INDUSTRIA DI MARCA | DISTRIBUZIONE MODERNA

BLUEBOOK

Management of surplus food: A guide for companies in the supply chain

ECR ITALY
EFFICIENT CONSUMER RESPONSE

Summary

ECR Italy

Purpose

The purpose of the association, established in 1993, can be summed up in the desire to work together to better meet the desires of the consumer, as quickly and cheaply as possible through a business process leading to shared benefits throughout the supply chain. Key aspects of the organization are the following: central role of the consumer, efficiency and effectiveness of the relationship between businesses achieved thanks to the adoption of a model of cooperation.

Objectives

ECR was created with the primary objective to re-engineer processes to reduce costs of the manufacturer-distribution system, contributing to the development of cooperation between the companies, for the benefit of the consumer.

Currently the association is seeking to increase the integration of the players of the chain to maximize the value in joint activities, working simultaneously in several respects: the demand, the supply chain organization and other aspects of the relationship between businesses.

Strategy

ECR Italy pursues its objectives by coordinating the dialogue between manufacturer and distribution, creating the right conditions for developing joint projects with quantified objectives, through the involvement of businesses and their managers, who directly contribute to the definition of common solutions.

ECR Italy therefore implements a methodology of work aimed at achieving tangible results by fostering an approach capable of generating a positive and constructive dialogue among the parties.

Members of ECR Italy

Distribution companies

Auchan
Autogrill
Carrefour-GS
Conad
Coop Italia
Crai
Despar Italia
Esselunga
VéGé Retail
Metro Italia
Selex
Sigma
SISA

Production companies

Barilla
Bauli
Beiersdorf
Bic Italia
Bolton Services
Cameo
Campari
Carapelli
Carlsberg Italia
Cloetta
Coca-Cola HBC Italia
Colgate Palmolive
Conserve Italia
Danone
Elah Dufour
Eridania
Fater
Ferrarelle
Ferrero
FHP
Glaxo Smithkline
Granarolo
Heineken
Henkel
Johnson & Johnson
Kellogg Italia
Kimberly-Clark
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Lavazza
L'Oréal Italia
Martini & Rossi
Mondelez Italia
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Muller
Nestlé Italiana
Parmalat
Perfetti Van Melle
Procter & Gamble
S.C. Johnson
Sanpellegrino
Star
Unilever Italia

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Ferrero	Ermanno Bellezza
Kellogg	Enzo Rizzi
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Research objectives

The issue of food waste is of increasing significance for companies of the supply chain, due to the strong economic, social and environmental impacts: economic, as production factors and resources were utilized for the production of food; social, as sadly, an increasingly significant part of the population is suffering from "food insecurity"; and environmental, due to both the consumption of even "poorer" resources, and the impact generated on the environment, and more generally on the climate.

The key to reduce food waste is the implementation of an approach to the management of surplus that is both collaborative (characterized by solutions and information flows among the different partners of the chain, with a "systemic" vision) and structured (characterized by processes and specific methodologies, a dedicated organizational focus).

ECR Italy in recent years has increasingly accompanied companies from the mass consumption sector as well as from manufacturer and distribution, in projects intended to improve the sustainability of the chain.

In particular, in 2013 a working group was created which studied the issue of, "Prevention and treatment of food surplus". This study provides an initial overview of the phenomenon (entity and main causes) and identifies some strategies to prevent surplus, intended to avoid the conversion of food surpluses into waste (for example, cooperation in promotional plans, and reduction of the product range…).

On the one hand, the results obtained reveal that the extent of this phenomenon is not particularly high in terms of percentage of food surplus generated, while on the other hand, in the majority of the cases, the results highlight the lack of an adequate control process of the phenomenon, which leads to low percentages of recovery of surplus.

Therefore, in 2014, ECR, in partnership with Politecnico di Milano, established a working group on "The management of food surplus in the chain of mass consumption" in order to further deepened understanding of the structured management of food surplus patterns.

In detail, ECR Group has identified four areas of study:

- *Definition of setting variables of the surplus management process*
- *Identification of best practices in supply chain level*
- *Identification of cooperation areas, in terms of chain in the management of the surplus*
- *Formal definition of the main barriers to reduce food waste*

At a methodological level, a thorough analysis of national and international literature has been carried out, exploratory case studies related to manufacturer and Distribution companies have been developed, and a survey addressed to ECR Italy members has been realized. The findings in terms of supply chain were also detailed and validated in workshops with members of the working group.
The purpose of this document is to present the results of the research, by formalizing guidelines for proper management of food surplus in terms of the supply chain, drawing attention to the main barriers to be overcome in order to reduce the impact of waste.

1. Introduction

The issue of food waste, on the one hand is a very topical issue, and greatly debated by the media; on the other, it is affected by a significant terminological confusion, making it difficult to address the issue in an operational manner. In the research, reference was made to the terminology introduced by the study "Feeding the hungry" of 2012 conducted by three professors of Politecnico di Milano, Paola Garrone, Alessandro Perego and Marco Melacini.

Surplus food is the edible component of food availability that is realized, transformed, distributed, or served, which, and for various reasons is not sold or consumed (Figure 1). It includes food produced in the primary sector, transformed in the transformation stage, distributed in the distribution stage, prepared or served in the food service stage, but that is not sold to the customer or to the final consumer. It also includes food purchased by the consumer, but not consumed in food service providers or at household level.

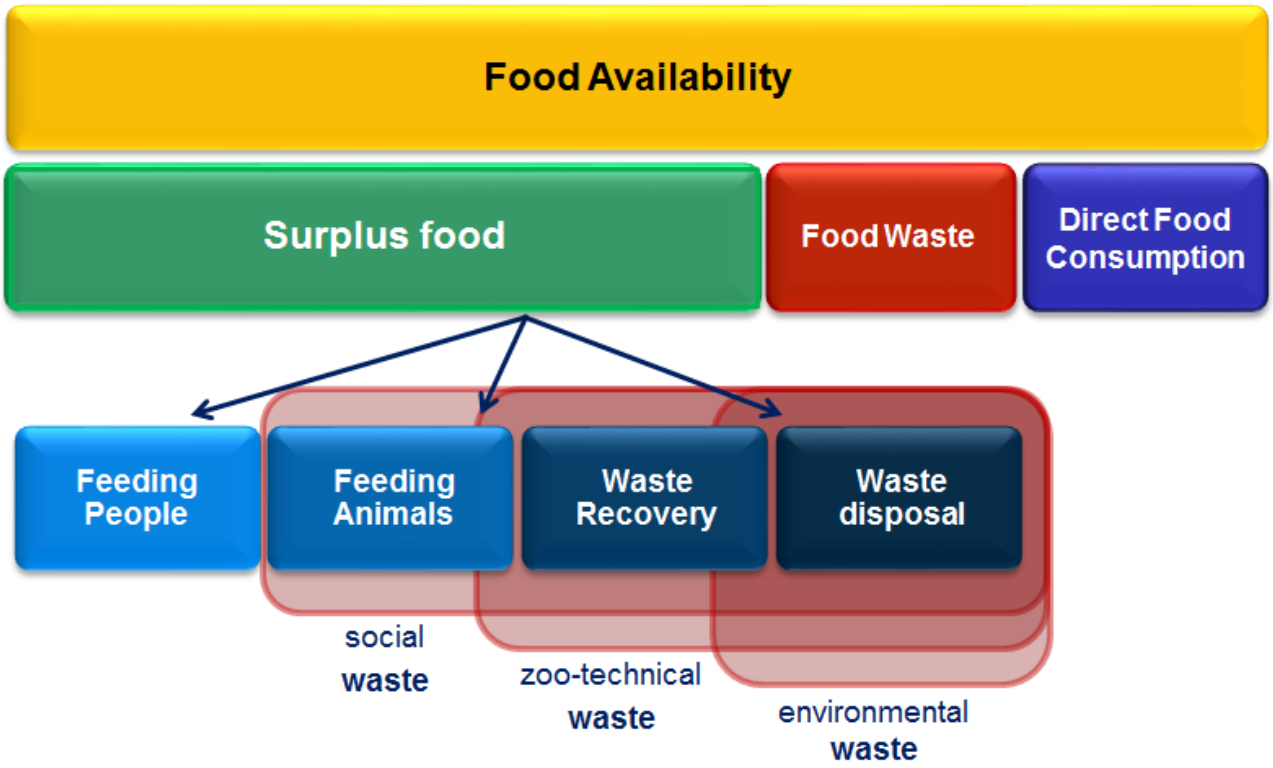

Figure 1 – Key concepts of the issue (revision of the authors on Garrone et al. scheme, 2012)

With regard to food waste, several definitions, depending on the hierarchy pertaining to the different methods of surplus management and to the perspective regarded, may be used. From a social perspective, food waste means the surplus food that is not recovered for human consumption, which as an initially edible product that was not managed, becomes no longer accessible for human consumption. Consider for instance a product "near its expiration date", stored at the warehouse of a producer or a distribution centre. Such a product can no longer be sold through the traditional sales network, and therefore represents a food surplus. The product becomes food waste when it reaches the final date for human consumption. Conversely, if recovered, this surplus does not turn into waste.

2. Surplus food management hierarchy

The distinction between the two key concepts of the issue (food surplus and food waste) helps to understand the two sides on which to work in order to reduce waste: an upstream activity for the reduction of surpluses generated (prevention) and a downstream activity after food surplus has been produced (recovery). Recovery necessarily implies a redistribution of the surplus to channels other than the traditional sales network.

Recovery aimed at human consumption of generated surplus can follow different paths. First, each single unit of the supply chain can evaluate the feasibility of ***reuse of surplus***, for example by re-introducing products into the production cycle, subject to verification of compliance with sanitary regulations. This is the case for some companies of the meat manufacturer able to develop finished products from surplus of other products. In the case of damaged packaging, the damaged products can be packaged again, especially if the damage is in terms of secondary or tertiary packaging.

Another possibility involves ***sale in secondary markets***. This solution for the Manufacturer sector means giving products to companies for resale in secondary markets (domestic or foreign), at prices close to those of production. The Distribution sector can find new ways of selling products near the expiration, even with the aid of new solutions[1].

A third possibility is ***donations*** to non-profit organizations, who in turn distribute the products to the needy.

The recovery of surplus food for donation purposes presents different challenges depending on both the type of product as well as the type of supply chain member considered. Some important elements in need of particular attention are the remaining shelf life, "conservation" methods, and both frequency and quantity of food surplus generated.

Exhausted the three aforementioned possibilities, there are other alternatives to recovery for human consumption. Surplus food can be used to satisfy the needs of animals, which can occur either by means of direct use of the surplus (e.g. Conferring to kennels), or by transfer of surplus to processing companies, specialized in the production of animal feed.

The surplus food can then be handled as recovered waste, conferred to companies (public or private) that specialize in the production of fertilizers or energy (especially for dry food products). Finally, surplus food can be used as disposed waste to be disposed of in landfills.

If the aforementioned are the possible macro alternatives to the management of surplus food, in structuring a surplus management process, there still needs to be a clear definition of the priority among these alternatives. Of potential help in determining this priority, is the “Food Hierarchy” (Figure 2), developed in England starting from the broader "Waste Hierarchy" perspective, which offers the alternatives described above, but summarized in two separate stages:

- ***Prevent*** *the creation of waste*
- ***Manage*** *the waste created*

The alternatives to recovery of surplus for human consumption – the main purpose of this study - relate to the stage of preventing the creation of waste, in other words, in all the actions that help promote the non-transformation of surplus into was from a societal perspective.

