSEM.
\(^30\) Source: Eco-Emballages.
\(^31\) Source: Danone Waters.
This rotation is assessed on the basis of sales divided by the returnable bottles park:

- 100 cl, returnable glass bottles: 1 month of stock of finished products (factory + Danone platform) + 3.2 months of stock in client warehouses (empty + full) + 1 month of stock of empty bottles (factory + Danone platform), i.e. 5.2 months of total stock.
- 50 cl returnable glass bottles: 1 month of stock of finished products (factory + Danone platform) + 5.1 months of stock in client warehouses (empty + full) + 1 month of stock of empty bottles (factory + Danone platform), i.e. 7.1 months.

**Investment for a washing line - rate of 28,000 bottles/hour**

<table>
<thead>
<tr>
<th>Specific machines</th>
<th>Amount (in € million) (approximation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washing machine for bottles</td>
<td>3 to 4</td>
</tr>
<tr>
<td>Washing machine for crates</td>
<td>0.2 per packaging line</td>
</tr>
<tr>
<td>Conveying/ Crate storage</td>
<td>No data</td>
</tr>
<tr>
<td>Unpacker + Packer</td>
<td>No data</td>
</tr>
</tbody>
</table>

**Key Success Factors**

- A specific design resulting in robust bottles (heavier), ensuring their resistance and rotations for reuse,
- Specific facilities (washing, control) for refilling
- A France-wide network of wholesale distributors in the out-of-home consumption sector that ensure local collection services and the increase in inventories,
- A large returnable packaging park taking into account the seasonal consumption of the product,
- Regulated deposit (means by which bottles are returned).
3.2.1.4 Refreshing soft drinks market

Background information on the sociology of consumption

In 2015, the market consisted of 5 categories of beverages. The diagram below shows the volume market share (in %) of each category.

In 2014, the total volume of the refreshing soft drinks market in France was 4.2 billion litres. With consumption of 64 litres per year and per inhabitant, France is among the EU countries consuming the least amounts of refreshing soft drinks.

In France as a whole, packaging can be broken down by type as follows:

- PET: 68%
- Cans: 23%
- Carton: 6%
- Glass: 3%

The volume sold in returnable packaging in the hotel and catering sector is estimated at 65 million litres, i.e. 1.7 % of the total volume (base: 2014).

As for water, the average weight of plastic bottles has steadily decreased, resulting in 40,000 tonnes less packaging between 2007 and 2012 in the water and refreshing soft drinks sectors.

Similarly, over 25 years, the average weight of an aluminium can decreased by more than 20% and the weight of a steel can by more than one third, while remaining as resistant as ever33.

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32 Source: French Soft Drinks Association (SNBR).
33 Source: BCME.
Glass bottles

**Example 1: Coca-Cola France**

Comparison of weight of a returnable bottle and a single-use bottle

<table>
<thead>
<tr>
<th>Volume</th>
<th>Returnable bottle</th>
<th>Single-use bottle</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 cl</td>
<td>380</td>
<td>N/A</td>
</tr>
<tr>
<td>25 cl</td>
<td>N/A</td>
<td>190</td>
</tr>
</tbody>
</table>

By extrapolation of these figures: for a given volume, on average, a returnable bottle is approximately 24% heavier than a single-use bottle, which is the result of efforts to ensure its resistance for reuse.

**Lifetime/number of rotations of returnable bottles**

<table>
<thead>
<tr>
<th>Volume</th>
<th>Lifetime (years)</th>
<th>Number of rotations/lifetime</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 cl</td>
<td>8 years</td>
<td>25</td>
</tr>
</tbody>
</table>

**Investment**

Lines dedicated to the deposit-return system amount to several million euros.

**Example 2: Orangina-Suntory France (OSF)**

**Compared weight**

Only small volume glass bottles (25cl) are returnable: in order to ensure that they are resistant during different rotations, returnable bottles are on average 40% heavier than single-use glass bottles. The lifetime of glass bottles is, on average, 10 years for approximately ten rotations.

Lines designed to treat reusable bottles have, in addition to refilling and labelling machines, specific equipment for depalletising, unpacking, crate conveying, crate washing, bottle washing, automated-inspection (multi-camera), packing and palletisation: the amount of these high investments depends on volumes and required rates. It is necessary to invest in a bottle park that can be rotated and a crate park: this represents an important financial asset.

It is also necessary to invest in facilities (warehouse) where, at the end of the season, crates of empty bottles returned en masse can be stored, in order to protect them from bad weather: bottles which contain residual liquid (rainwater) can be damaged or become weak if frozen.

