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How can we optimize the new link in the fight against food waste?



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Abstract

The Newlink project focused on optimizing the redistribution of surplus meals from institutional catering. The challenge was to integrate this ethical and social approach into a local context with its own particularities, while also ensuring that the food remained safe to consume and maintained its environmental qualities.

The work highlighted:

- the diversity of organizational models for institutional catering kitchens, intermediaries, and non-profit organizations;
- the development of intermediaries with very different legal statuses and business models;
- the administrative, logistical and organizational constraints on this new link in the supply chain.

Opportunities for optimization are emerging, but they require stronger support from public authorities to structure solid donation supply chains and meet the needs of non-profits and of people with precarious access to food.

The study shows that to identify the sources of surplus, the quantities and the potential recipients at local level, it is necessary to develop territorially-based cooperation and engineering, which currently do not exist.

This support could be provided by municipalities, groups of municipalities, or *départements*, for the purposes of economic development, provision of institutional catering, or social action. The State could play a role in communication and supervision. Moreover, as intermediaries' economic models are fragile and dependent on subsidies, coordinated public policies could simplify funding and make it more secure.

New intermediaries in the fight against food waste

A legal framework that supports donations

In 2020, annual food waste in France amounted to 8.7 million tonnes or 129 kg per head (Eurostat, 2022¹). While out-of-home catering accounted for only 12% of total food waste, **the quantities thrown away in institutional catering were significant: up to 30% wasted per meal**. The average was 120 grams of food thrown away per meal and per eater (ADEME 2020²).

To combat food waste in institutional catering*, the French EGAlim law (2018³) requires establishments serving more than 3,000 meals a day to enter into a partnership with at least one food aid non-profit organization, in which it undertakes to donate its surpluses (definition p.2). Only food and meals that meet regulatory and health standards may be reused. Referred to as surpluses by catering professionals, such food may be offered to individuals or donated to non-profits working to combat food insecurity (Ansa 2022⁴).

This strategy of donating to charities is designed to be both ethical and social (solidarity with the most disadvantaged, combating food insecurity) as well as environmental (e.g. reducing CO₂ impacts) and economic (optimizing costs). It involves new logistical steps and is leading to the emergence of new players.



Definition of «institutional catering»

Institutional catering is a service consisting in the provision of meals taken in a collective space outside the private home. Unlike commercial catering, the customer of an institutional catering service does not pay the full cost of the meal; **part of the cost is borne by the local authority, employer or institution, that is, the organizing authority**.

There are four main categories of institutional catering:

- **school catering** (public and private): nurseries, kindergartens, primary schools, secondary schools, universities
- **medico-social catering**: hospitals, retirement homes
- **company catering**: government administration, local authorities and businesses
- **other**: holiday centres, army, prisons

Institutional catering comprises three types of establishment, depending on how they operate:

- **on-site kitchens**: establishments producing meals that are consumed exclusively on site
- **central kitchens**: establishments where at least part of the activity consists in manufacturing meals for delivery either to at least one satellite restaurant or to a social group
- **satellite restaurants**: “establishments or premises equipped to serve meals supplied by a central kitchen”, and which can produce certain meal portions on site.

The emergence of intermediaries on which little research has been done

A report assessing the 2016 law on combating food waste points to the major logistical constraints involved in collecting, transporting and distributing unsold food from supermarkets, while ensuring that non-profits respect the food cold chain (AN, 2019)⁵. It highlights **the risk of products with short expiry dates ending up not being redistributable, thus leading to a transfer of waste from retailers to charities**, and consequently to the local authorities responsible for collecting and processing it. The report concludes with the need to promote a diversity of solutions for managing unsold products.

Initiatives to collect and redistribute surplus meals exist in the institutional catering sector where they were started by central kitchens, in some cases even before the EGAlim law (2018). Because of the recency of such initiatives and their invisibility in the public arena, very few studies have been carried out on this new link in the collection and redistribution of surplus meals to charities. The NEWLINK project aimed to define how the redistribution of surplus meals from the catering industry to non-profits works, by asking the following questions:

- How can the stakeholder system be characterized? How does it work?
- What method should be used to analyse this system? What dimensions of the link should be taken into account?
- What quantities of surplus meals are available at meal production sites? How much is collected and redistributed, in compliance with the EGAlim law (2018)?
- What can be done to optimize the organizational, administrative, economic, social and environmental aspects?