[1]An example is the GS1 DataBar, new barcode symbols smaller but capable of containing more information such as expiration date, weight, batch number.

Starting with the visibility of the amount available, sorted by expiry date, GS1 DataBar makes possible the development of newly targeted initiatives in terms of offer management, significantly reducing waste. For more information: www.indicod-ecr.it/standard

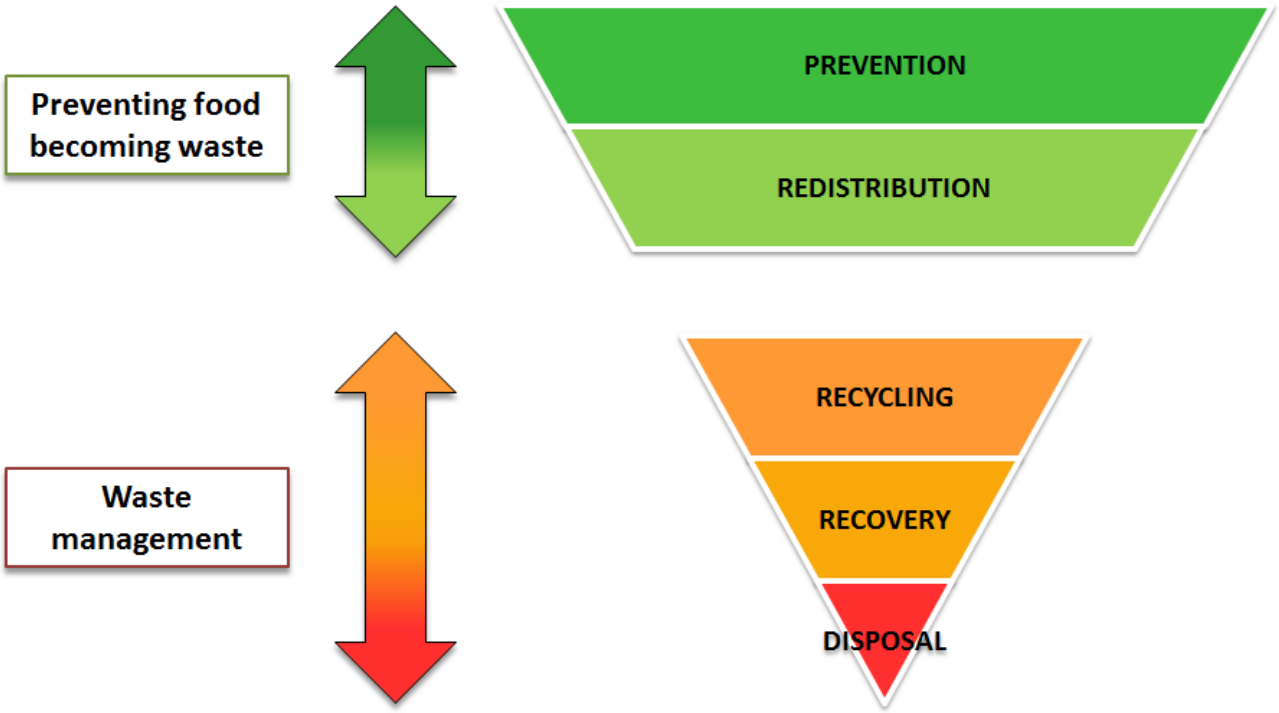

Figure 2 –Surplus food management hierarchy

3. The management process of surplus food: an overview

For companies in the supply chain, the prevention and management of surplus food result in an actual business process, consisting of administrative, operational and decision-making stages involving multiple players within the company.

The research has highlighted four key elements to set the process of managing food surplus (Figure 3):

- Development of a ***control system*** for the measurement and management of the case studies
- ***Formal definition*** of management ***process***
- Introduction of ***coordination tools*** among players involved
- Setting of the ***allocation*** of surplus ***process***

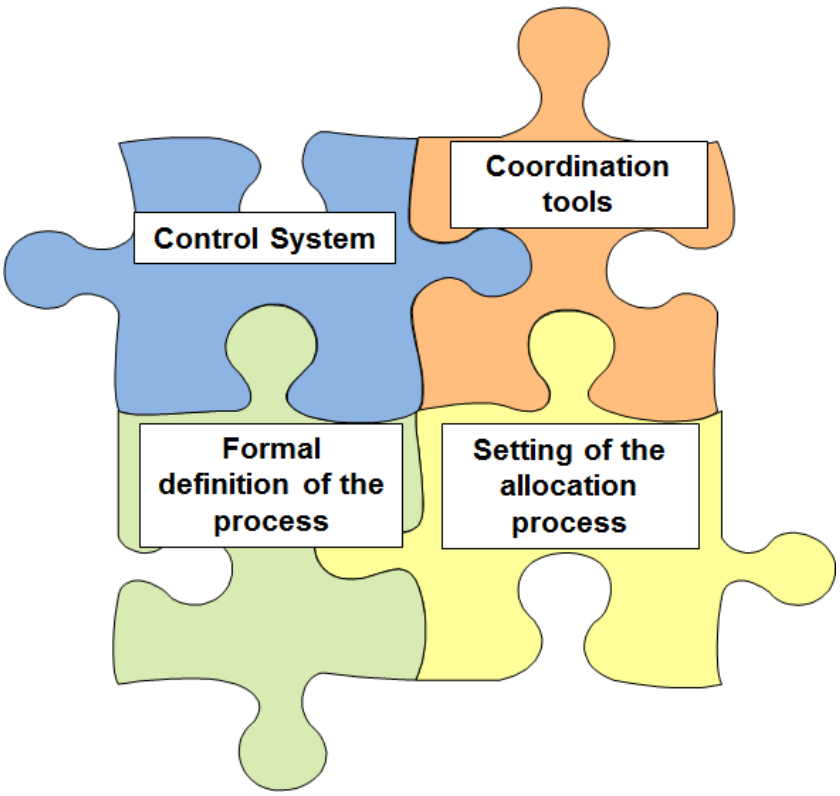

Figure 3 –Key elements to set up a structured process for the management of surplus food

The following are the key elements of each, referring to subsequent paragraphs for the deepening of the special features related to the different business sectors: Manufacturer and Distribution.

3.1 Control system

The first key element to set the management process of surplus food is a system to monitor and control the case studies. The amount of surplus created and the portion that becomes waste must be measured. The identified KPIs (e.g. impact of surplus created on the volume of business, impact of the waste created on the surplus, the value of surplus created, and the value of food waste) can be related, on an annual basis, to some target values.
The control system can be developed with different levels of detail in terms of:

- *Level of* ***aggregation***
- Level of ***proactivity*** of the measure
- Level of ***visibility*** of the results
- ***Frequency*** of measurement

The analysis can be carried out at a "macro" level, by product category or per single SKU. Afterwards, the values obtained can be segmented, either by cause of generation [*of the surplus*] (sell-by date, product returned by customer, damaged product ...) or by crossing point related to the company (store, distribution centre, central storage, transit point ...).
The measure of the phenomenon can be ex post, or ex ante (proactive), with the introduction of a structured system of alert to guide the management of the phenomenon. As an example, for a manufacturer this means monitoring items at risk of creating surplus, in order to enable the necessary corrective measures. A distributor can determine whether the incidence of donations has, in certain retail stores, anomalies of any kind (donation excess compared to the average, or low incidence of donations compared to the average), in order to enable timely corrective action.
Finally, the data can be "collected" from a single business function or can be developed with different views from multiple functions (e.g., *planning* can track the surplus generated and the *finance* can track the part of the surplus disposed in landfills). In the second case, an overview of the phenomenon is not as easily obtained. Regardless of who develops and manages the phenomenon, the visibility of the results is important - and the more so if the element of pro-activity of the measure is present. Visibility on the one hand, enhances awareness of the phenomenon, and on the other hand, it helps to provide information to different parts of the company involved in the process. The more proactive the approach adopted, the greater the frequency of measurement of the phenomenon. Ultimately, this research has shown that the greater the "understanding" of the phenomenon throughout the company departments, the greater its translation in enhanced monetary terms.

3.2 Formal definition of the process

The second element of the process of management of surplus, which is to say the formalization of the process, entails: the definition on the part of the company as to which and how many alternatives should be enabled in order to manage surplus; the definition of target values for each alternative identified (for example, in terms of percentage of sales or effort required to pursue them); and the formal definition of the timing through which these alternatives are enabled (for example, based on the residualshelf life of the good).

3.3 Coordination among players

Coordination among players defines the way in which the various corporate functions are involved in the management of the surplus. Involvement can be informative in nature, in which case the company functions are informed of the KPIs. Alternatively, from a perspective of proactive management of the surplus, some coordination tools can be introduced. Actions can range from exchanges of emails raising the issue of "risk areas" in terms of surplus management or cost recovery, to formal and structured meetings to deal with the surplus.

3.4 Setting of the allocation process

For that part of the surplus that the company plans to recover through donations, the number and type of Nonprofit Organizations (NPOs) with which to interact should be defined. For example, the company could apply directly to local organizations, or to more organized ones (***food banks***) with strong logistics capabilities and expertise in redistribution of the collected products to local organizations.
As the NPO distributes the company's products, it may be appropriate to perform some *audits* to check compliance with the sanitary regulations, as well as gain awareness and visibility as to the final use of given surplus. Obviously, this type of “check” becomes more necessary the less that is known about the single organization. Finally, the rules to relate with the NPO should be defined. This aspect is very critical, as it can affect, on the one hand the internal costs for the recovery, and on the other, the effectiveness in reducing waste.
Two lines of action can be identified:

- Frequency of collection, namely how often NPOs receive /pick up the surplus generated

- Mode of activation, namely which entity activates the "request" for the collection of the surplus generated - if the collection starts from NPOs contacting the company or the company "calling" the NPO whenever there are surpluses to allocate.

As shown in Figure 4, the combination of the two axes results in four possible cases. In Case A, there is an agreement between the parties with respect to the type of products to be collected. The NPO makes contact with the company at fixed frequencies to confirm collection and the amount to collect. In Case B, there is still an agreement between the parties with respect to the type of products to be collected, but the NPO collects products at a fixed frequency. Only in case of exceptions (extremely low or absent surplus or logistic problems), is there communication between the parties to agree on an alternative plan. Alternatively, the parties may not agree in advance on the quantity and type of products to donate, in which case the company gets in contact with the NPO to arrange collection when large quantities of goods (case D) are available. Finally, the NPO may contact its donors to verify the existence of surpluses, which can be donated (Case C). The latter model is the most expensive for both actors in the supply chain.

