The role of school canteens in building more sustainable food systems. The impact pathways of the "Ma Cantine Autrement" programme in Montpellier

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5.1 Introduction

5.1.1 The multiple roles of school canteens

Global estimates suggest that one in every two school children, or 388 million children, receive school meals every day (WFP, 2020). Aside from increasing school enrolment, the main purpose of school feeding programmes is to help improve children's nutritional status by giving them access to school meals that meet nutritional recommendations (CNA, 2017). By providing low-cost healthy school meals to all and particularly children from low-income families, school canteens play a crucial role in the reduction of social inequalities in health. In this respect, in order to be effective, measures to improve school canteens cannot overlook the social inclusion challenges surrounding the way in which they are received by different groups and social categories. Beyond public health issues, school catering addresses many other challenges relating to education, economic development, and environmental issues (CNA, 2017; FAO, 2017). Its educational role involves social dimensions, for instance in teaching civility and good manners during school meals. Canteens are a space for socializing and the meals are a time for sharing and social interaction, but also for food education to encourage healthy eating habits, taste education to help the children discover and enjoy new foods, and education about the food system—where the food comes from, how it is produced, and by whom. Furthermore, school canteens are a place to raise children's awareness of the impact of their food choices on the environment and can thus help teach children to adopt dietary behaviours with a lesser environmental impact and to minimize food waste. Finally, school canteens recently took on an additional role, in the reterritorialization of food and local economic development. The large quantities of food required for school meals make public catering

establishments a major stakeholder on the food market, and their food procurement strategies provide a key lever for supporting territorial agricultural economies.

5.1.2   *The French context*

In France, public school catering is embedded in the public school system, an institution that has been secular, free, and compulsory since 1881. In a way, public service is thus core to its mission. Paradoxically, however, public school catering was long not run as a public service: it depended on the involvement, at local levels, of the municipalities, parents, social organizations, or teachers and therefore took on various forms, when it existed at all. Only after the Second World War did school meals become widespread (Comoretto et al., 2020).

In France, nearly 70% of children aged 3 to 17 have lunch at school at least three times a week (ANSES, 2017), making school canteens a real lever for promoting sustainable dietary behaviours. The nutritional quality of school meals is structured by several laws and recommendations. Nutritional guidelines were developed in 2001 and updated in 2007, 2011, and 2015 by the Groupe d'Etude des Marchés de Restauration Collective et Nutrition (GEM-RCN, task force on the institutional catering and nutrition markets) (GEM-RCN, 2007, 2011, 2015). French regulation provides that school meals must necessarily include four or five components (a starter and/or a dessert, a main dish, a side dish, a dairy product). Furthermore, frequency standards that are set by the GEM-RCN for 15 type of dish (e.g., any dish that qualifies as a "starter containing more than 15% fat" must be served no more than four times in a series of 20 consecutive meals) became mandatory across all schools in 2011 (République Française, 2011a, 2011b).

Since 2017, all children in France have been entitled to register for school meals. As of 2019, the EGalim law (République Française, 2018) to achieve a balance in trade relations in the agricultural sector and a healthy, sustainable, and accessible diet for all requires school catering services to offer at least one vegetarian meal (without meat or fish) per week. The EGalim law also provides that as of 2022, public catering establishments must include 50% sustainable and quality-certified products with a minimum of 20% organic products (as a share of total purchase value excluding VAT). Additionally, this law extended the obligation to implement a framework to combat food waste—estimated at 115g per meal and per child in school canteens (AMORCE-ADEME, 2019)—to all institutional catering actors in both the public and private sectors. Moreover, school catering establishments preparing more than 3,000 meals per day must enter into a food surplus donation agreement with an authorized nonprofit. The French legal framework thus upholds the principle of equal access to food that meets quality standards defined according to nutritional quality and sustainability criteria (Chiaverina et al., 2022; Sanz Sanz et al., 2022). However, it is hampered by social differentiation in canteen attendance, with pupils from disadvantaged backgrounds eating at school less often than those from more privileged backgrounds (Caillavet et al., 2021; Poinsot, 2021).