**Palletisation**

With the exception of the “bowl” Orangina bottles that are stored head to tail as a result of their shape, allowing for optimal palletisation, pallets of bottles stored in crates contain up to 30% less bottles (-25% in lorries).

**Key Success Factors**

- A specific design resulting in robust bottles (heavier), ensuring their resistance and rotations for reuse,
- Specific facilities (washing, control) for refilling,
- A large returnable packaging park taking into account the seasonal consumption of the product, which facilitates the management of peaks in consumption,
- A France-wide network of wholesale distributors in the out-of-home consumption sector that ensure local collection services and the increase in inventories,
- Regulated deposit (means by which bottles are returned).

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**Source:**
- Coca-Cola France.
- Orangina Suntory France.

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3.2.2 Gas bottles (butane, propane)
Refillable steel bottles intended to contain various types of gases, except from fire extinguishers, are considered as packages\textsuperscript{36}.
Gas bottles are returned in accordance with rules (cf. chapter 5.1.2): with a deposit of 15 euros, returning gas bottles is an efficient means for facilitating their reclassification, repair or even reform.
The deposit is high enough to encourage clients to bring the waste bottle back to a distribution site.

Key figures\textsuperscript{37}

**Bottle volumes** (non-exhaustive list)
- 35kg bottle which can be stored outside, giving the consumer independence
- 13kg bottle with multiple purposes (heating, cooking),
- 6kg volume launched in 1996/1997 for leisure and DIY.

**Bottle rotation rate**
Thanks to their solidity, these bottles have a very high rotation rate. Indeed, they can be reused more than a hundred times during their lifetime.

**French butane/propane bottle market**\textsuperscript{38}
- In France, nearly 10 million households use gas bottles, 80% of them for cooking,
- 1 out of 2 French households has at least one gas bottle.

Structural erosion of the processed butane market: volume has been regularly decreasing for many years, falling to 426,000 tonnes in 2014 (-4%), with 13 kg bottles being most effected.
Sales of 5-6 kg bottles are stagnating after several years of increase. This packaging type, which is lighter and more easily transported, accounts for around 8% of sales in the processed market.
In France, there are **nearly 60 million gas bottles in circulation**.

Each bottle has a sticker noting the manufacturing date and the gas charge refilling weight. The reclassification date is identified by a colour.

**Gas bottle recycling**
There is a specific system for the return of reformed bottles: at the end of the life cycle, materials are recycled.
According to law, it is mandatory to reform bottles put on the market before 1948.

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**Key Success Factors**
- A specific design resulting in robust bottles (given their contents, consumer safety must be ensured), allowing for numerous reuses,
- Bottles are returned in the same packaging (crates) as those in which they were delivered in specific lorries,
- A high deposit (15 euros) (means by which bottles are returned for reuse),
- A national network of points of sale: 99.7% of French households have a gas bottle distributor within 5 km of their home.

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\textsuperscript{36} European Commission Directive 2013/2/UE, 7 February 2013.
\textsuperscript{37} Source: [http://www.primagaz.com/](http://www.primagaz.com/) (in French)
\textsuperscript{38} Source: French Butane and Propane Committee (CFPB) activity report
3.3 Systems for individual collection of single-use packages

3.3.1 Individual collection of domestic packages for reuse

The French Law on Energy Transition stipulates that "experiments may be launched on a voluntary basis in order to develop deposit-return systems, especially for reuse, for certain packaging and products". These experiments will be regulated by a call for projects led by the ADEME (the French Environment and Energy Management Agency). The aim of this call for projects is to evaluate deposit for return system or bonus systems that encourage reuse in order to identify the conditions in which they would be relevant for domestic packaging. Indeed, from a technical, economic, environmental and behavioural point of view, very little information is available to make any sort of general assessment.

To reuse packaging, it is necessary to collect intact packaging in circulation before using it to package a product – in general, one that identical to the first product packaged in the packaging. Rules allow a company to take on responsibility for this (cf. part on regulations) by putting in place deposit for return system or individual systems.

Deposit for return systems are regulated by law: they involve asking the buyer to pay a certain amount of money (or deposit) that is then returned when the packaging is brought back. Other projects have also been implemented recently. They sometimes refer to deposit, but are rather based on the principle of a bonus to encourage the buyer to bring back the empty package, for example thanks to coupons or loyalty cards. These projects often cover specific products and/or take place on a local scale. Some of them are part of the "Réseau Consigne"39.