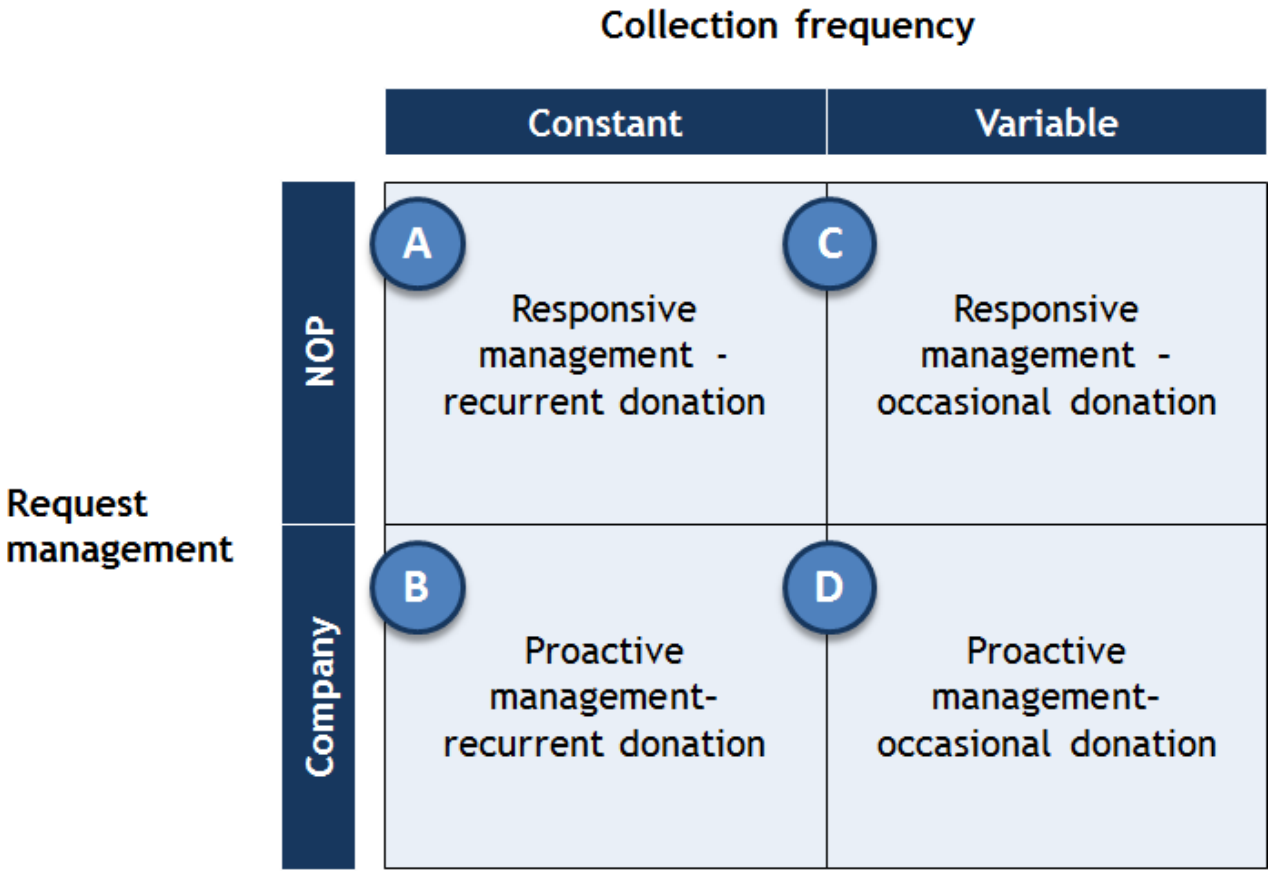

Figure 4 – Axes of classification of setting of the allocation process of the surplus generated

4. The management process of surplus food: the Manufacturer

For companies of the Manufacturer the leading cause of generation of surplus food is the attainment of the internal sell-by date. This date represents a percentage of the overall "life" of the product, whereby typically a significant period of time that can range from several days to months depending on the product category, elapses between the internal sell-by date and the date by which the product must be consumed (both in terms of "best before" and of actual time limit).

The formal definition of the process of managing the surplus resulting from the achievement of the "expiration date" may follow the diagram shown in Figure 5.

First of all, the milestones in the shelf life of the each product must be defined as precisely as possible: when the product can be considered "at risk of creating surplus" (opening date of obsolescence risk or overstock); the final date for the sale in the primary market (corresponding to the sell-on date); the sales limit for secondary markets (if able to be activated); the deadline for human consumption.

Subsequently, for each time range, the alternatives that the company considers applicable should be defined. For example in the time range between the identification of the obsolescence risk and the sales limit in the primary market, the following alternatives can be considered: reprocessing of the product, sale through promotions/discounts (often developed specifically for the risk of obsolescence), and marketing actions/sponsorships in which the products can be used. In the category "sales in secondary markets", some organizations are planning to use the B2C e-commerce channel. In the interval between sales to secondary markets and limit for human consumption, companies can activate different kinds of redistribution alternatives, primarily through the donation of surplus to Non-profit Organizations.

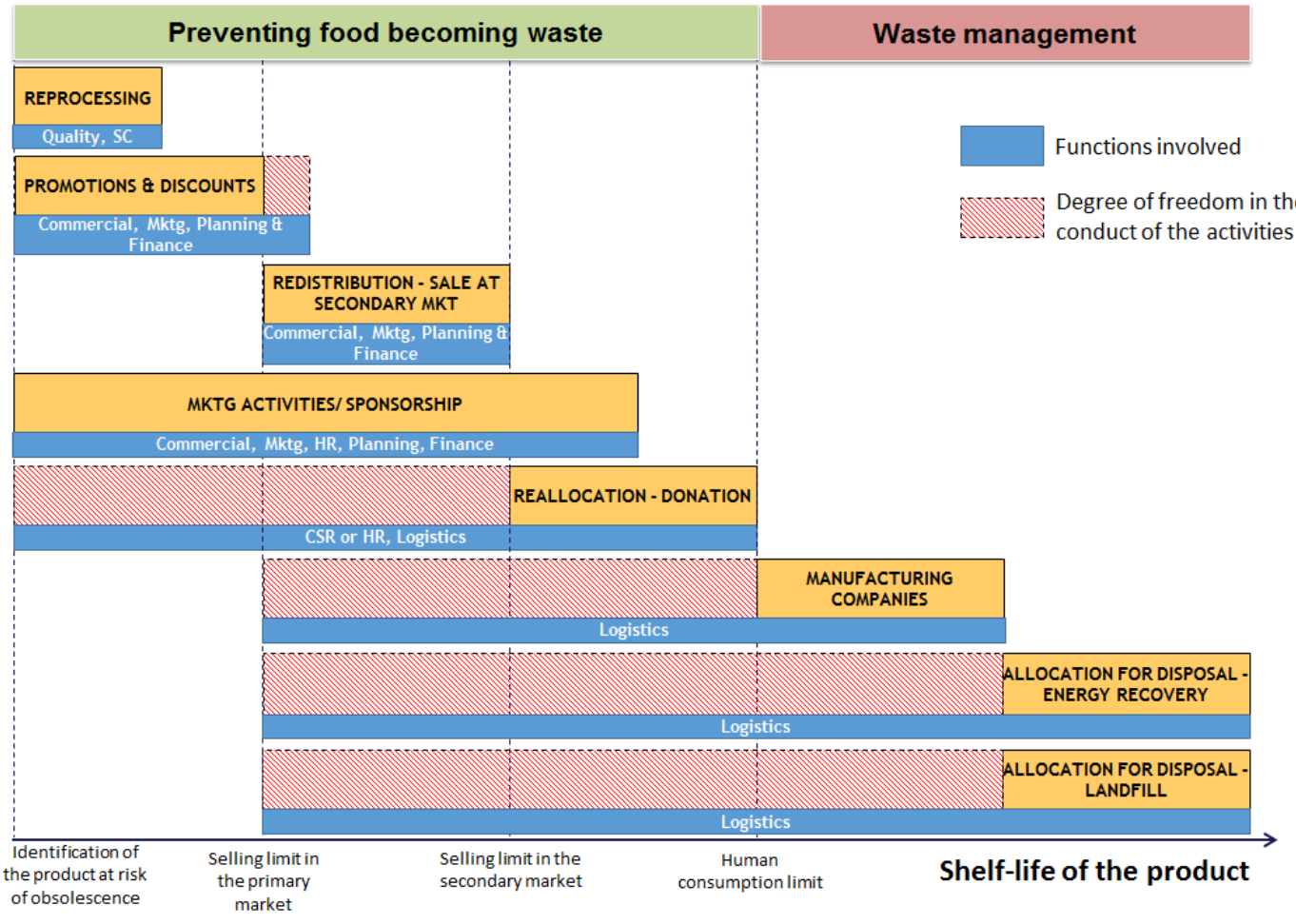

Figure 5 – Formal definition of the process of food surplus management for Manufacturer

Business functions involved in the activation of the different alternatives and the respective role must thus be defined. Involvement of logistics/supply chain, together with the business and financial areas should be expected in the early stages of the process. Similarly, any reprocessing should be carried out only after verification by the quality department of compliance with the sanitary conditions.

The number of alternatives available for each time range varies depending on the shelf life of the product. Theoretically, in the initial part of the process, more alternatives are available. It is therefore necessary to introduce, more or less formally, some trigger point, namely factors allowing or preventing the activation of each alternative in each time range. As shown in Figure 6, examples of some acceptable qualifying elements may include economic assessments on sustainability/affordability of the different alternatives as well as the presence of constraints on minimum quantities. For example, low quantities as well as minimum sales volume requirements for sale in secondary markets make that activation of significant promotions difficult. The sale to manufacturing companies is a function of the characteristics of the product, and not all products are able to be equally utilizable.

The necessity of verification of the effect of each destination against the targets set in the budget is a common element in all the alternatives. For example, with significant discounts, theoretically, most of the surplus can be sold; however, this can worsen the profit margins of the company.

Moreover, both the definition of the time range whereby each alternative can be "activated", and the respective activation priority, have a degree of subjectivity. For example, the redistribution of the product via donation could be taken into consideration even before the limit of sale in the secondary market is exceeded.This margin of subjectivity has been indicated with the term "degree of freedom" in the activation of alternatives and is linked to strategic corporate reasons. For example, some companies actively involved in the working group consider donating to be a cornerstone of their corporate sustainability plan, thus prompting the donation very early in the process described, or assigning it a very high priority compared to other, often more cost-effective alternatives.

Finally, the process described above can be effectively formulated in several ways. Coordination between the various functions involved through regular meetings and/or ad hoc meetings is necessary in order to manage the abnormalities. Meetings of the working group have revealed the usefulness of integrating the above process in the normal process of Sales & Operations Planning (S & OP). Therefore within the regular coordination meetings of the ***Sales & Operation Planning*** *(*S & OP), a comparison phase according to the scheme described, has been included.