Concerning the food supply, as in all European countries, French public catering is subject to the public procurement code that requires school canteen supply contracts above an authorized threshold to go through a tendering process. With regard to the inclusion of local products in school meals, it is worth noting that the public procurement code makes it difficult to include geographical criteria in calls for tenders, since they could be considered as discriminatory according to free European market exchanges rules. Nevertheless, these restrictions were recently relaxed. As of 2015, social and environmental clauses can be introduced in calls for tenders in order to facilitate local procurement. Prior to this, the restrictions could be circumvented by requiring short delivery times, for example. Specific attributes, such as organic certification, can also legally be mentioned in calls for tenders.

For some years now, the policy and regulatory context has thus been evolving to provide better conditions for developing more sustainable school catering. Such improvement has also been encouraged by the introduction of food policies at local level, with a stronger commitment from regional and municipal institutions as well as the emergence of Territorial Food Projects (*projets alimentaires territoriaux*, PAT), an institutional framework defined by French law in 2014 (Guillot & Blatrix, 2021; Lamine et al., 2019). Local institutions can set up PATs to obtain funding from the French State in order to relocalize the food system within their territories.

5.1.3   The "Ma Cantine Autrement" programme in Montpellier

The city of Montpellier is actively committed to this evolution towards more sustainable and relocalized food systems. It has been a signatory city of the Milan Urban Food Policy Pact since the pact's launch in 2015. The city self-manages the production and distribution of 14,600 meals a day for its 89 primary school restaurants and 42 recreation centres for children aged 3 to 11, with 22,000 families making use of the city's school catering. Meals are prepared in the city's central production unit (CPU) and distributed to schools in refrigerated trucks. In 2016, following a food waste diagnosis in its school canteens, the Food Policy Department (FPD) of the city of Montpellier launched a programme to optimize its school catering system, with a view to reducing food waste and promoting sustainable diets for children. This programme, called "Ma Cantine Autrement" (MCA), was designed as an interactive framework of 23 actions organized into four main pillars: 1) food procurement policy; 2) production management; 3) meal distribution; and 4) sustainability awareness.

This chapter describes how the Urbal participatory approach was applied to identify the impact pathways (IPs) of the MCA programme on the different dimensions of a sustainable food system and discusses the lessons learned from this analysis. The application of the Urbal approach was the result of a relationship between CIRAD and the city of Montpellier that predates the project. Even before the Urbal project was launched, Montpellier's FPD was seeking a tool to evaluate and monitor its innovative actions. The MCA case study was one of the first identified to test the Urbal approach. The participatory

approach aimed to shed light on the IPs by taking into account the perspectives of diverse stakeholders concerned by the programme to provide insights on what impacts should be expected and how/why they could be achieved.

5.2   Methodology

The MCA case study was carried out in three steps, guided by the Urbal methodological framework. First, a study characterized and provided a better understanding of the MCA programme, its innovative activities, timeline, and stakeholders. The research team then carried out a multi-stakeholder participatory workshop to collectively identify the main impacts and IPs of a set of innovative activities. Faced with the legal and practical difficulty of directly involving school children in the workshop, the research team decided to conduct a separate study to collect their views. The research team analysed all the data collected to develop a more detailed and explicit understanding of the IPs of activities and produce a synthetic map showing barriers to and levers of the impacts. Finally, the research team organized a second workshop, during which this analysis was presented and informed a discussion about strategies to scale out an innovation such as the MCA programme.

5.2.1   *Characterization of the programme (activities and stakeholders)*

The study was carried out from mid-January to early May 2019, drawing on a range of sources. The Urbal project research team benefited from the direct support of the Montpellier Food Policy Director, who is also the Montpellier School Catering Director and the main MCA designer. The Food Policy Director helped to provide access to documents, made himself available to answer questions, and connected the Urbal intern in charge of carrying out this first stage of the research with an intern at the FPD. The initial data sent by the FPD comprised of documents in various formats (PowerPoint presentations, internship reports, documentary notes, maps, teaching scenarios) and of different kinds, such as urban food policy benchmarks, food waste management documentation, action plans, decisions made by the MCA steering committee, engagement letters from the Mayor, progress reports and evaluations of the measures' implementation, press releases, etc. These documents were organized and categorized. Interviews with the Food Policy Director completed this data. This material was used to produce three main documents:

1. A timeline of the different measures implemented as part of the MCA programme from 2014, when the first food waste measurement operations were launched, to the end of 2019
2. A list of the activities carried out as part of the MCA programme from 2016 to 2020 (see Table 5.1)
3. A map representing the main actors and categories of actors involved in the MCA programme (see Table 5.2)

Table 5.1 Complete list and description of the MCA programme activities

Axes	Activities
Pillar 1: Food procurement policy	1. **More targeted allotment by product or family of products**: the size of the batches ordered is reduced and products are unbundled to encourage smaller local producers to respond to calls for tenders 2. **Specification of higher quality standards for public contracts**: this activity allows for the integration of quality criteria such as organic certification and other quality labels 3. **Working group on local outlets**: these multi-stakeholder groups, which include farmers, meet regularly to structure and facilitate the local response to calls for tenders 4. **Administrative services cooperative supporting local producers**: this service offer aims to strengthen local farmers' capacity to respond to public calls for tenders
Pillar 2: Production management	5. **Creation of fruit and vegetable processing stations**: this production tool makes it possible to use a greater number of first-range products (raw agricultural produce that has not yet been processed) in the production of meals 6. **Improvement of recipes and portion weights**: these adjustments are made dish by dish, guided by preliminary studies of the meal leftovers, to minimize food waste 7. **Reorganization of the booking system**: an online platform is set up to allow parents to book meals for a shorter period than before (6 weeks) 8. **Seasonal menu cycles**: this menu design aims to promote local and seasonal products and is supported by communication targeting the parents and children 9. **Four-component meals (replacing the usual five-component meals)**: this simplification of the meal structure was informed by a study of meal leftovers to minimize waste 10. **Food donation agreement with charities**: this agreement with local charities facilitates the recycling of production surpluses through food aid
Pillar 3: Meal distribution	11. **Nutrition training for staff**: these training courses are accessible to kitchen and facilitation staff and provide them with nutritional knowledge and skills 12. **Hospitality and service training for staff**: these training courses are accessible to kitchen and facilitator staff and provide them with hospitality knowledge and skills 13. **Cutting kit**: this set of tools is designed to facilitate the work of kitchen staff and allows for cutting fruit directly at the table 14. **Limiting cutting work to one task per meal**: this action aims to facilitate the work of kitchen staff 15. **Experiment with self-service restaurants**: this experiment aims to minimize waste by allowing children to choose dishes according to their taste preferences

(Continued)

Table 5.1 (Continued)

Axes	Activities
Pillar 4: Sustainability awareness	16. **Eco-citizen meal (without any animal-based food)**: this menu, which was initially served monthly, is coupled with communication on limiting environmental impacts and on nutritional quality
	17. **Bio-compostable food containers**: these plant-based containers, which hold portions for an entire table, replace plastic containers
	18. **Generalization of waste sorting and biowaste recovery**: this action is aimed at better sorting the different types of waste while involving the children
	19. **Sorting table with an integrated scale**: this device makes the quantities of waste generated by meals visible to all
	20. **Educational booklet and interactive map**: these communication tools are designed to raise parents' and children's awareness of MCA actions and can be used as a teaching device during school time
	21. **Educational theatre play "Opération Brocoli"**: this recreational play aims to raise the children's awareness of the sustainability issues and challenges surrounding food
	22. **Teaching activity on taste run by dietitians**: this activity strives to expand the children's palate by enabling them to open up to new tastes
	23. **Communication sent to parents with proposed evening menus**: this communication tool suggests menu and recipe ideas for dinner meals at home

5.2.2   *Identification of impact pathways by the stakeholders*

Based on the set of activities identified in the first stage of the study, the research team organized a participatory workshop, but decided to focus on just 12 activities, spanning all four MCA pillars and from among those with the most potential for impact. This allowed the participatory exercise to be conducted during a few hours' workshop covering a limited but comprehensive range of activities.

5.2.2.1   *Participatory workshop*

We organized the participatory workshop on Wednesday 26 June 2019, in a large classroom designed to accommodate 50 people, from 5: 00pm to 8: 00pm (in other words after the end of the workday, but not too late). The chosen location was on the campus of the agronomic school of Montpellier, close to the city centre and easily accessible. We informed the participants that drinks and snacks would be provided during the workshop and that a friendly, more informal chat would follow.