1| https://ec.europa.eu/eurostat/databrowser/view/env_wasfw/default/table?lang=en

2| <https://agriculture.gouv.fr/restauration-collective-la-reservation-de-repas-experimentee-pour-lutter-contre-le-gaspillage>

3| Article 88 > Art. L. 541-15-3 du code de l'environnement et ordonnance 2019-1069 du 21 octobre 2019

4| Ansa, Rapport d'activité 2022, Paris, 28 p.

5| French National Assembly, 2019, Information report submitted by the Committee on Economic Affairs on the assessment of Act No. 2016-138 of 11 February 2016 on combating food waste, submitted by Graziella Melchior and Guillaume Garot

The intermediate link: various organizational methods

In the Île-de-France region, in France, **there are systems for selling and donating surplus, distributing it directly or through intermediaries, with or without a digital application.**

In the case of donations, a catering establishment may or may not work with a logistics intermediary who transports the surplus, or with an intermediary who puts it in contact with non-profits, or even directly with the beneficiaries. In the latter case, either the donor or the recipient organization is responsible for transporting the surplus. When surpluses are sold, the intermediary is involved in establishing contact with customers, who are often on-site staff and employees and, in rare cases, external private individuals. The Newlink research project has highlighted the wide variety of ways in which wastage of surplus meals from the catering industry is avoided. The actors identified in the study are shown in the diagram below (which we do not claim is exhaustive).

The legal status of intermediaries and their business models also vary, including both for-profit companies and non-profit organizations. The latter work with both employees and volunteers, some of whom may be doing their civic service.

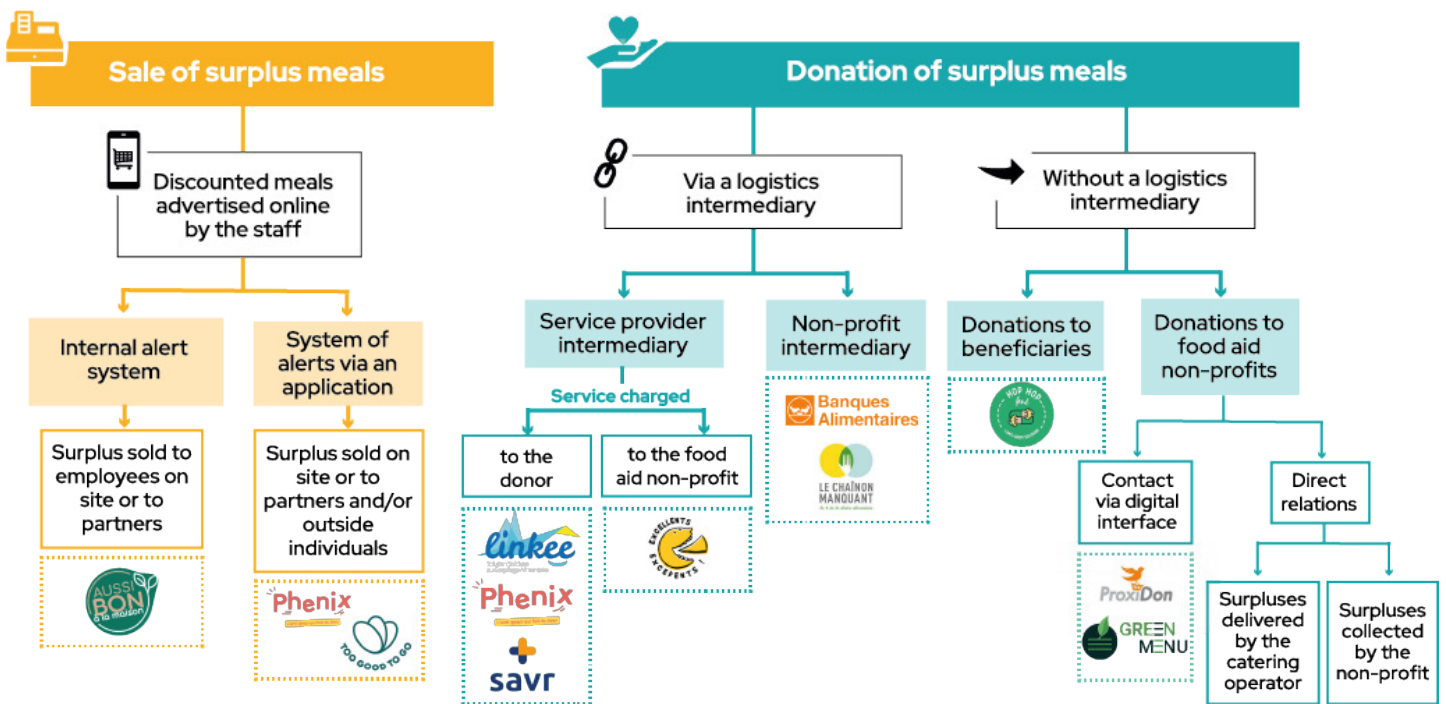


Definition of «surplus»