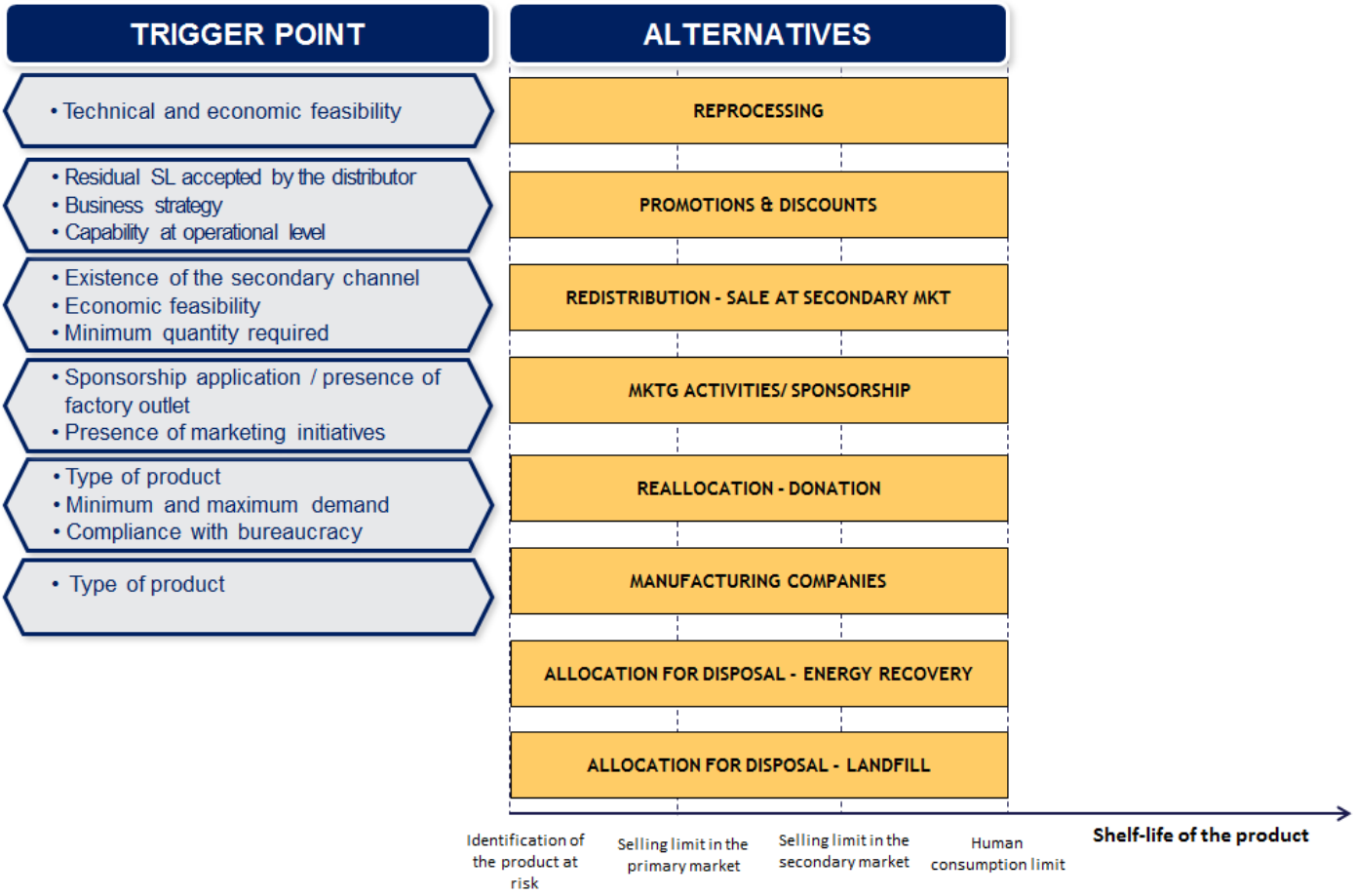

Figure 6 –Potential trigger point for the activation of the alternatives to manage the surplus food in the Manufacturer sector

A second important cause of creation of the surplus is related to returns (contextual to the delivery or not). Compared to the process described above for the management of attainment of the sell-by date, two activities have been added to the process of surplus management: transportation of the product to the warehouse and verification of integrity of the product (Figure 7). Downstream of the control of "health and hygiene" integrity, the product can be regularly re-inserted into the traditional channel or managed according to the process described above. The effectiveness of the control of integrity is a function of several factors, amongst which: the package unit (the control over a pallet return of a mono-article is less critical compared to a return of packages), and the storage temperature of the products (whereby when a product is to be kept at a controlled temperature, verifying the integrity of the cold chain becomes more problematic).

Concerning the management of returns, some clarifications should be made: in most cases, producers prefer to examine their products in their central warehouses or at least in sites easily accessible for quality control. The speed of the "return" of the product and the related controls influences the possibility of redistribution. For example, items returned and placed back in the traditional channel may be characterized by "shelf life" lower than the remaining part of the stock, and therefore may be rejected by customers at the time of delivery. Regardless of where the control is carried out, there is a significant critical issue in redistributing the product, thus to date most of the companies in the supply chain prefer not to take that chance.

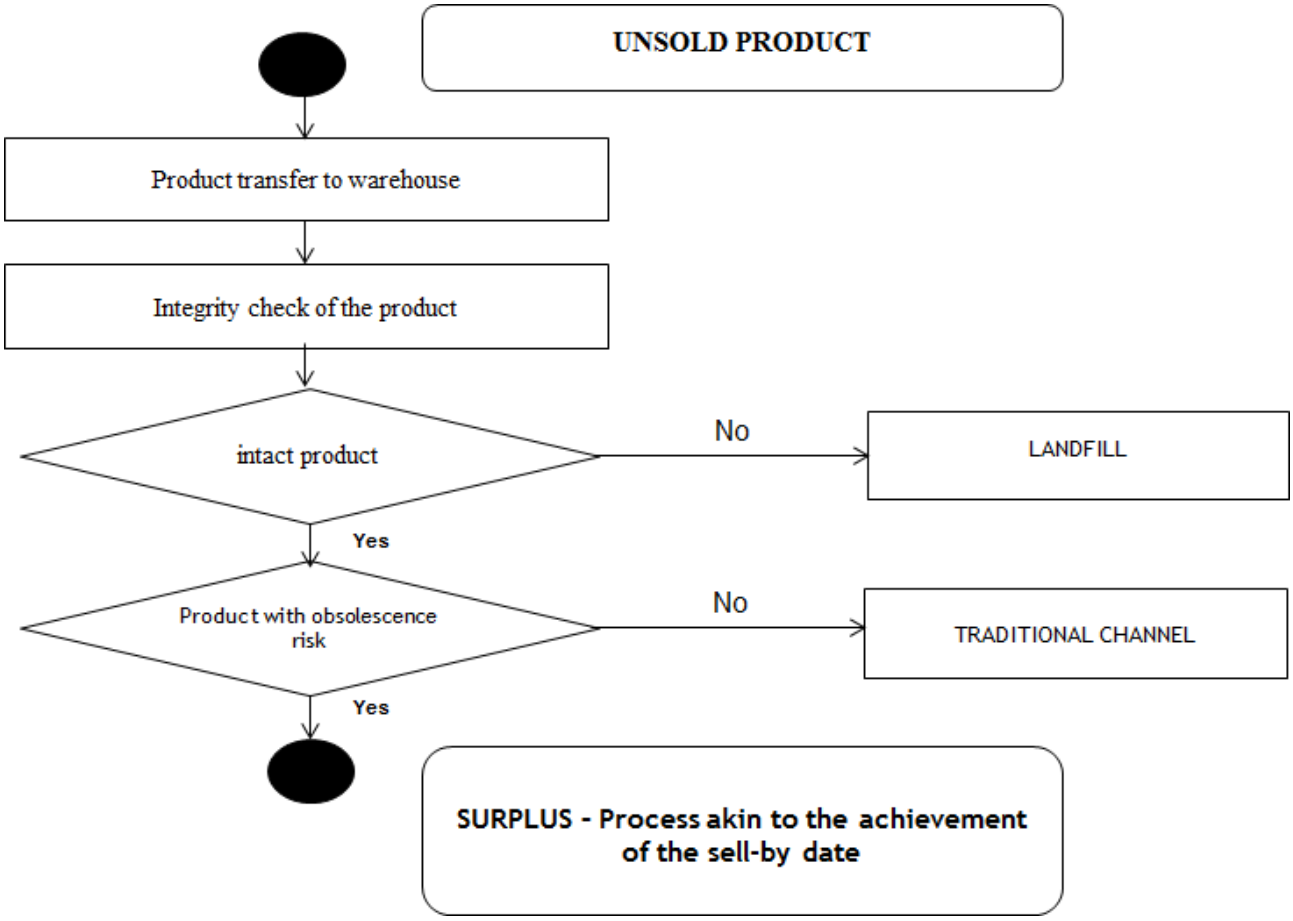

Figure 7 – Formal definition of the management process of surplus food for a producer for the creation of "returned" products

5. The management process of surplus food: the Distribution

The management of surplus can come about in two ways: at the distribution centre (DC) or at the store network. The research pointed out that the first case is very similar to the manufacturer situation. DCs act as suppliers to their own retail outlets, establishing the sell-in dates and policies for the management of returns (refer to the previous paragraph for the surplus management at the DCs). This section will delve into the peculiarities of the management of surplus at retail outlets.

Even in the store the main cause of generation of surplus is the achievement of the sell-by date, namely the latest date the product can be present on the shelf. This date may correspond to the day in which the product must be consumed or can be a few days prior to that date, depending on the company policy and the type of product (usually 1 or 2 days before for fresh food, more days for “dry” products, poorly sold items, and then removed from the shelf). **Milestones** for the management of surplus are: the starting date of the "risk of creating surplus" (opening date obsolescence risk), the time limit for the presence on the shelf and the limit for human consumption.

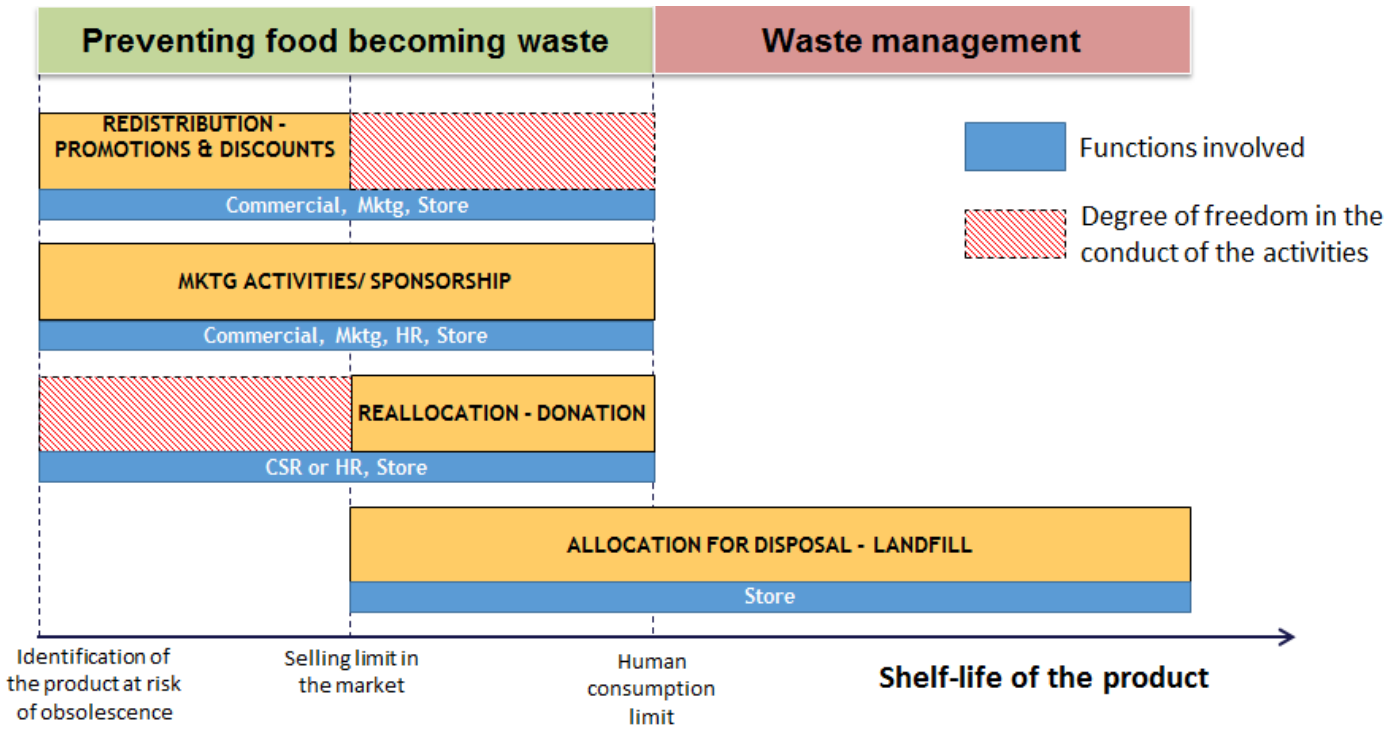

Figure 8 –Formal definition of the managing process of surplus food for a store

The ***applicable options*** should be defined for the two time ranges: from identification of the risk of obsolescence to the limit of presence on the shelf, and from the limit of presence on the shelf to the limit for human consumption. These are mainly discounts on products, often characterised by product transfer to dedicated areas of the store and, to a lesser extent, sponsorship events. Redistribution of surplus and the allocation of the waste, are to be evaluated, the latter of which, for smaller stores is carried out by municipally own companies (with a cost proportional to the area of the store) and for the larger ones, can be entrusted to private entities.