The invitation mentioned the event's title: "What are the impacts of 'Ma Cantine Autrement'?" Based on the inventory of relevant actors carried out in the previous stage, we wished to bring together a diverse range of protagonists: the Director of Food Policy and School Catering; people working in

Table 5.2 Main groups of actors involved in the MCA programme

Institutional actors
Actors whose decisions and support have direct effects (mayor, elected
representatives, municipal service departments, etc.) or indirect effects (local
chamber of agriculture, Regional Department of Food and Agriculture,
Environmental and Energy Management Agency, etc.) on the implementation of
the MCA programme.

Field actors
Actors that are directly involved in running school catering and the MCA
programme on a daily basis (FPD, cooking staff, facilitators of extracurricular
activities and school support staff, dietitians, composting centre, waste treatment
plant, Montpellier Market of National Interest, National Centre for Local Civil
Service, etc.).

Economic/industrial actors
Actors that are directly involved in the production of meals (suppliers, CPU, etc.).

Financial actors
Actors that fund the MCA programme (municipality, Regional Department of Food
and Agriculture, Environmental and Energy Management Agency, etc.).

Non-profit/foundation actors
Social organizations that are partners of the MCA programme (charities, local
farming organizations, etc.).

Social actors
Children, parents, parent associations, voters, etc.

Research actors
The Urbal research team, researchers from the MoISA research unit, the French
Agricultural Research Centre for International Development, the National
Research Institute for Agriculture, Food and Environment, and the UNESCO
Chair in World Food Systems.

Network actors
Actors involved in structuring the local sustainable food network.

production at the CPU; a dietitian from the FPD; farmers/producers supply-
ing the CPU; a person working at Montpellier's Market of National Interest
(Montpellier wholesale market); a person from the Chamber of Agriculture;
representatives of non-profits interested in MCA (organizations that can ben-
efit from the production surpluses, such as Saint Vincent de Paul, or that are
working to improve the sustainability of school catering, such as Greenpeace);
parents, including some involved in a non-profit promoting the use of organic
and local food in Montpellier's canteens (named Collectif Cantines); organiz-
ers of extracurricular activity (managers and facilitators); maintenance staff
(school operations managers, maintenance, and catering staff); and expert
researchers of sociology, economy, nutrition, and agronomy. In order to run
the workshop efficiently, we chose to limit participation to 20 people.

We faced difficulties in inviting facilitators of extracurricular activities,
actors who play a crucial role in canteens since they are in charge of facilitating
mealtimes. They are employed by the municipality, more precisely by the

Department of Education, which was not willing to let them take part in the workshop for fear that they might voice criticism. This may have had to do with the fact that an election was coming up—which also explained the Department of Education's lack of involvement in the MCA programme—and with the power asymmetry between the FPD and the Department of Education, a much bigger branch of the municipal services. We ultimately decided to conduct separate interviews with extracurricular activity facilitators to collect their views about the activities' impact pathways. Some of the statements collected were quoted during the workshop.

In order to reach the target of 20 workshop participants, we sent an invitation to about 40 people. Thirteen people attended the workshop. Although this was fewer than expected, it was enough to organize the workshop following the desired structure, that is, with plenary sessions at the start and end of the workshop, and with working group sessions.

In practice, the workshop was structured as follows:

1. First, we held a plenary session to present the Urbal approach, the IP concept, the dimensions of sustainability, and the set of 12 innovative MCA activities.
2. We then split the participants into groups—the core stage of the workshop. We had three groups of three participants, and one group of four participants. Each group worked on three activities and had its own table, with one facilitator per table, and moved to a different table once, in order to produce cumulative views about another set of three activities (Table 1: (a) more targeted allotment by product or family of products, (b) more organic and local products, and (c) alternative eco-citizen meal (without any animal-based food); Table 2: (a) four-component meal, (b) improvement of recipes and portion weights, and (c) reorganization of the booking system; Table 3: (a) staff training, (b) cutting kit, and (c) bio-compostable food containers; Table 4: (a) generalization of waste sorting and biowaste recovery, (b) sorting table with an integrated scale, and (c) educational booklet and interactive map). We endeavoured to have diverse groups, with one expert, one person directly involved in MCA, and one parent or non-profit member per group. Each group spent 45 minutes discussing the first set of three activities before rotating and spending 30 minutes on the second set of activities, which had been discussed by a previous group. Each group thus worked on six activities in total. After the rotation, each group arrived at a new table was briefed on what had been said by the previous group. We used paperboards to summarize and transcribe the discussions in real time, making sure that all participants agreed on the formulation. The facilitator at each table was in charge of facilitating, audio-recording and transcribing the discussion.
3. Finally, the third stage brought all the participants together again in a plenary session. While the aim was initially to collectively discuss the synergies between the activities, this time essentially allowed the participants to share their thoughts on the workshop, their surprises regarding certain impacts, their learnings, or their assumptions that had been confirmed.