The government Decree of 21 December 2009 pertaining to the health rules applicable to retail trade, storage and transport of products of animal origin and foodstuffs containing them (Art. 2) defines a surplus as “a culinary preparation intended for an institutional catering service, not presented to the guests and the healthiness of which has been ensured, particularly by keeping it hot ($\geq 63\text{ }^{\circ}\text{C}$) or cold (between 0 and $+3\text{ }^{\circ}\text{C}$), until it is found to be in excess of consumer demand, or a product stable at ambient temperature, pre-packed in individual portions”.

When the intermediary organization offers a paid service, it charges either the donor for collection and redistribution, or the recipient charity for distribution. Intermediaries can be remunerated via tax exemption schemes. In the case of private establishments subject to tax, donors benefit from tax exemptions for food donations, which generates a financial advantage, part of which can then be paid back or shared with intermediaries. This system does not apply to public-service catering services.

Recovering surpluses from the catering industry in the Île-de-France region: new link and organizational approaches



Source: based on the diagram by Clara Gaurichon, 2023, completed in 2024.

The interviews conducted, the multi-criteria analysis and the discussions at the workshop highlight the main challenges that stakeholders face in setting up a local surplus donation supply chain. **The arguments put forward primarily concern logistics, although regulatory and political issues are also raised.** The main findings are set out below.

An opaque sector with scattered and poorly available data

First observation: institutional catering operators do not have data on the quantities of surpluses. **In most cases, the management and monitoring of surpluses and bio-waste is not analysed in detail, even though a diagnosis of food waste has been compulsory** since the EGAlim law (2018). Waste is perceived as undesirable but unavoidable and is therefore tolerated in central kitchens' production.

« I wouldn't be able to give you exact figures. Why? Because surpluses depend on many things. »

- Interview with a member of a food aid organization, June 2023

In some cases, for reasons pertaining to traceability and sanitary quality, monitoring was done in a paper file or notebook. Yet no quantitative summary of donations was drawn up, as such monitoring was not intended to be audited.

Quantitative monitoring can be time-consuming if it is not computerized.

Yet even when a logistics intermediary provides a computerized monitoring tool, the tool is not necessarily used by the managers of a central kitchen. In cases where donations to charities are made directly, without intermediaries, follow-up is even more uncertain.

A lack of information about existing intermediaries and non-profits in the area was also observed in the institutional catering industry: intermediation happened mainly by word of mouth, locally.

In fact, knowledge of networks of actors seems to be a determining factor in setting up a donation partnership. **In seven of the thirteen interviews with caterers, the partnership with a food aid organization was initiated by a third party, an agent or a political project.**

« I order as close as possible to what's needed, but (...) you'll still have a school that forgets to tell you that 200 kids went on a field trip. »

- Interview with the director of a school fund, July 2022

An organization that does not remove all the obstacles

Intermediation in the donation process is still a work in progress: there is not enough support for those involved, and **donors and recipients rarely have the opportunity to meet so that they can build a working relationship.**

Redistributing surpluses requires additional material and human resources, both for the non-profits and for the caterers.

The latter sometimes feel left to their own devices when it comes to complying with the EGAlim law (2018), which is perceived as virtuous and directive, but insufficiently backed up by support measures.

Our interviews show that, in compliance with the EGAlim law (2018), managers of central kitchens are already working on aspects that have a major impact on the costs and production of meals: for instance, organic and sustainable supplies, more plant-based meals, no more plastic. The interviewees often justified their lack of commitment to combatting food waste by the fact that food waste takes place essentially during the serving and consumption of meals, rather than in the central kitchen. Local authorities and institutional catering operators seem to know little about where to minimize the cost of food waste in central kitchens.

Logistical challenges were also mentioned on several occasions. For example, the non-profit's lorry was sometimes unable to collect the surplus due to a lack of volunteers. In addition, not all charities are authorized to receive donations.