Starting with the director and heads of department, the **staff of the store** play a key role in the process. In terms of coordination, other business functions such as sales, human resources and the CSR (Corporate Social Responsibility) functions are involved. The process described is replicated on N units, N being the number of stores in the network. Given the heterogeneousness of personnel, varying levels of performance among stores of the same brand could result. This varying performance among stores leads to the need to

introduce figures able to coordinate the whole process and to develop reporting tools that allow "abnormal cases" to be detected in due time. This coordination must also take into account the specific nature of the sales network (for example the presence of proprietary stores or independent local entrepreneurs).
The development of **trigger points** primarily involves the criteria for activation of the donation: the presence of Non-profit Organizations on the territory in which the store is operating, small quantities of surplus that would justify the withdrawal, product that can be managed by the NPO (not all organizations are able to handle "fresh" or even "frozen" products).
Generally, as compared with the producer approach, the process described is carried out more informally once the guidelines have been defined, with a key role played by the staff of the store who regularly monitor the shelves, deciding the destination of the products.

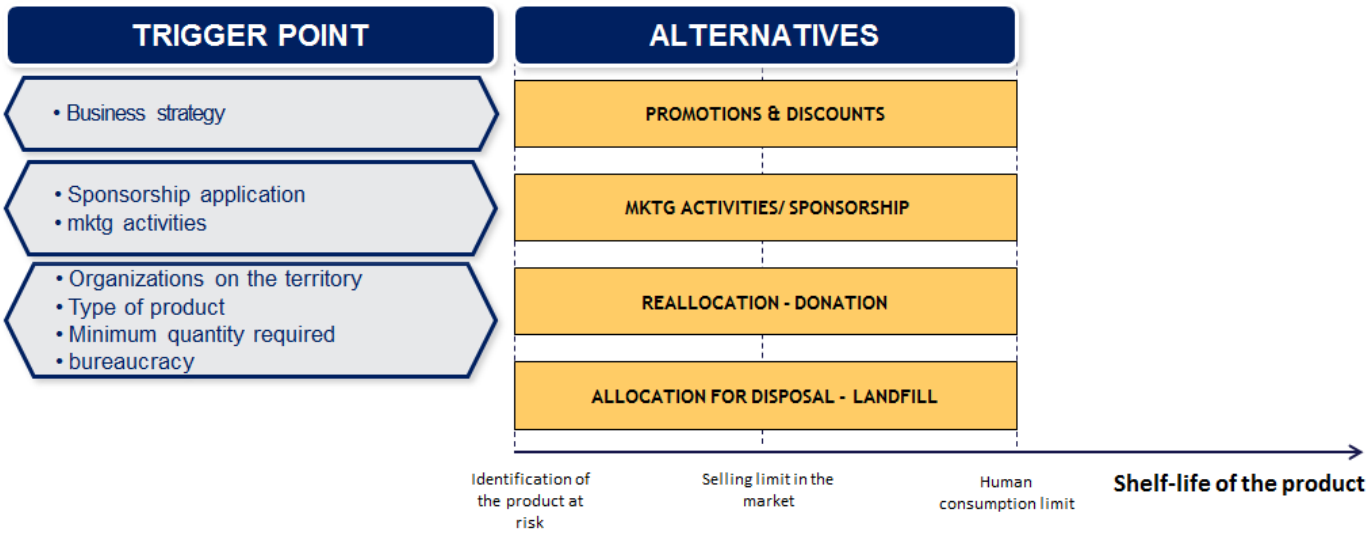

Figure 9 – Trigger point for the activation of the option of management of surplus food in a store

6. Setting up the donation process

6.1 Point of view of the Producer

The process of management of food surplus begins when planning and sales, having analysed the existing warehouse stock, identify products "no longer sellable" on the traditional market, but still able to be intended for human consumption (Figure 10). The donation of products involves henceforth two business areas, each with different roles and responsibilities: logistics, for the management of operations of handling and storage of products; and management and control, to manage bureaucratic and accounting activities.
Once the "no longer marketable" and "to be donated" have been identified, logistics contacts the Non-profit Organization to agree on quality and quantity of goods to be donated and to plan how to collect the goods" Products to be donated are then collected and stored in a dedicated area waiting to be sold. At the same time, in order to use the benefits (art. 4 c. 4 Art. 13 Legislative Decree 460/97), the administration will send by registered mail with return receipt requested advance notice to the Inland Revenue. The company is required to make such advance notice if the value of the goods for the donation exceeds € 5,000. In general, communication must take place five days before the transfer to the non-profit organization, to allow any inspection by the Inland Revenue. If the products are easily perishable (ex. fresh products), communication can be simultaneous to the transfer to the NPOs. The collection of the products is typically at the warehouse of the producer, with the activities of transport incurred by the recipient. The goods must have a transport document, which lists the type, quantity and quality of goods destined for donation. DDT should also indicate the correct reference to the law relating to supplies free of charge, "free supply of goods no longer marketable art. 6 L. 133/99 ".
Upon receipt of goods and verification of correspondence between transport document content and the actual amount of goods received, the organization gives the company the affidavit and the statement of use of the goods. These documents are necessary for the company to achieve tax benefits (see section 6.3).
Finally, the company must register in the accounting records the quality and quantity of the goods donated.

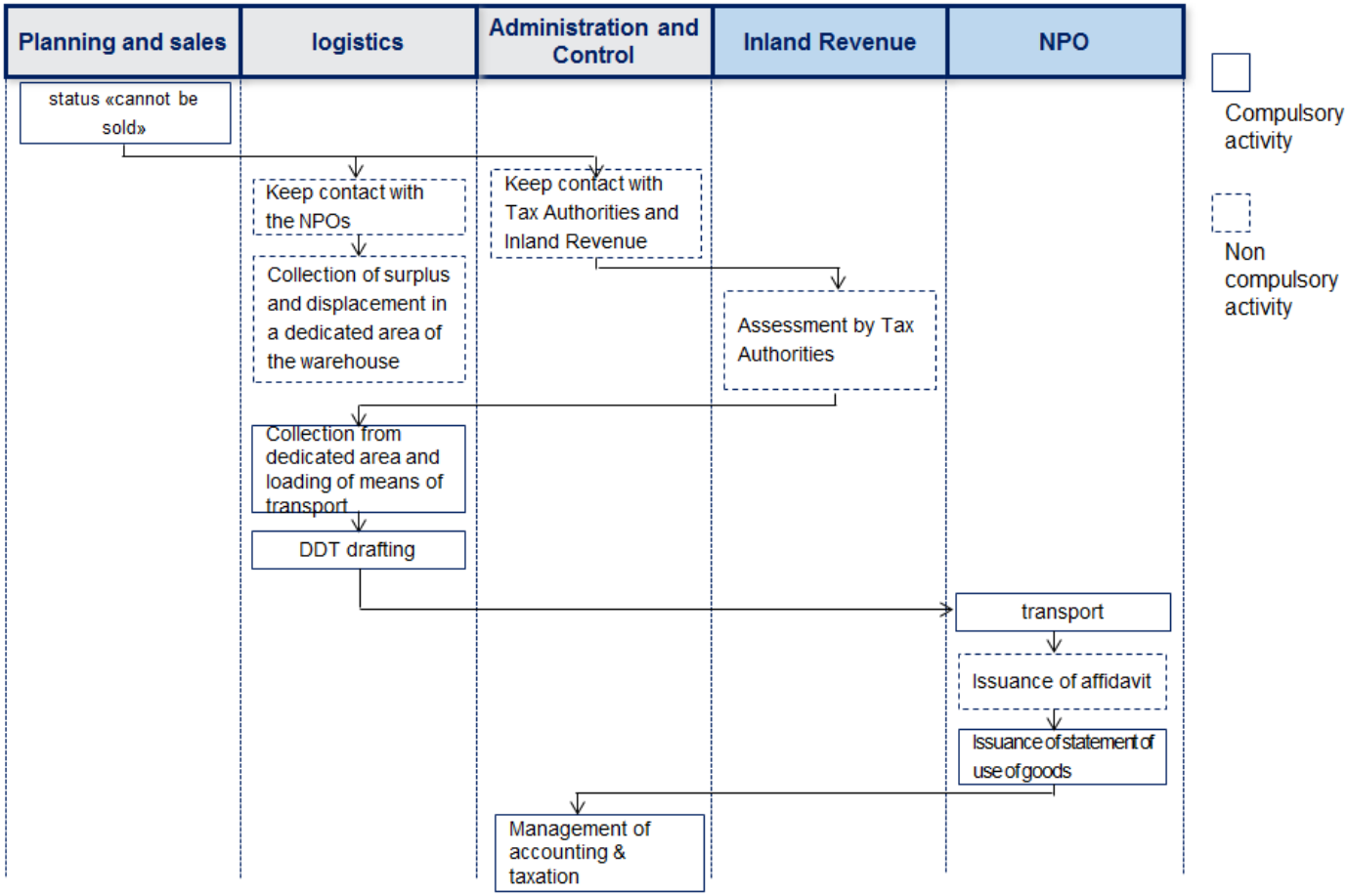

Figure 10 – Activities of the donation process for a manufacturer

6.2 Point of view of distributor

Within the stores, the process of managing surplus food involves three types of players. The staff of the store, who selects products "no longer marketable" and manages the relationship with the Non-profit Organization. The logistics of the store that manages the operational activities of handling and storage of products. Administration and control that takes care of the bureaucratic and tax aspects.

This process turns out to be more costly and complex than in case of producers at an early stage of sorting of the products (Figure 11). The staff of the store, frequently (e.g. Daily) verifies the expiration date of shelf products and collects those nearly expired or damaged. These products are transferred to the warehouse where logistics makes a quality control (for example, checks the integrity of packaging) to identify products still suitable for human consumption. These products are recorded in the system by reading the bar code and are put into stock in a dedicated area within the warehouse of the store. As an alternative, the recovery from the shelf and sorting of items collected can be carried out simultaneously. The goods are then ready for collection by the NPO.

The collection may take place based on a fixed timetable or by telephone arrangement between the two parties involved. In most cases, transport activity is once again borne by the NPO.