The workshop ran smoothly, and participants shared positive feedback about the event and were unanimous on the importance of such multi-stakeholder spaces—which previously did not exist—surrounding school catering.

5.2.2.2 *Interviews with children and observational work*

Before organizing this workshop, we had to make a decision regarding a sensitive question: should school children be invited to the workshop? While school children could indeed be considered as the main actors impacted, it seemed very difficult to involve them directly, due to legal considerations and the difference in language used. We therefore decided to conduct a separate study with school children before the workshop, so as to be able to share some of their statements during the workshop and to aggregate their views on the activities' impact during the analysis stage following the workshop. We conducted a qualitative study with children at several schools in Montpellier. With the support of facilitation staff, eight group discussions with five to eight children, each lasting about 30 minutes, were carried out "to talk about the canteen", as was announced to the children. We were also able to take part in three sessions of the children's municipal council, with time dedicated to discussing what the children knew and thought about the MCA activities. Each session brought together the elected representatives of the children from four different schools. Eight children took part in the first session, five in the second session, and 12 in the last one. This study was completed by *in situ* observations and by discussions with about 45 different children in total, while sharing meals with them at their canteens, around tables of six to eight children. While we did quote some of these field data during the workshop, their analysis took place largely after the workshop.

5.2.3 *Synthesis/mapping of the impact pathways and identification of barriers and levers by the research team*

Based on the material produced in the workshop, the separate fieldwork with school children and the additional interviews, the research team worked on drawing the IP maps of each of the 12 activities. The raw data from the workshop, namely 12 paperboards showing an activity at their centre and boxes listing the effects associated with this activity, could be hardly called "IP maps". They could better be described as "effects maps": for the most part, the intermediate effects leading to the long-term effect or impact, in other words the concrete pathways from the activity to its impacts, were not made explicit.

The research team analysed the raw material, listening to the audio recordings when the notes taken during the workshop or the interviews were not sufficiently clear. In order to arrive at readable impact pathways, the research team often had to reformulate the impacts in a clearer, more precise way and state the intermediate effects that were not explicitly mentioned by the workshop participants. In some cases, the research team also added some obvious impacts that

had not been identified during the workshops but were documented in the scientific literature. This analytical step amounted to a translation process, balancing two distinct requirements: to capture all the information provided by the participants and remain true to what they meant, while also producing significant and precisely defined IPs that could be understood unambiguously. This analytical step also involved situating barriers, levers, and possible bifurcations as milestones on the pathways from activities to their impacts. Some of these levers, barriers, and bifurcations had been identified by the participants during the workshop, but were mainly identified and formulated by the research team based on the scientific literature and the raw data. In fine-tuning the formulation and identification of hypothetical or documented barriers, levers, and bifurcations, we made the choice to essentially strike a balance between the participatory spirit of Urbal and the value added by the knowledge in the literature. This balance was informed by the availability and allocation of time and human resources to the workshop, on the one hand, and to the analysis by the research team on the other. The result of this analytical step consisted of 12 IP maps—one for each activity—and a global map synthetizing the overall impacts of these 12 activities (the IP maps of two activities are shown further in this chapter). Each identified impact was assigned to one or several of the five different dimensions of sustainability addressed in the MCA case study: environmental, health, socio-cultural, governance, and economic.

5.2.4   *Identification of strategies to support the programme's effectiveness, and conditions for its scaling out*

Based on this synthetic IP mapping and working in close collaboration with the FPD, the research team decided to collectively further the discussion on the conditions of success and on the issues involved in scaling out the MCA programme, that is, in transferring the concept and methods of MCA to implement the programme in other territories or communities. At the time of the project, the MCA programme implemented in the city of Montpellier was starting to be seen as an inspiring proof of concept for other French cities, and several communities asked the FPD to share its experience. The municipality's commitment to improving school catering in support of greater sustainability, which began in 2016, anticipated and in several ways even exceeded the recommendations of the 2018 EGalim Law. The FPD expressed the need to reflect on how the programme could be efficiently transferred to other contexts. The decision was thus made to explore the question of scalability collectively, as part of the Urbal study.