As part of these projects aimed at implementing a reuse system for domestic packaging, the CNE reiterates that the following issues have to be taken into account:

Regulatory issues:

- Ensuring the health and safety of the product and the consumer throughout the whole supply chain40;
- The collection system is an alternative means by which a company can assume its responsibility in accordance with Article L.541-10 of the French Environmental Code. As such, it must be approved by public authorities in order to ensure that packaging is efficiently collected and that consumers do not simply throw packaging into an unfunded recycling system.

Technical issues:

- The company must size the packaging park to satisfy consumers’ demands, including when there are peaks in consumption, especially with regard to drinks, the consumption of which is highly linked to the season.
- The company must have sufficient space on its premises for storing packaging as well as dealing with reverse logistics.
- Sufficient space is also necessary on the distribution site to store the packaging brought back by the consumer.
- The implementation of a washing and refilling system impacts rates and the packaging cost.
- Consumer information channels must be adapted to the specificities of reuse, for example with labels that can be easily removed during the washing process, while respecting the characteristics linked to the brand and the traceability chain. It must also be made clear to the consumer that the packaging is to be brought back and not thrown out like a single-use packaging.

39 http://www.reseauconsigne.com/ (in French)
40 Packaging as Key Element in Product Logistics, CNE 2015
Financial issues:
- Assess the overall cost of implementing an adequate collection and logistics system (including additional operations, such as reverse logistics and washing operations, as well as all fixed assets, such as packaging parks and storage warehouses). If necessary, the cost of a bonus may also be assessed, (whether it be in cash or in kind, as part of a loyalty card programme) in view of the expected savings in terms of the purchase of packaging.

Environmental issues:
- Returnable packaging and more broadly the reuse of packaging constitute alternative packaging solutions that promote waste avoidance, in compliance with the hierarchy established by the French Environmental Code. This hierarchy may be amended, if justification is provided regarding the environmental and human health impact and technical and economic conditions. Indeed, like all packaging management and packaging waste management methods, returnable packaging and reuse have an impact on the environment resulting from the production, distribution, collection, transportation and notably the washing of reused packaging. A complete and comparative life cycle analysis must thus be undertaken concerning refillable packaging systems and recycled single-use packaging.

- In light of this, the French Environment and Energy Management Agency (ADEME) published a data sheet\(^{41}\) in 2011 after a number of studies had been carried out to assess the technical, economic and environmental impact of available data on deposit for return systems. This data sheet highlights that the environmental impact of returnable packaging destined for reuse, compared to that of single-use packaging, depends on various factors:
  - Transportation distance between the packager and the distribution site, and the agreed means of transport
  - Number of uses of refillable packaging and weight of single-use packaging
  - Single-use packaging recycling rate

Consumer acceptance issues:
- Beyond public perception surveys, it is advised to lead consumer studies on the product target specifically, in order to ensure consumer support of a method consisting in returning packaging and enabling consumers to benefit from a potential bonus. For example, although exclusively restricted to the recycling industry, opinion polls sometimes highlight a discrepancy between strong support for recycling and for the environment, and the actual act of recycling. A bonus could be a good incentive, but must be in proportion.

- Returnable packaging also requires for the consumer to dedicate a specific space for storing intact and empty packaging in addition to household waste bins and selective sorting bins for unregistered packaging (cardboard, metal, plastic...). Some studies underline the fact that a lack of space is often the explanation given by some consumers for not adhering to selective sorting.

- These studies are also necessary as the ADEME asserts that deposit can notably be a source of confusion for the consumer, who may tend to reduce his recycling efforts on unregistered packaging.

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\(^{41}\) Ademe-Consigne technical specifications sheet on beverage packaging—ADEME November 2011
3.3.2 Individual single-use packaging collection methods for material recycling

It is not uncommon to hear talk about deposit for recycling (recovery of single-use packaging for the purpose of material recycling). The term “deposit” must be employed with caution in this case (see definition above).

**Testing based on RVMs**

A number of measures exist to incite consumers to return their household packaging to target operators; they are bonuses which come in various forms (discount coupon, discount voucher, charity donations, etc.) and which are notably supported by systems such as RVMs.

A certain number of experimental initiatives have been taken by large-scale distributors to collect, via more or less sophisticated systems, plastic bottles and containers, PET bottles in particular. These systems are notably supported by RVMs, which are placed strategically on the customer’s way, for him to return the packaging. The act of returning the packaging is rewarded by discount vouchers to be used in the shop (the bonus amounts to 1 or 2 cents for a PET bottle), or by discount coupons, or even by donations to selected charities.

The CNE does not wish to employ the term « deposit » for this type of method.