For non-profit organizations, the difficulties associated with donations from the catering sector are mainly due to their irregularity in terms of quantity. **Non-profits and catering establishments mutually require regularity, but direct collaboration is not enough to overcome this structural limit.**

As for the intermediaries, they complain about a form of inertia in the industry regarding the changes that the EGAlim law (2018) is supposed to bring about. Our interviewees described the institutional catering sector as still "not very mature" and "barely driven by legislation" when it came to donating its surpluses.

« Monitoring agreements, updating them and all that takes a bit of time and anticipation. Sometimes we're a bit tight. »

- Interview with a staff member of a central kitchen, June 2023

The sector was said to be imbued with a culture of risk prevention that allegedly paralyzed potential donors, and organizational and logistical changes seemed to be “difficult to implement” despite catering managers’ motivation, because they operated with “extremely long decision-making cycles” (Interview with an intermediary, April 2023).

Could these difficulties, linked to the irregularity of flows, the lack of manpower and of information on actors in the supply chain, and the lack of knowledge of the law, met by institutional catering and food aid organizations, be overcome with the support of intermediaries?

A link seeking to position itself

Food waste is associated with organizational difficulties, inefficiency and the “waste” of public money, as well as a form of “immorality” in a context where many people do not have enough to eat. A certain “political taboo” therefore surrounds central kitchen surpluses, with some local councillors going so far as to “deny or ignore” the issue.

« I think the reason they [the donations] weren't necessarily set up at the time was because it was frowned upon to have surpluses. There's this image of 'we don't need to donate, because normally we don't have any surplus'. »

- Interview with a staff member of a central kitchen, May 2023

While it may have seemed that the EGAlim law (2018) was going to be a starting point in setting up collaboration around donations, the interviews showed us that the motivations and genesis of these projects were plural, very often not correlated with legislation as a driver.

Our results neither confirm nor refute the need for intermediaries. **Some collaboration works well without intermediaries**, particularly when key people are identified in the donor and recipient organizations, dedicating part of their time to organizing or receiving donations. Collaboration that works well is also that which has been ongoing long enough to establish a routine, a protocol. It does nevertheless appear that **the presence of intermediaries in some of the partnerships studied reduces the workload of central kitchens and non-profits**, while providing tools and expertise to donors who complain of a lack of support from the public authorities.

They offer services that can facilitate the logistics and administrative aspects of donations, thus reducing the need for human resources in two sectors where the staff are already very busy and even over-worked at certain times.

Is the purpose of the donations enough to make this link socially, economically and environmentally virtuous? The question of what is morally good or not arises recurrently in the discourse of many of our interviewees.

Charity or company, for-profit or non-profit, donation or sale: the various actors in the supply chain have different attitudes as to what is good or bad when it comes to food surpluses and avoiding waste. In particular, in this industry opportunities to derive financial benefits from surpluses are still frowned upon.

The business models are not very transparent. Yet despite our difficulties in obtaining precise data on the financial aspects (cost of waste, cost of waste management, cost of producing meals, packages paid on the various platforms, etc.), **several business models were identified among the intermediaries:**

- the “volume effect – tax exemption” model for private companies
- the “participation of the recipient in the cost of the service provided” model for socially beneficial solidarity enterprises
- the 100% subsidized “social” model, with public and private donations
- the “double tax exemption” model, for food donations and donations to a charity at the end of the year.

To what extent are they dependent on public funds, either through tax exemptions or through direct or indirect subsidies? A detailed study of these models would make it possible to clarify the **cost to the taxpayer of every meal provided**. This cost would have to be put into perspective by comparing the quality of the service provided with the needs of the non-profit organizations.



Two recommendations for developing the intermediate link in the meal donation supply chain

Managing surpluses and structuring local donation supply chains: a role for local authorities?

To identify sources of surplus meals, potential quantities and potential recipients at local level, it would be necessary to develop local cooperation and local engineering, which is currently non-existent. **This support for structuring donation supply chains could be provided by local authorities, municipalities or groups of municipalities**, for the purposes of economic development, institutional catering, or social action.