To this end, the research team organized a second workshop on Tuesday 3 December 2019, from 5:00 pm to 8:00 pm. It invited 74 people: the attendees from the previous workshop (N = 13); the people who had been invited but had not participated (N = 26); and other people whose presence had been identified as relevant given their involvement in programmes similar to MCA or activities associated with the programme (N = 35). A total of 24 people attended this workshop, spanning a diverse range of positions and forms of involvement with

school catering and the MCA programme. It is worth noting that we were once again unable to secure the attendance of teachers from the schools involved and that two children were present with a parent. The event's objective was twofold:

1) To share and discuss the results of the previous workshop; and
2) To organize a debate around two major crosscutting questions that had emerged from the IP mapping: (a) how to foster the involvement of all stakeholders and ensure the success of the programme "Ma Cantine Autrement" for a more sustainable food system; and (b) what are the major barriers to and conditions of transferability of the MCA programme?

The workshop was organized in three stages. First, a plenary session was held, in which the research team presented Urbal and the MCA programme and summarized the findings from the previous workshop, stressing the issues that appeared to be common to several MCA activities (see Section 5.4.2). The second stage of the workshop was dedicated to discussing the major crosscutting questions around involvement and transferability. The participants were split into two diverse groups of 11 and 12 people respectively, each at a separate table. For 45 minutes, one group worked on Question (a) while the other worked on Question (b). The two groups then swapped tables to spend 25 minutes discussing the other question, so that the discussion was cumulative. Each table had a facilitator moderating the discussion and another research team member taking notes on a paperboard. The third and final stage consisted of a plenary session to summarize the discussions and collect the participants' feedback about the workshop. We concluded with more informal discussions over refreshments.

After the workshop, the research team analysed the results and synthesized them in a 10-page document that was sent to all the participants and published as a working paper on the MoISA research unit's website.

5.3   Results and discussion

5.3.1   *What are the impacts of MCA? Who do they affect and how/where do they materialize?*