The first objective is to enable more recycling and recover quality PET flows and thus enable their better reuse and valorisation. The second objective is to generate traffic at the point of sale thanks to attractive bonus offers.

**Testing carried out by the French National Beverage Association (FNB)**

A number of reverse testing of single-use packaging in out-of-home consumption are being carried out by FNB members (beverage wholesale distributors), whose objective is to contribute to improving the rate of single-use packaging recycling (glass, PET, cardboard). Single-use packaging is thus collected in out-of-home consumption establishments (cafés, bars, brasseries, hotels, restaurants…) by way of beverage reverse logistics established by wholesale distributors who are also service providers specialized in the commercialisation and delivery of beverages to all types of out-of-home consumption establishments, that is to say around 220,000 clients all over France. The method presented to FNB clients consists in recovering single-use packaging during delivery rounds and redirecting them to recycling plants.

**Testing with the CCC program**

The CCC program, Chaque Canette Compte (Every Can Counts), is another method which objective is to raise awareness and encourage the collection of cans consumed out-of-home in order to increase the number of cans collected and recycled in places such as the workplace, schools, campuses, major events and popular shows. In France, CCC was launched in the Northern region in 2010, before continuing its development all over the country. The program offers free collection kits and is supported by collection partners from the social and solidarity economy sector: integration workshops, young start-ups or associations who use the profit generated by the valorisation of the cans to finance their charity work.

30 million cans were collected in France in 2015. Over 1,500 sites and many hundreds of events host the CCC project: Tour de France, Braderie de Lille, 24H du Mans, Paris Games Week...

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42 Reverse Vending Machine.
43 For more information: Source: Fédération Nationale des Boissons (FNB).
44 For more information: Source: BCME.
4. LESSONS LEARNED AND FOCUS POINTS

The previous examples demonstrate the wide-scale existence of return packaging measures, and industrial and commercial measures in particular. The CNE learns from what works (key factors of success) in terms of packaging return/recovery and highlights the points requiring attention regarding current and future experiments.

Lessons learned

Certain types of packaging prove their efficiency throughout reuse cycles. Reuse does not depend on a deposit system, as long as it makes sense on economic, environmental and social levels.

The success of return methods depends on:

- A specific conception of the packaging in question, which must be strong enough to ensure its necessary resistance to rotations during reuse and to facilitate the management of a packaging pool shared between a number of different users,
- A conception facilitating the return methods for reuse (standardization, compactness, easy to clean, etc.),
- Regulated cost of deposit to enable packaging return,
- Reverse logistics is usually done in the same packaging as the outbound logistics (at the checkout desk for example),
- Actors included in an efficient logistics system with a territorial network working closely to consumption sites,

In some cases (bottles destined for reuse, food product packaging):

- Setting up specific wash and control facilities is necessary for refilling, which ensures perfect product health safety,
- It depends on a large registered packaging park in order to take into account the potential seasonal consumption of a product and be able to satisfy demand during consumption peaks, which sometimes requires the anticipation of a storage space of maximal volume dimensions,
- White bottle marks (due to bottles rubbing against other bottles) may be considered as a point of discharge by quality control and thus limit the number of rotations.

The evolution of consumption habits, whether it be in terms of product use, time or place of consumption, are also factors to be taken into consideration for the successful return of packaging.

Focus points

As mentioned in various examples, whether the different measures are at the experimental stage or have been in place for a long time, the following focus points are to be observed:

The environmental interest for the return of packaging for reuse must be supported by studies on entire life cycle analysis about the return system in its entirety to be compared with a recovery system of material recycling.

Due to the considerable investments mentioned in the previous examples, the economic interest for solutions/methods must be closely followed throughout the entire chain of value of the packaged product, as economic studies published so far offer too often fragmented or incomplete information on the subject. This economic interest must also integrate the notion of complexity when implementing a specific measure. For instance, a registered packaging park of bottles is considered as a fixed asset in terms of accounting, thus optimization efforts by the eco-participation are even harder on this type of bottles, the older park having to be “eliminated” first.

The social interest must also be studied when comparing measures from an economic and environmental point of view: employment stakes must not be excluded.
Finally, it is imperative to study the method in question by integrating traceability, hygiene and safety requirements for the concerned product.
5. REGULATIONS

Deposit system is a way for a company to organise the distribution of its products. The choice of this type of organisation is their responsibility, in compliance with legislation, and environmental legislation in particular. In this case, the French Environment Code differentiates packaging whether the end-user is a household or not.