The reference document is always the transport document, in which the company must state the type, quantity and quality of the goods given and based on which the NPO issues the affidavit and statement use of the goods.

The surplus generated at store level, typically involve small quantities of inexpensive goods; accordingly, barring special circumstances, it is not necessary to make a prior notification to supervisory bodies. It is important, however, to record the sale on the accounting records, for inspection by the Inland Revenue. In

stores of small dimensions the process turns out to be much less complex. The product is simply removed from the shelf and handed over to local authorities for assistance to the needy or donated to employees.

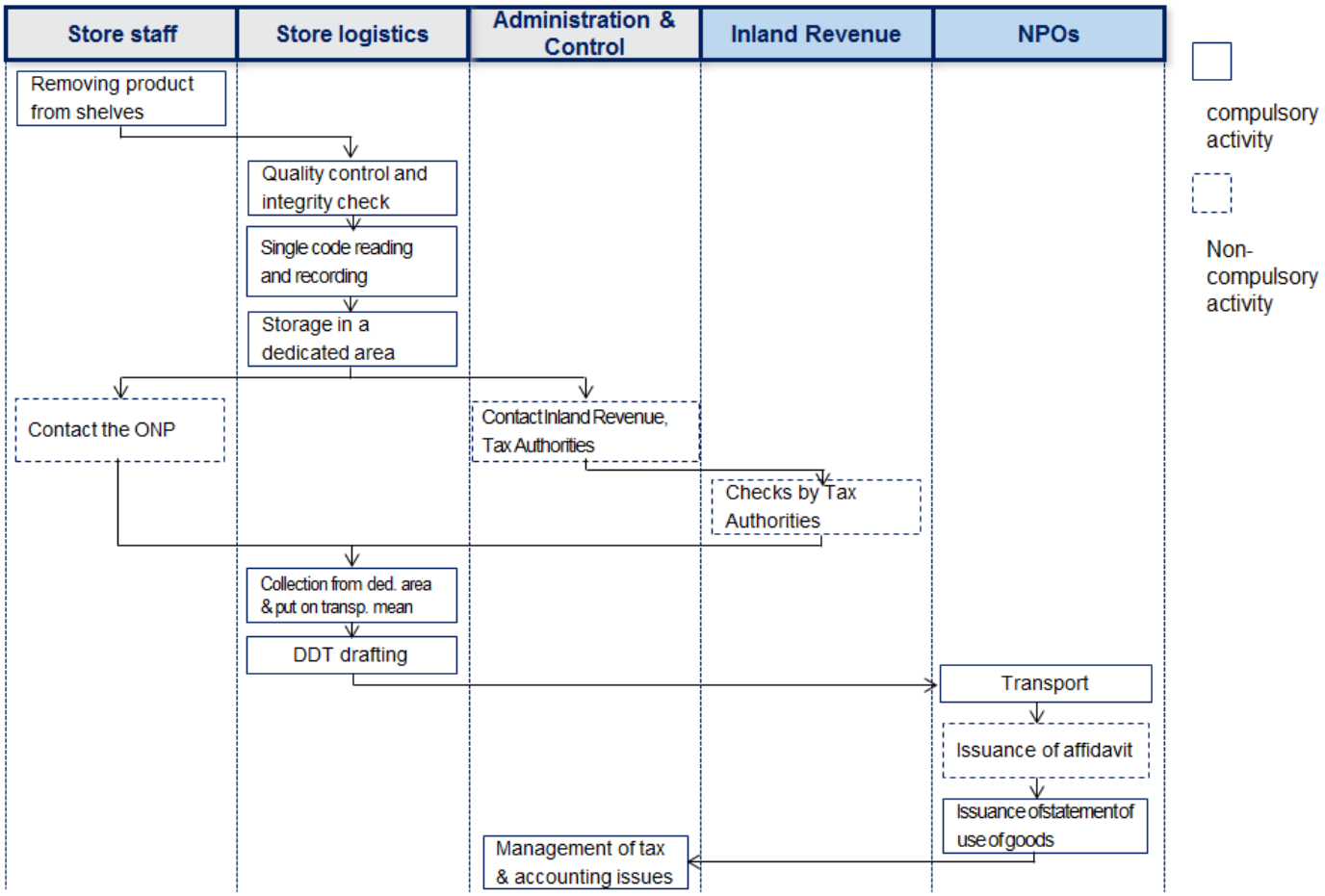

Figure 11 – Activities of the donation process for a store

6.3 Legal framework

From a regulatory perspective, the donation of surplus food can be defined as "donation" or as "free supply of food." The first option has, for the purpose of tax benefit, an upper limit on the value of what is donated each year, amounting to 70,000 € (art. 14 paragraph 1 of the Decree Law 35/05 converted into Law No. 80 of 14/05 / 2005). The second option has no such limits and is to date the most widely used by companies in the supply chain. The method of "donation" is most commonly used when providing goods in case of natural disasters (such as earthquakes).

In Italy, the legal framework is not considered a barrier to donation. The "Good Samaritan Law" (Law 155/2003) equates the "end user" to Non-profit Organizations (also called NPO) who, for the sake of charity, involves free distribution of food to the needy. The comparison of the NPO with the end users, indemnifies the donor company from the so-called principle of "food path responsibility", whereby before its entry into force, it was necessary to provide guarantees for the food donated (the proper condition of maintenance, transportation, storage and use of food), even after delivery to organizations. From the point of view of the Non-profit Organization, in line with existing legislation, that already regulates the end consumer, non-profit organizations may be indemnified against all those bureaucratic requirements that make it more difficult to give support to the needy.

From a tax perspective, the "free supply of food" can lead to tax benefits primarily in terms of deduction from corporate revenue (Article 13 of Legislative Decree 460/97), whereby the food that is produced or exchanged and then transferred free of charge to the non-profit organization, rather than being removed from the commercial circuit, is not considered intended for purposes other than the exercise of business. It is therefore does not income, thus rendering its cost of acquisition or production deductible.
There is also a VAT benefit. According to Article 10, paragraph 1 no. 12 of Presidential Decree 633/72, the free transfers of goods whose production or exchange is part of the company's activities made in favour of NPOs, are exempt for VAT purposes. Art. 6, last paragraph of Law no. 133 of May 1999, considers the free supply of food no longer marketable to NPOs, equivalent to having been destroyed for VAT purposes. Therefore, the transferor may deduct the tax (VAT) paid upon the purchase or production of the good.
Finally, it is good to note that the law considers "NPOs" to be only those organizations that expressly provide in their statutes or certificates of incorporation, the term "charity", as reported in Article 10 of Legislative Decree n. 460/97. “ONLUSes” are non-profit organizations of social value listed in the registry at the Ministry of Finance, in accordance with article 11 of Legislative Decree n. 460/97.
NPOs "by law", in respect of their structure and purpose, pursuant to art. 10, paragraphs 8 and 9 of Legislative Decree n. 460/97 are: voluntary organizations under Law 11 August 1991, n. 266, entered in the registers established by the regions and autonomous provinces of Trento and Bolzano; non-governmental organizations qualified as eligible under the Law of 26 February 1987 n. 49; cooperatives under Law 8 November 1991, n. 381. Since they are considered NPOs limited to the tasks listed under point a) of paragraph 1 of Legislative Decree no. 460/97 (including charities), "partial" NPO status is given to both ecclesiastical organizations of religious denominations who have entered into covenants, agreements or arrangements with the state, as well as social promotion associations included among the institutions referred to in Article 3, paragraph 6, letter e) of the Law of 25 August 1991 No. 287, whose charitable purposes are recognized by the Interior Ministry.

7. Management of surplus: an ongoing process

A survey was carried out to study the level of development of the process of managing surplus food from companies of the chain (manufacturer and distribution), considering the axes of classification emerged during the activity of the working group:

- Development of a ***control system*** for the measurement and management of the phenomenon
- ***Formal definition*** of the management ***process***
- Introduction of ***coordination tools*** between the players involved
- Setting of the ***process of surplus provision***

The results reported in figure 12 show the presence of "outstanding" players in the chain of the management of surplus in which 21% of the companies have a high level of development of the process, while 67% a medium-high level of development.
Subsequently it appears that the more the process is structured, the greater the recovery ability (and thus the less the waste). Although not statistically generalizable, the result is the first evidence of the effectiveness of the process introduced.

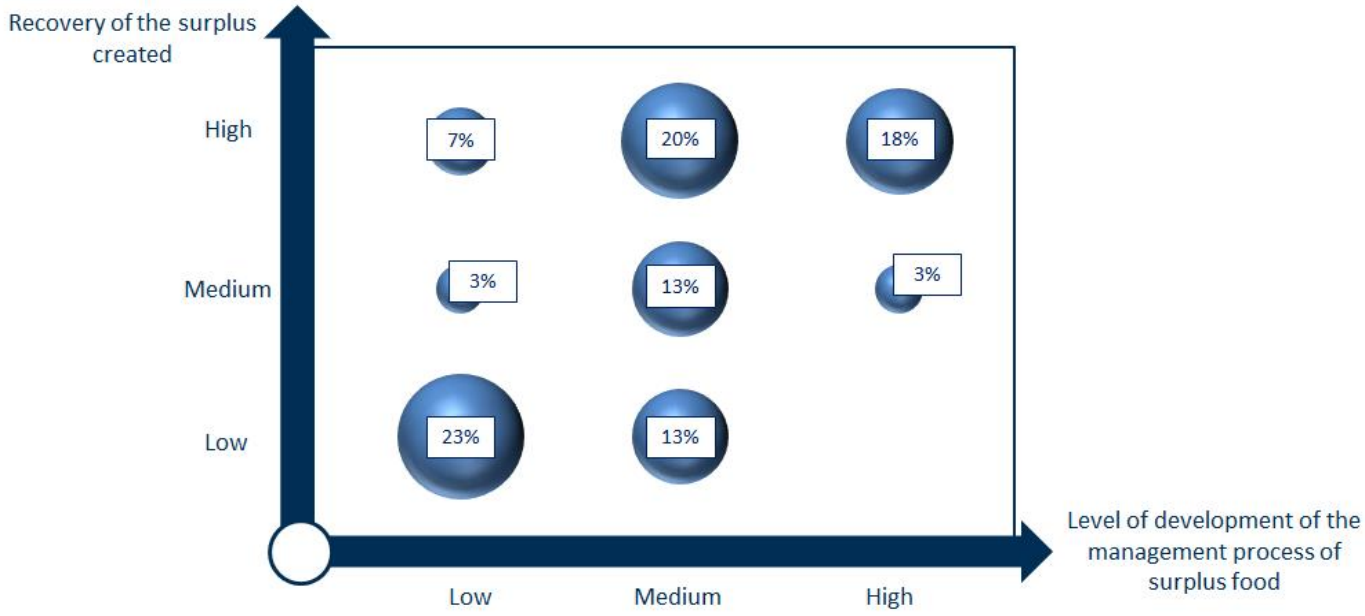

Figure 12 – Development of the management process of surplus food: evidences of the supply chain (manufacturer and distribution)

In particular, the results confirm and support, in addition to the importance of the measure as a tool to guide the process according to a pro-active management, the importance of the involvement of multiple business functions. The entities with a greater effectiveness of the process are those involving at least three company functions. Of significant importance as well is the visibility of the results in terms of regular corporate reporting. More in detail, there is no predominant function in the management, but rather there is involvement across corporate functions, confirming the complexity of the issue (see Figure 13). The different role of the CSR function is clear. In distribution, the CSR function has two specific functions: maintain relationships with the large number of NPOs operating in the area, and monitor and guide the implementation of surplus management processes for the network of stores. For companies of the manufacturer side, the CSR function is mainly involved in defining the guidelines of the initial process and is therefore not involved in the operational management.