The IP analysis (Douthwaite et al., 2007) highlighted the inputs, outputs, outcomes, and impacts of each of the 12 MCA activities studied. Inputs refer to the resources (material, financial, etc.) used to implement an activity; outputs refer to the immediate effects produced by the activity; outcomes refer to the changes or intermediate effects resulting from the outputs; and impacts refer to the long-term effects generated by the activity (Barret et al., 2018; Walker et al., 2008). Figure 5.1 provides an example of the raw data from the workshop. This sheet summarizes the discussion on one of the MCA activities (the implementation of four-component meals). It was completed by audio recordings. Figure 5.2 shows the final version of the IP map for this same activity.
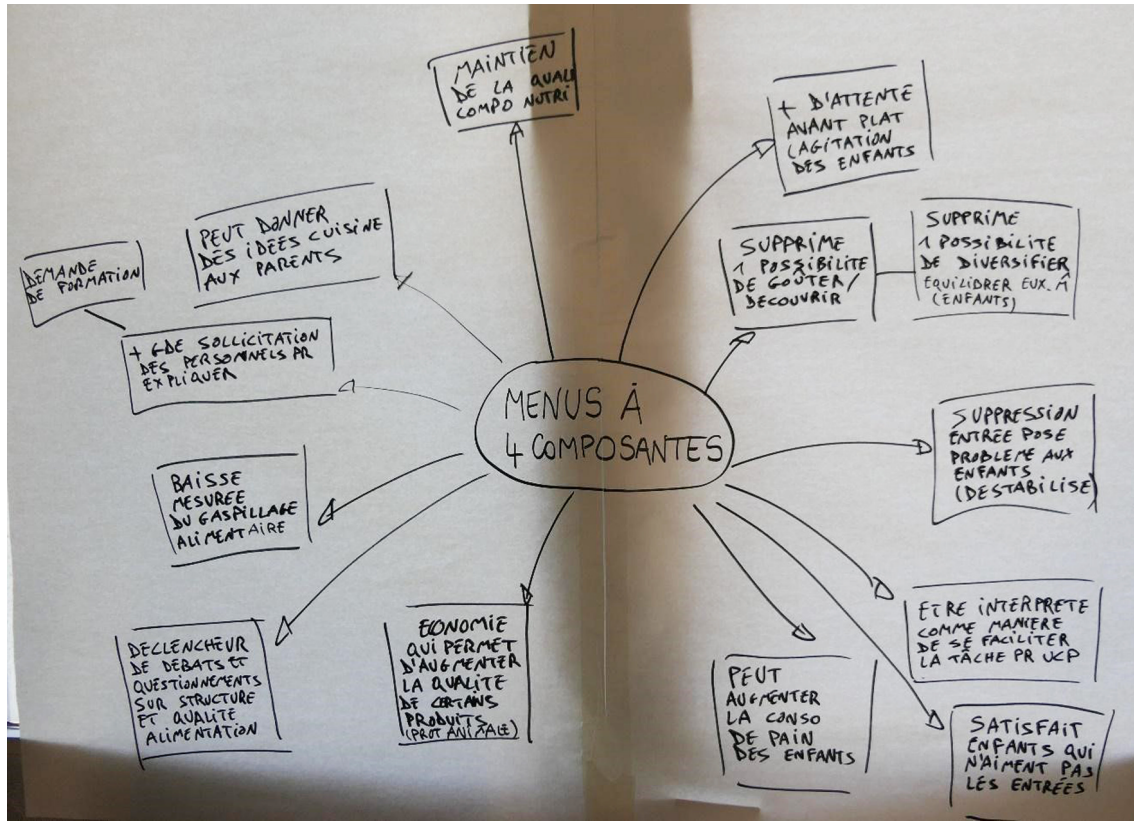
Figure 5.1 Sheet summarizing the workshop discussion on the activity "Implementation of four-component meals".

Source: Roudelle, 2019.

OUTPUTS

OUTCOMES

IMPACTS

Implementation of Four-Component Meals

Waiting until the appetizer has been removed to serve the main dish

The children enjoy spending less time at the table

Breaking away from the usual five-component meal composition

Reduced overall serving size

Children feel like they are eating "lighter" meals

Opportunity to reduce costs and reallocate funding to other areas of the budget

The children become increasingly restless

More time for the recreational portion of the lunchtime break

Awakening the children's curiosity

Possible frustration for children accustomed to the "starter/main/dairy/dessert" meal pattern

Reduced opportunity for children to taste and discover new foods

Improved perception of the meal by children

Reduction of food waste

Potential increase in bread consumption

Ability to buy better quality, more expensive products (organic, quality brands, certified origin)

Reallocation of the budget to other MCA programme's activities

Staff field more questions from children, requiring specific training

Children are worried that they might get hungry

Children are concerned that the meal is not enough for the amount of money paid

Limitation of children's food knowledge and taste

The children consume a greater proportion of their meals

Better tasting meals

Impact on working conditions

Impact on food knowledge (through taste education)

Impact on social connections (community life, citizenship, family)

Impact on knowledge (through awareness raising)

Impact on the canteen's image

Impact on food satisfaction and enjoyment

Impact on the canteen's image

Impact on physical activity

Impact on well-being

Impact on nutritional intake

Impact on food safety and exposure to contaminants

Impact on knowledge (through awareness raising)

Impact on food waste

Impact on emissions from agricultural pollutants going into the environment

Impact on the programme's cost

FC1 Facilitating condition for Activity 1. Clearly expressed and maintained political will

FC2 Facilitating condition for Activity 2. Integration of tools into the regional educational project

CS1 Condition of success 1. Staff training

CS2 Condition of success 2. Purchase of organic products

CS3 Condition of success 3. Adaptation of recipes to provide adequate nutritional intake

CS4 Condition of success 4. Ensuring the nutritional quality of the products purchased