The end life of the industrial and commercial packaging is the responsibility of the end-user, who must ensure a treatment which either consists in "preparation in view of reuse, recycling or any other mode of valorisation, including energy valorisation." In terms of household packaging, Article L 541-10 of the French Environmental Code stipulates that companies are responsible “for providing or contributing to waste avoidance and management issued from this packaging”. As a result, the person launching the household packaging on the market can choose between multiple alternatives: “implementation of individual collection systems and waste treatment of their products or collectively implement eco-organisms, to which the person can give a financial contribution and transfer the obligation and ensure the management.” If not, individual systems must be approved by the State.

Furthermore, Article R.543-63 of the French Environmental Code stipulates that a packaging market launcher, who decides to take on waste management induced by the dumping of the packaging he uses, must either implement packaging deposit system or organize designated sites for the separate collection of this packaging. Therefore, the deposit system or implementation of certain measures are possibilities open to companies to ensure the reuse or recycling of packaging, so long as they are approved by public authorities. The approval of public authorities, whether applied to mutualised recycling methods or individual systems, must notably make it possible to ensure the sturdiness and traceability implemented to measure the packaging return rate or packaging recycling rate. This is essential to ensure that a company having set up an efficient packaging recovery system is not penalised by having to also contribute to a licenced recycling company. Conversely, it is also essential to avoid that a company having failed to set up an efficient system, and whose packaging would eventually be disposed of by the consumer in a recycling bin, doesn't pay for the cost.

Overall, these possibilities consist in a hierarchy established by the Environmental Code, which can be modified “if justified depending on the environmental and human health impact and technical and economic conditions.”

Regulation also implies certain measures to supervise the conditioning of some specific products, which are recapitulated in this chapter.

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45 Environmental Code Articles R 543-66 and 67.
46 Article L-541-10 and Article L-541-2-1.
5.1. Direct regulations
5.1.1 Out-of-home consumption packaging deposit system

- Legal framework

The January 13, 1938 Act had made packaging deposit in breweries and sparkling water production sites compulsory. This Act was replaced in 1989.

1. Act No 89-421 of June 23, 1989, regarding consumer awareness and protection, and diverse business practices

"The deposit of packaging used for the delivery and commercialisation of food liquids are implemented according to the following principles:

- the same deposit price is applied to all stages of commercialisation for a same type of packaging,
- registered packaging is necessarily deposited for the same price it was registered for.

The list of non-personalised packaging admissible for deposit and the respective deposit prices are determined by the so called deposit commission.
These lists and rates, in full or in part, are mandatory by law.
Packaging prices fixed by their owners shall respect the pricing categories fixed by the so called deposit commission.
Packaging destined for deposit bear the same mention than their deposit, affixed in a clear and sustainable way, according to modalities fixed by decree following the deposit commissions’ recommendation."

2. Decree No 90-264 of March 23rd, 1990, regarding packaging deposit in the liquid-food industry

The Deposit Commission includes an equal number of owner organisation representatives and packaging users.
Besides, the Deposit Commission also includes:
- a representative of the Minister in charge of the economy;
- a representative of the Minister in charge of trade.

The administrative office of the Deposit Commission is run by the French Directorate-General for Competition Policy, Consumer Affairs and Fraud Control.
The Deposit Commission draws a list of non-personalised registered objects and defines their characteristics and conditions of use when necessary.
These registered objects are regrouped into categories in order to restrict the number of deposit rates.
For each registered packaging, the Deposit Commission fixes a deposit rate which applies regardless the commercialisation stage.
These rates are mandatory for all operators in accordance with the order of the Minister of the Economy.

For all registered, unmarked or personalised packaging, the deposit is received upon payment of the product rate, at the rate of exchange in effect on the transaction date.
When a registered object is returned in good condition, the deposit rate equals the deposit rate.
However, when the identification of the deposit price is not possible, the deposit is made at the current rate of the return date.
The total of the deposit and deposit prices figures on the invoices which are sent with the delivery of the products.
Ministerial Order of August 1st, 2001, regarding the fixation of packaging deposit rates in the beverage industry (following the recommendation of the Deposit Commission)