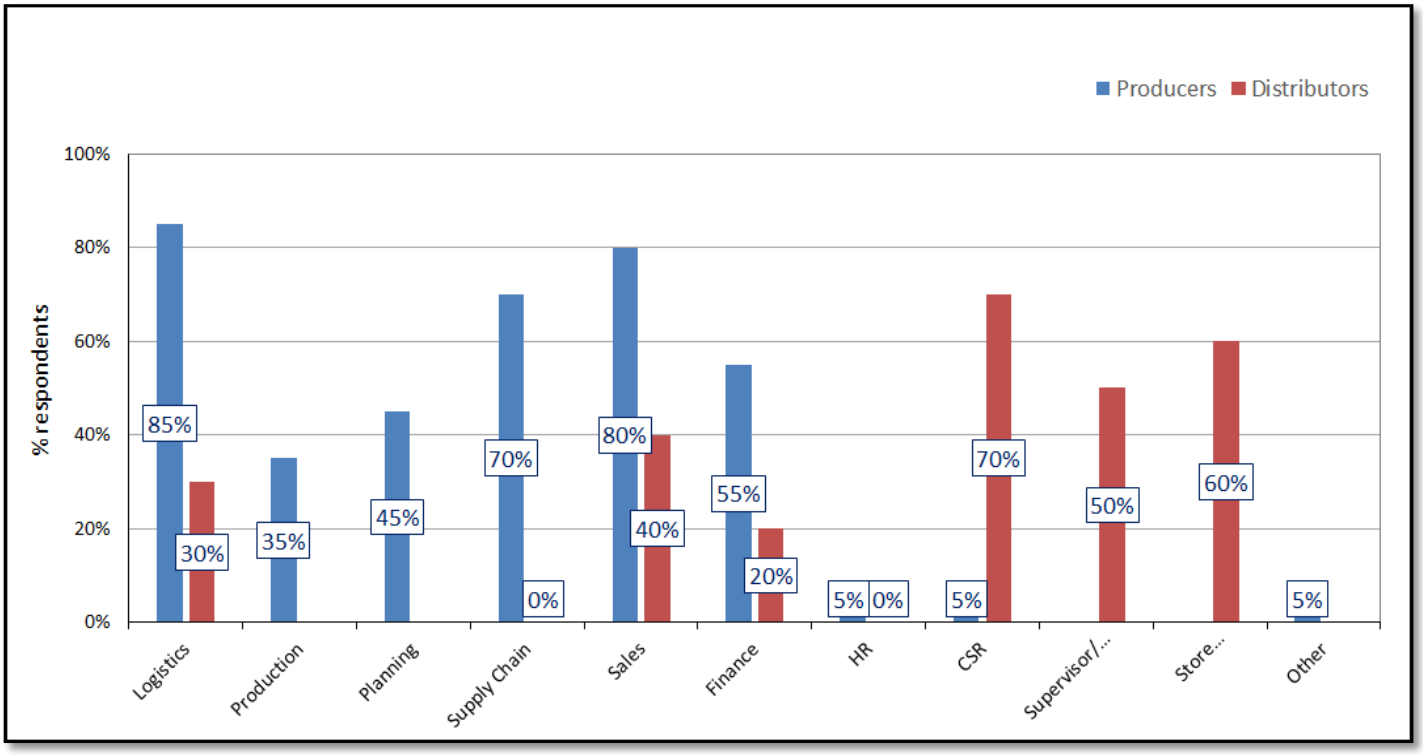

Figure 13 – Company functions involved in the management of surplus

Another aspect resulting from the analysis involves the type of relation with the NPOs, namely how the allocation process is established. For processing companies, the preferred method is the company-initiated request, which varies in frequency (Figure 14). The constant frequency rate is indicative of those companies with perishable goods, as the collection process must be more regular given the lower shelf life available. This situation is similar to that of the stores, which in fact mainly use this latter relationship model (75%).

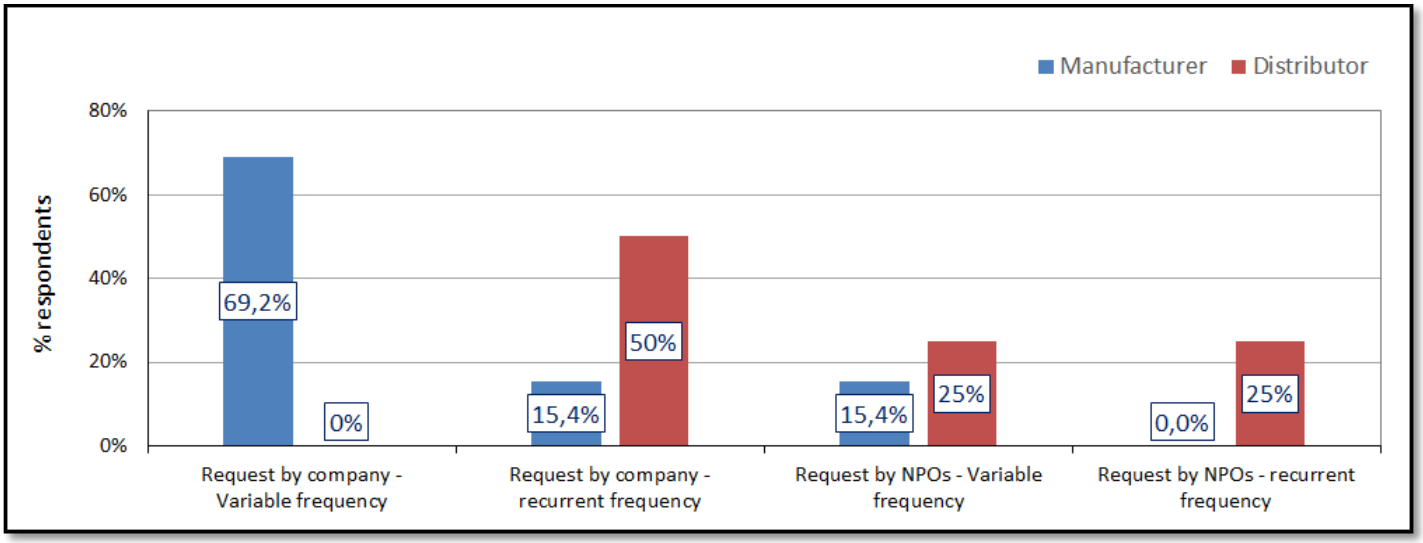

Figure 14 – Setting of the allocation to Non-profit Organizations

8. Areas of cooperation in the supply chain

In the management of surplus food, six main areas for cooperation in supply chain have been identified:

- **Collaborative management** of surplus of products **branded by distributor.** For products with the brand name of the distributor, the producer needs the consent provided by the distributor in order to enable redistribution, in particular, the donation. An agreement between producer and distributor for the donation of these products (often at the request of the customer), could be introduced. Otherwise, meetings to determine the best way to manage the surplus could be set. Such cooperation could also be extended to those products characterized by a specific ad hoc format for a particular retail chain, that in fact represent for the producer, an SKU dedicated to the customer.
- ***Cooperation*** for automated ***communication*** of the ***expiration date.*** Distributors often complain about the burdensomeness of expiration date's registration process. In the absence of an effective exchange of information, this operation is performed manually upon receipt of the goods. Discussion during the working group sessions revealed that neither technology issues, no problems related to the lack of available solutions posed a problem, but rather the processes setup was the issue (reference is made to the standard GS1 128 and to EDI)[2].
- ***Collaborative management*** of ***sell-in date.*** Manufacturers often complain about returns of products that have surpassed by only a few days the remaining shelf life established by contract (perhaps compared with months of shelf life yet available on the product's label). Greater flexibility in the management of these cases would help to reduce the impact of surplus.
- ***Management*** of surplus within a VMI (Vendor Managed Inventory)/CRP (Continuous Replenishment Program) ***system***. In CRP systems, surplus can be created. It is not always clear who has the responsibility and the burden of management of surplus, so normally the distribution department initiates the process of destruction of the goods, charging it to the supplier. Collaborative mechanisms to handle these situations could be introduced.
- Cooperation in the ***management of surplus in the store***. Ad hoc procedures to manage the producer-distributor collaboration for those products nearing deadline in the store, can be defined. For example in the case of "commercial sales returns", the distributor may proceed to donate on behalf of the manufacturer, avoiding the cost to the latter of the return of the product.
- ***Involvement of logistics service providers***. Often companies of the supply chain complain about the difficulties in redistributing the surplus when a minimal quantity of surplus is generated (mainly with reference to "fresh" products), which does not justify the collection. Multi-manufacturer logistical platforms could be used to aggregate food surpluses, resulting in an amount of goods significant enough to justify the collection by Non-profit Organization, or transport of products on their behalf.

As highlighted in Figure 15, to date, the main interest for companies of the supply chain is the collaborative management of the sell-in date and the greater collaboration between manufacturers and distributors in the management of products with private label.

[2] The GS1-128 bar code, used to encode packaging and logistics labels, can carry along with the unit identification codes other additional features, such as expiry dates or the "best before" date. Through this system, when the units enter the warehouse, this information may also be "captured" in a quick and error-free manner, ensuring a better control of expiration dates and, based on this, arrange a more effective distribution to stores. The combination of logistics label and EDI messages between producer and distributor (Shipping Notice), allows companies to connect the physical flow of goods, to the relevant flows of information, and to exchange all information regarding the transaction and the products, including information on expiration date.