The aim is both to better “manage surpluses” – what quantities, at what level of the production chain, what type of products, how often? – and to identify “receivers” who have the needs and the capabilities to distribute. There is an abundance of potential recipients of food donations in the form of meals, but a detailed understanding of their activities is required so that donations can be adapted to their needs. They include food aid organizations, players in the accommodation and emergency sector such as day centres, shelters, outreach workers, student hostels or young workers’ hostels, and private individuals. To reach them, it will be necessary to choose between either developing direct donation solutions, or developing intermediaries. It will also be necessary to support compliance with the strict standards applicable to this type of food.

Endeavours to make the best use of donations from central kitchens have received scattered and unstructured public and private investments. Effective intermediary links, or the ability to bypass intermediaries and make local donations directly, presupposes the removal of mainly organizational and regulatory obstacles. While there is considerable scope for progress in reducing waste in catering (pre-registration of eaters, cooking methods, deep-freezing, etc.), there remains an “incompressible”, albeit uncertain, stock of surplus food that could be donated or recycled.

There is a real need for **support for those involved in institutional catering** to help them characterize their surpluses, choose the right intermediary from among the existing options, or set up a local donation network to overcome existing obstacles. **Social workers** also need **support** in adapting to these free or cheaper but fluctuating meals: HACCP training, accreditation, and reorganization of supplies.

Supporting a sector in the process of professionalization

Today, surpluses generate significant economic, ecological and social costs (in terms of waste, destruction or the logistical costs of recovery), which are either hidden in the accounts of the catering industry, outsourced to non-profits, or charged to the State via tax exemptions. How can we cut these costs, reduce waste, and effectively redistribute the remainder?

Moreover, food aid organizations invest heavily in managing their donation supplies, both financially (e.g. purchase of refrigerated lorries), and in terms of volunteer resources (e.g. finding drivers, training people to comply with health regulations, etc.).

The intermediate link studied still needs public support if it is to grow, **for the economic models are fragile and depend at least partially on temporary subsidies or tax exemptions**. Coordinated public action to combat waste and promote donations could help to simplify and secure funding and overcome threshold effects. In exchange, transparency on costs and operating models seems necessary. Catering organizations currently wishing to “just give away” food have no turnkey solution to facilitate this, nor any guidance from the public authorities beyond the obligation to donate to “an approved organization”.

The State and local authorities can play a communication role (making existing offers accessible and clear, distributing a food donation guide, linking up with intermediaries through the development of tools) and acting as guarantors of the framework.

Further research

Current research has revealed the extent of the unknowns surrounding the donation of surpluses from institutional catering, despite the fact that it is compulsory by law. Studies into local donation supply chains, the recovery and processing of surpluses, avoided costs, and product life cycles, and studies comparing existing models (with or without intermediaries, between different types of intermediary, public or private, etc.) could enable public authorities to make informed choices to promote access to healthy, high-quality food for as many people as possible.



METHODOLOGY

Three studies were devoted to analysing this new link in the food logistics chain. Using a survey approach, two of them investigated various aspects: the actors involved, the organization of activities, the quantities collected and redistributed, food safety and traceability, the economic model, and administrative management. Twenty-six semi-structured interviews were conducted, including thirteen with representatives of the institutional catering sector (central kitchen managers, cooks, dieticians, and environment, sustainable development or CSR managers), eight with food aid organizations and five with intermediaries involved in various activities between the collection and redistribution of surpluses. A third study looked at the cold chain of this link from a thermal and energy perspective, using *Excellents Excédents* as a case study.

Two other studies explored the appropriateness and implementation of a multi-criteria analysis. Using the MyChoice tool developed by researchers at the IATE/INRAE unit, the pros and cons of the new link were assessed, using criteria drawn from a variety of sources (interviews, press) and stakeholders.

At the end of 2023, based on these analyses and in collaboration with Ansa, a multi-stakeholder workshop bringing together intermediary operators, professionals from the institutional catering sector, local authorities and researchers drew up recommendations for optimizing the operation of the supply chain.

The Newlink project

The Newlink project (2022-2023) was carried out at two INRAE research units: UR FRISE and UMR SADAPT. The project team included two researchers, Hong-Minh Hoang and Barbara Redlingshöfer, and five trainee students from university or engineering school: Hinde Bouchayeb, Clara Gaurichon, Mathieu Bonel, Assiya Zahid and Karima Ghmit.

Three non-INRAE partners also contributed: the company *Excellents Excédents*, the *Cantines Responsables* and the *Agence nouvelle des solidarités actives (Ansa)* non-profit organizations. Ansa facilitated the multi-stakeholder day and contributed to the writing and layout of this article.

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