As of January 1st, 2002, the deposit rates of unmarked packaging were fixed as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Deposit Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Six-star litre bottles</td>
<td>€0.15</td>
</tr>
<tr>
<td>Under 35cl bottles not included</td>
<td>€0.10</td>
</tr>
<tr>
<td>25cl wine bottles</td>
<td>€0.10</td>
</tr>
<tr>
<td>37.5cl beer bottles</td>
<td>€0.20</td>
</tr>
<tr>
<td>35 to 70cl bottles not included</td>
<td>€0.15</td>
</tr>
<tr>
<td>70 to 100cl bottles included</td>
<td>€0.20</td>
</tr>
<tr>
<td>Special bottles</td>
<td>€0.35</td>
</tr>
<tr>
<td>Special bottles, mechanical caps</td>
<td>€0.55</td>
</tr>
<tr>
<td>Specific local bottles</td>
<td>€0.25</td>
</tr>
<tr>
<td>20 to 50L barrels</td>
<td>€30</td>
</tr>
<tr>
<td>Palett</td>
<td>€13.50</td>
</tr>
<tr>
<td>Barrel palett</td>
<td>€20</td>
</tr>
<tr>
<td>Half palett</td>
<td>€7.50</td>
</tr>
<tr>
<td>Box</td>
<td>€100</td>
</tr>
<tr>
<td>Half-box</td>
<td>€75</td>
</tr>
<tr>
<td>Dividers</td>
<td>€7.50</td>
</tr>
<tr>
<td>12-Bottle Racks</td>
<td>€1.80</td>
</tr>
<tr>
<td>24-Bottle Racks</td>
<td>€3.10</td>
</tr>
<tr>
<td>Special Bottle Racks</td>
<td>€4.60</td>
</tr>
</tbody>
</table>

Ministerial Order of June 20, 1990, establishing the list of member organisations of the Deposit Commission

Professional organisations figure on the list, such as the following:
- Les Brasseurs de France et le Syndicat des importateurs de bières (French Brewers Association and the French Beer Importers Association),
- Chambre syndicale des eaux minérales (French Association of Mineral Water Producers),
- Confédération des coopératives viticoles (French Winemaking Cooperative),
- Confédération française des hôtels, restaurants et discothèques (French Hotel, Restaurant and Club Cooperative),
- Fédération nationale des commerces multiples (French National Multi-Channel Businesses Association),
- Fédération nationale intersyndicale des distributeurs, embouteilleurs et éleveurs en vins (French National Inter-Union of Distributors, Bottlers and Wine Producers),
- Groupement national des hypermarchés (French National Hypermarket Association),
- Syndicat de l'épicerie française et de l'alimentation générale (French Grocery and General Stores Association),
- Syndicat national des boissons rafraîchissantes (French Soft Drinks Association).
5.1.2 Gas bottle deposit system (butane, propane)

Decree No 2012-1538 of December 28, 2012, relating to the implementation of an equivalent deposit process or recovery system for gas bottles designed for individual use and gas bottle waste management.

Article L541-10-7
Amended by Act No 2015-992, August 17, 2015 – art. 81
Any natural or legal person who brings gas bottles designed for individual use to the national market shall provide them with deposit or an equivalent system encouraging their reuse. This person also takes responsibility for the free recovery of gas bottle waste resulting from the unloosening of the regulator outside of the deposit circuits or equivalent system set up by producers.

Environmental Code - Article R543-257
Created by Decree No 2012-1538 of December 28, 2012 – art. 1

"I. - The following section is applicable to rechargeable gas bottles designed for individual use and for gas bottle waste.

II. - The following are excluded from the scope of this section:

1° Gas cartridges and aerosol dispensers;

2° Gas bottles designed exclusively for professionals.

III. - Subsections 1, 3 and 4 of Section 5, Chapter III, Title IV, Book V of the Environmental Code regulatory section remain applicable.

Article R543-258 For more information on this article...
Created by Decree No 2012-1538 of December 28, 2012 – art. 1
For the application of this section:

1° A "rechargeable gas bottle designed for individual use", known hereby as "gas bottle", represents any pressurized container containing compressed, dissolved or liquid gas [butane, propane] which can be recharged, with a unit water capacity not exceeding 150 Litres and is designed to be used by households, due to its disposition and the circuits in which it is distributed;

2° A "market launcher" is considered to be any person who professionally produces and makes full gas bottles available for the first time in France, or who imports or introduces them to the French national market. These bottles are designed to be distributed, either for payment or free of charge, to an end-user, regardless of the transfer technique, including by distance or electronic communication;

3° A "distributor" is considered to be any person who commercially provides the end-user with full gas bottles, regardless of the distribution technique employed, including by distance or electronic communication;

4° "Deposit“ is considered to be the amount paid by the user on the occasion of the first gas bottle transfer, refunded when returning the gas bottle, even if not empty;

5° A "deposit form“ is considered to be any document attesting the payment made by the gas bottle user, mentioning the conditions of its return;

6° An "equivalent system of the deposit method“ is hereby known as "equivalent recovery system", encompassing any recovery system set up by a market launcher other than the deposit, which incites the user to return the gas bottle after use and thus encourages the reuse of gas bottles by organising their recovery and collection free of charge for the user.”
5.2. Environmental Code amended by the Energy Transition Act for green growth

The 2015-992 Act of August 17, 2015, is an amendment to the Environmental Code in order to promote packaging deposit, reuse and furthermore the implementation of a second life for packaging.