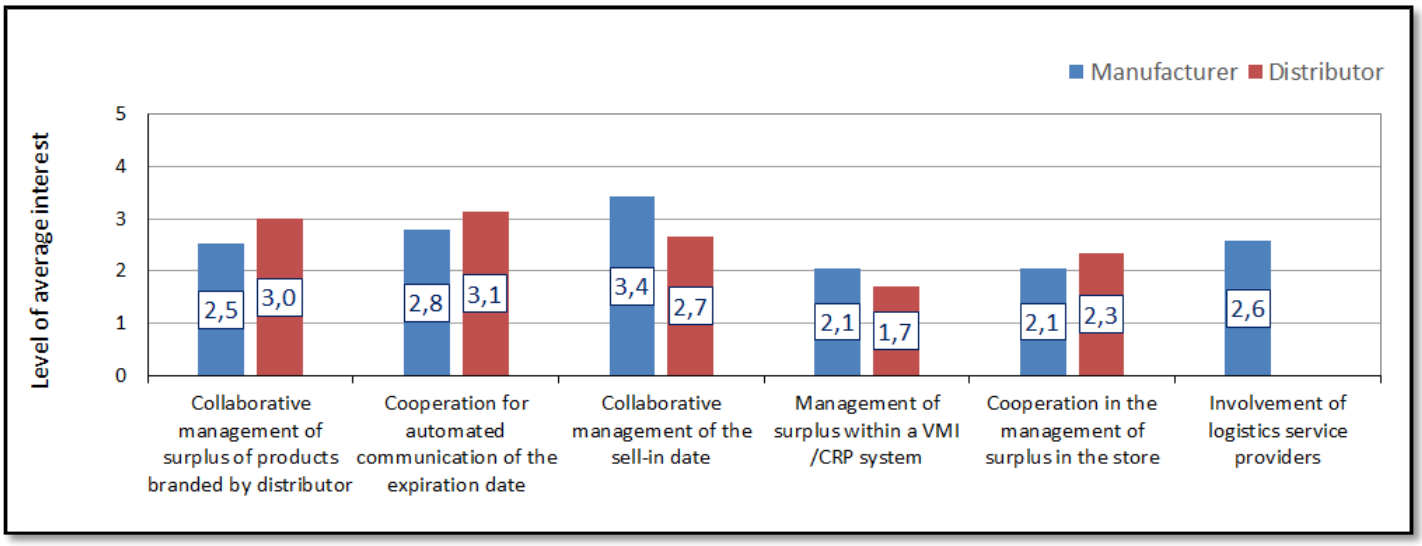

Figure 15 – Level of interest in the collaborative supply chain initiatives

9. Barriers and work directions

If on the one hand the construction of a structured process reduces the creation of food waste, on the other hand, barriers to its application - both internal and external to the company - do exist. These barriers have been analysed with particular reference to the implementation of the different redistribution methods through donation to Non-profit Organizations.
Results show (figure 16) the following main internal barriers:

- ***Economically of little benefit*** (35% and 40% of cases for manufacturers and distributors respectively). As shown in previous sections of this document, the implementation of the donation process on the part of the company implies the introduction of added activities that can lead to the consideration of donation as an unbeneficial alternative compared to other options.
- ***Low level of regulatory clarity*** (25% and 40% of cases for manufacturers and distributors respectively). Donations are regulated by law and require a series of administrative compliances. Certain aspects of the process appear little clear within companies, especially for those that to date donate very little. This difficulty is not always tied to Italian legislation. For example, some companies believe that when it is the company that brings the product to the NPO, the consignment cannot be considered a donation. In 2014, the financial law made clear that in case of donation, the company can indeed bring the product to the NPO. The interpretation of the regulation of VAT regarding the supply of goods to the NPO represents another problem stemming from a regulatory framework that is not consistent on a European level, since in some European Union states, that VAT is applied considering a very low value on the goods donated[3]. Discussion in the working group sessions confirmed that for Italian legislation payment of that VAT on donated products was not required (refer to paragraph 6.3).
- ***Reputational risk***. Companies recognize the level of quality of the regulations that protects them from a civil standpoint (see "The Good Samaritan Law), but still perceive a risk to their reputation in the event the final consumer (needy individual) were to receive a poorly preserved product or one past its expiry date.

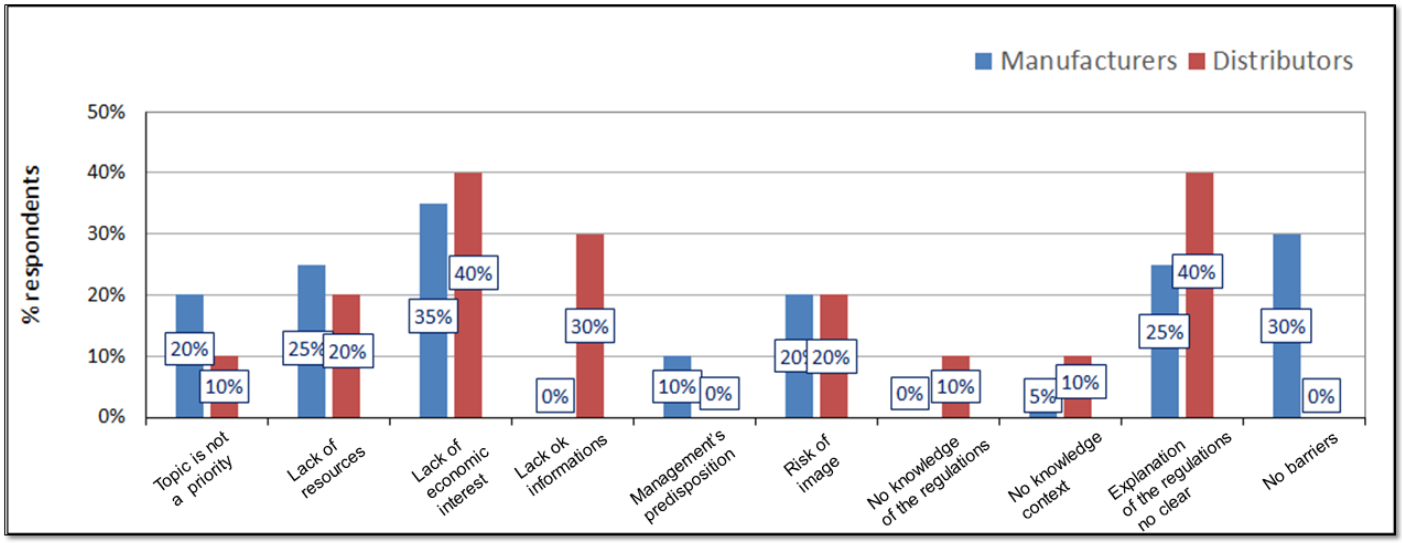

Figure 16 – Internal barriers to the donation

[3]Deloitte (2014): "Comparative study on EU member states' legislation and practices on food donation"

With regard to the external barriers of the company, the findings highlight the following (Figure 17):

- ***Lack of economic benefit of the tax framework (***30% and 50% of cases for manufacturers and distributors, respectively). If on the one hand the legislation allows for the recovery of VAT on products donated, on the other hand, unlike other European countries, in Italy there are currently no incentives for donation. This situation is perceived as more critical especially from the point of view of the distributors.
- ***Standards/regulations*** (40% of both manufacturer and distributors). While the goodness of the Italian law is recognized, at the same time, companies of the chain complain about too much bureaucracy in the process. For example, there is a threshold for the value of the donation (5,000 €) beyond which the Revenue must be informed about the donation. This value is lower than that in use for disposal by destruction of the product (10.000 €)[4]. Subsequently, except in case of perishable products, once communication has been made, it will take some days before the donation of the product can take place. In circumstances such as those investigated and discussed where donations become more and more frequent and in short time periods, the system described is perceived as restrictive. "Certification" of surplus management processes, could be developed which would reduce bureaucratic burdens for companies, might be developed.
- ***Logistics constraints,*** related to limits on the amount donated. Mainly for retail stores of the distribution (20% of answers), there is a structural difficulty in making donations when the quantities of surplus generated daily are too small.

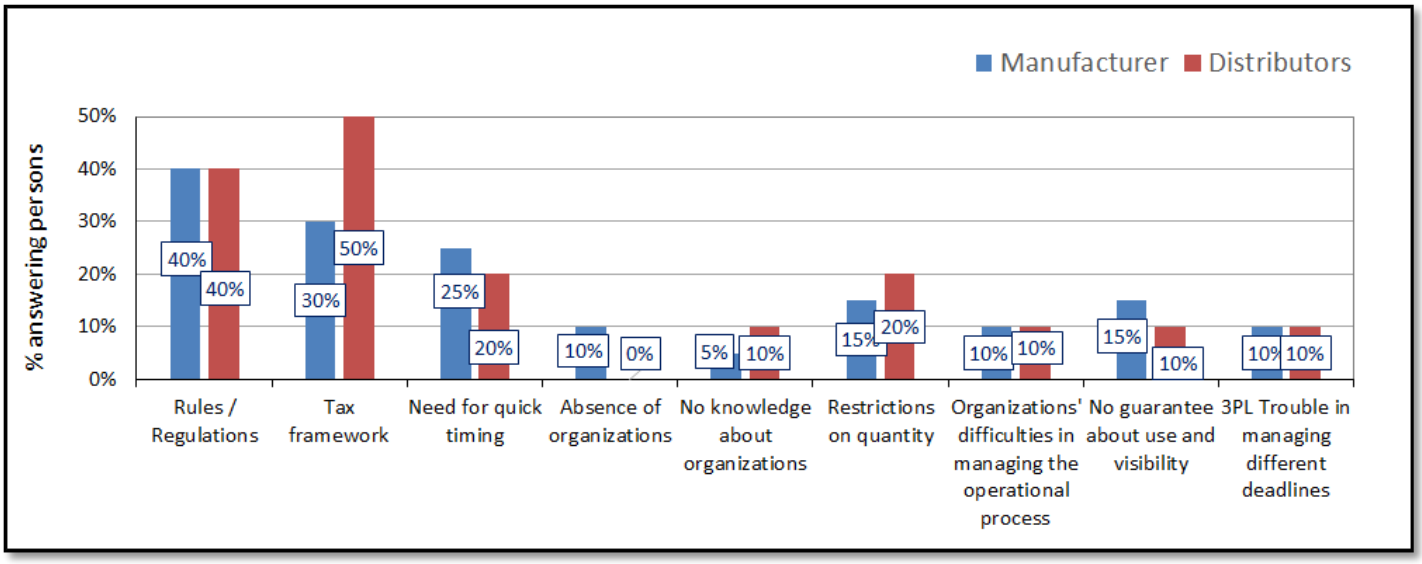

Figure 17– External barriers to donation

[4] The values given refer to the legislation in force at 30/05/2015. Please note that evaluations of measures to encourage donation by governments of several European countries are underway.

10. Conclusions

In short, thematic workshops carried out by the working group and discussed in the previous paragraphs, allowed to take a step forward in understanding how to manage the surplus food from companies in the supply chain, from the point of view of the identification of best practices, critical issues/barriers to donation, areas of cooperation.

BEST PRACTICE

- The research has confirmed the possibility of building a structured process to manage surplus food
- In the supply chain there are companies "farther along" in the implementation process (both producers and distributors), resulting a reduction in the impact of food waste
- In constructing the structured process of surplus management, the "best in class" companies link the "Food Hierarchy" to the internal decision making processes, improving its effectiveness in terms of implementation

CRITICAL ISSUES / BARRIERS

- The structured management of surplus often involves the use of additional resources for the supply chain, making the redistribution of the surplus less attractive.
- There is no clear understanding of the costs associated with the different alternatives of management of surplus
- The regulatory framework is not perceived as an obstacle rather it appears to be:
  - Little incentivizing (mainly for the Distribution)
  - Cause of uncertainty in terms of interpretation
- Regardless of the legislation, a reputational risk persists that can be overcome with a greater visibility/cooperation with the Non-profit Organizations

AREAS FOR COOPERATION

- Manufacturers are more interested in solutions that improve flexibility in the application of the "sell-by date" and thus in the reduction of surplus food generation.
- In terms of future developments, manufacturers are more interested in the further dissemination of systems of automatic communication of the expiration date, in addition to a "collaborative" management with private label products.

Finally, the research has also highlighted the presence of a problem in terms of both culture and knowledge. A significant percentage of companies complained about the lack of information and, more generally, a lack of explanation of the suitability of the different alternatives. Furthermore, although some companies complain about a lack of cost effectiveness in the donation, 30% claim to have no "internal" barriers to the donation.
Developments for the companies of the supply chain are manifold. For the "true beginners" at the implementation phase of a structured process, this means working according to the variables a rising during research. For the supply chain as a whole it is important to further develop the areas of cooperation not only between producers and distributors, but also with other members of the chain (Non-profit Organizations and logistics service providers). Lastly, the issue of the management of surplus food can be addressed from several points of view (for instance from packaging and legislation perspective). Thus, an in depth understanding of the costs related to the recovery of food will support the development of effective incentive systems.

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