Amended version of the Environmental Code - Article L541-10
The 2015-992 Act of August 17, 2015, adds an 11th obligation to the requirements specifications of eco-organisms:

"II. In compliance with the extended producer responsibility principle, producers, importers and distributors of these products or the elements and materials used for their manufacture may be obliged to pay for or contribute to the disposal of the waste generated by them.

The producers, importers and distributors for whom the above-mentioned obligation is decreed by the provisions of this section and subject to these same provisions, fulfil their obligation by setting up individual collection and treatment systems for the waste they produce, or by collectively setting up eco-organisms, to which they give a financial contribution, transfer their obligation and of which they ensure the governance. [...]"

Requirements specifications drafted by eco-organisms notably provide:

11° Objectives linked to the contribution of eco-organisms in the setting up of deposit system for recycling and reuse. [...]”

Amended version of the Environmental Code - Article L. 541-1
This article which provides the guidelines of French politics in terms of waste management introduces the second life cycle in French law.

"1° At the beginning of the article now figures an additional I written as follows:
I.- The national policy of waste avoidance and management is a key lever in the transition towards a circular economy. Its objectives, chosen in respect of the hierarchy of waste treatment methods defined in II, are the following:

1° Prioritize waste avoidance and decrease in production by reducing household and assimilated waste produced per capita by 10%, and by reducing the amount of waste resulting from economic activities per unit of produced value, notably in the construction industry, by 2020 starting in 2010.

To this effect, testing can be carried out on a voluntary basis to develop deposit systems, in particular for reuse, of certain goods and packaging, in order to encourage the ecological design of manufactured goods and optimize second life products. [...]”
5.3. Eco-design requirements and deposit system
Article R543-44

"Packaging referred to in Article R. 543-42 shall meet the essential requirements defined below:

1° Requirements regarding packaging production and composition:
   a) Packaging shall be designed and produced in a way to reduce its volume and mass as much as possible to ensure a sufficient level of safety, hygiene and acceptance.
   b) Packaging shall be designed, produced and commercialised in a way to enable its reuse.

2° Requirements regarding the reusable or recoverable state of packaging:
   a) Reusable packaging shall simultaneously meet the following requirements:
      - its' physical properties and characteristics shall enable a number of trips and rotations in normally predictable conditions of use;
      - it shall be handled with a view of renewed use in accordance with the applicable regulations in terms of worker health and safety;
      - it shall be designed and produced in a way to meet the specific requirements of recoverable packaging, once it is no longer reused and thus becomes waste."

In order to meet these requirements, the norm EN 13429 for « reuse » was defined.

Specifically regarding household packaging:

Article R543-56

Amended by Decree No 2011-828 of July 11, 2011 – art. 20

Any producer, importer, whose products are commercialised in packaging of the same nature as those referred to in Article R. 543-55 or, if the producer or importer cannot be identified, the person responsible for the first market launch of the products is required to contribute or provide for the management of all packaging waste, in accordance with the provisions of the French General Code for Local Authorities Articles L. 2224-13 to L. 2224-16.

For this purpose, the person shall identify the packaging he delivers to a licenced organism or company under the established authorisation of Article R. 543-58, according to their defined terms and conditions as stated in Article R. 543-57. He recovers the remaining packaging under conditions laid down in Article R. 543-63.

Article R543-63

Amended by Decree no.2011-828 of July 11, 2011 – art. 20

When the persons referred to in Article R. 543-56 choose to manage their own waste resulting from the packaging they use, they must either:

1° Establish a deposit system for their packaging;
2° Set up specific sites for the separate collection of their packaging.

NB: The CNE encourages the reader to follow the evolution of the legislative package on circular economy, currently being drafted at European Union level.
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7. APPENDICES

Functions of packaging (non-exhaustive list)

- **To contain and preserve the contents**
  It is about protecting:
  - The external environment of the contained product (limiting risks of leakage, blocking the evaporation of solvent to protect the user’s health, forbidding dangerous usage by children, etc.),
  - The content from external constraints (limiting damage by mechanical shock, reducing taste and parasite odours transfer, preventing alteration by air or oxygen, blocking any germs, insects or undesired products, preventing theft or consumption of the contents before purchase, optimising the life of perishable products, etc.).

- **To inform**
  - Instruct on general and legal information (expiry date, storage temperature, instructions, dosage/unit dose, composition, allergens, price, quantity, weight, etc.),
  - Provide information on conditions of production (Eco-labels, Label Rouge (French Red Label), fair trade, AOC, etc.),
  - Distribute information related to specific characteristics of the product in its market segment (brand, allegations relating to nutrition and/or health, recipes, cooking method, product history, etc.).

- **To group together**
  - Gather several consumption units to balance product consumption and the frequency of purchase (packs of yogurt, packs of beer),
  - Organise products into manageable units (bags of several biscuits) to reflect various consumption patterns (nomadism, etc.),
  - Ensure product promotion (promotional kits),
  - Enable handling and transport by the consumer,
  - Facilitate display or any handling operations by operators.

- **To transport/to store**
  - Ensure delivery from the production site to the sales site without damage (protection of the product/packaging pairing against mechanical damages) from wooden pallets, corrugated cardboard covers, angles, metal or plastic ties, stretching or retractable shrink film, etc.,
  - Protect against any ill-will (theft or “bioterrorism”),
  - Inform logistics centres about the contents of transport boxes (logos, brands, contents, barcodes, etc.),
  - Allow for possible storage at the consumer’s home,
  - Ensure product transportability by the consumer to their place of residence.
• To make use easier
  Product usage goes hand in hand with its packaging, both of which are often inseparable:
  - Packaging that is easy-to-open or has a facilitated opening for groups of consumers (the elderly, children, adolescents on-the-go, sportspeople, etc.),
  - Re-closing mechanism for deferred product consumption,
  - Multi-portions for divided consumption or an on-the-go usage,
  - Product gripping ergonomics for optimal balance between weight, size, shape, and frequency of use,
  - Precise dosage to limit losses,
  - Product return: clear up the contents of the packaging as much as possible,
  - Use the container/content pairing for any preservation method (freezing) or any preparation method (cooked in the traditional ovens, microwaves, bain-marie, etc.)

• To facilitate primary packaging operations
  - Satisfy mechanisations without untimely stops,
  - Ensure the safety of primary packaging employees,
  - Carry out primary packaging operations at reasonable costs,
  - Resist primary packaging unit operation (impact, heat, output, vibration, closing, hygiene, appertization, etc.).

• To make the product visible and convey product and/or brand and company values
  - Foster purchases through packaging – it acts as a beacon on shelves (the consumer only spends a few seconds in front of the shelf) – through colour coding (green for bifidus yogurt, red for cola drinks), the shape of the packaged product (orange-shaped bottles for orange juice), the material used and the universe intended to be evoked (wood for tradition), and graphics and typography for immediate product recognition,
  - Convey the assets and values of the brand and the company (Corporate Social Responsibility),
  - Ensure consumer acceptance during purchasing and product consumption stages.\(^\text{47}\)

\(^{47}\) “Acceptance of Packaging, for the Product, for the Consumer and for the User,” CNE, October 2010.
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ARCELOR MITTAL
AVOCAT A LA COUR D’APPEL DE PARIS
BCME
BRASSEURS DE FRANCE
CARREFOUR
CASINO
CNE
CNE
CNE
COCA COLA
COF
SNBR
DANONE WATERS
ECO-EMBALLAGES
ECO-EMBALLAGES
ELIPSO
FAR
FEDEVERRE
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SIEL
SNFBM
SYSTEME U
VINS RICHARD

C. JUNG
S. MARTIN
S. JUNGFER
P. CHEVREMONT
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M. KAHL
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K. DESBOUIS
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M. MORIN
H. TARRAUD
M. LOUBRY
N. MANGIN
O. DE LAGAUSIE
O. DRAULLETTE
J.M. POINTET
L. ARQUETOUT

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www.conseil-emballage.org

For more information, please contact:
Bruno Siri, General Manager, or his assistant, Maryse Bricout
Conseil National de l’Emballage
By phone: +33 (0)1.53.64.80.30.
By e-mail: c.n.e@wanadoo.fr
Board of Directors

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Bruno Siri, General Manager

The CNE’s Nine Colleges

Packaging material manufacturers,
Packaging manufacturers,
Companies in the consumer goods sector and their suppliers,
Retail companies,
Companies authorised by the public authorities to organise the collection and recovery of
packaging waste on the national level and operators in the sector,
Consumer associations,
Environmental protection organisations,
Local authorities,
Other federations and companies.