IF1 Impact Facilitator 1. Following traditional methods to prepare the food

B1 Break 1. Debates around making changes to the meal structure and food quality
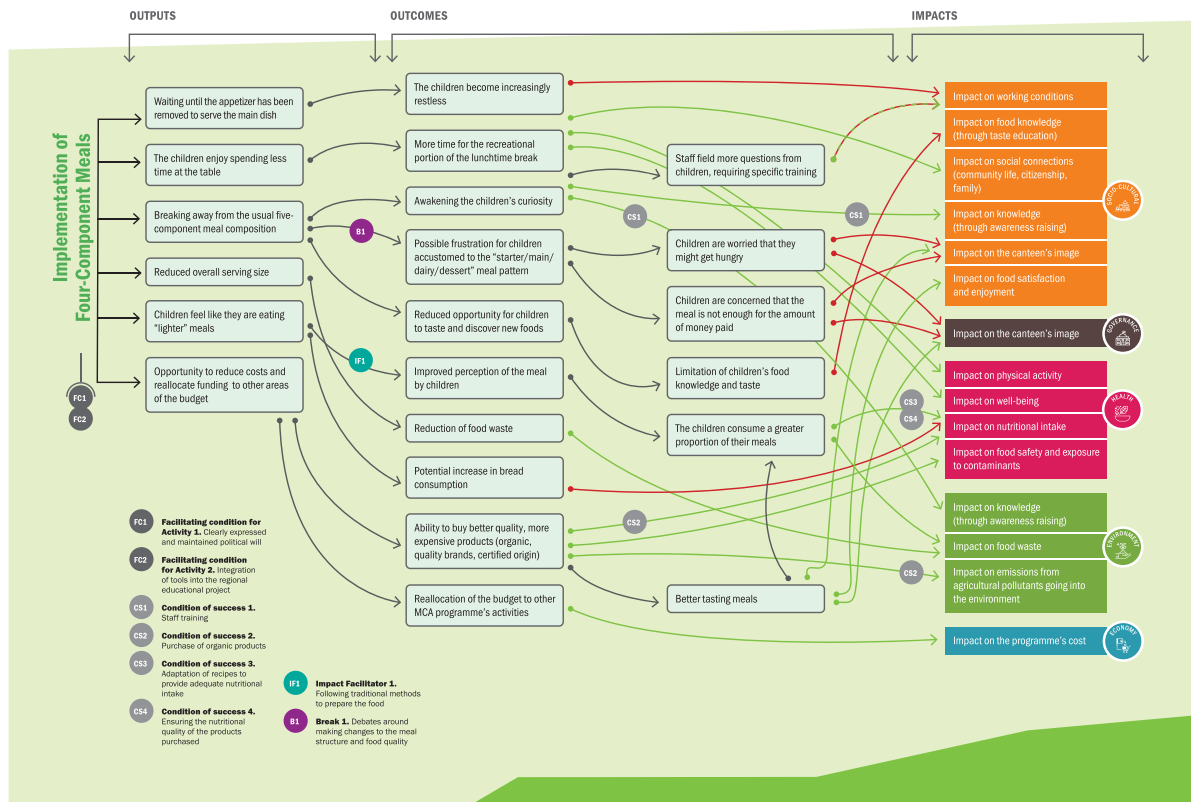
Figure 5.2 Impact pathway map of the MCA activity "Implementation of four-component meals".

Different types of *inputs* were identified: *context-related, material, and organizational inputs*. Moreover, these inputs could be either *conditions of implementation* (i.e., necessarily required to implement the activity), or *implementation facilitators* (i.e., not required but increasing the likelihood of implementation). Inputs relating to the national or international context, such as the EGalim law or the city's commitment to the Milan Urban Food Policy Pact, were factors that facilitated the implementation of the programme, but were not required. By contrast, inputs associated with the territorial context, such as the presence of local farmers to supply the school canteens with local food products, were required. A diagnosis of the food supply available on the territory was thus identified as a key step to carry out prior to the implementation of actions that fell under the "Food procurement policy" pillar of MCA. The primary food processing unit available at Montpellier's Market of National Interest,[1] which was used to process raw vegetables, was also needed to increase the share of local products in the food supply. Some inputs were assets required for the programme's implementation, such as the software program used for the new school meal booking system, the cutting kits, the bio-compostable meal containers, and the educational tools. Financial input was needed for some activities requiring the purchase of equipment (e.g., the waste-sorting tables, cutting kits and bio-compostable meal containers). Finally, organizational factors such as the existence of a working group to structure local supply chains, the management of the training session schedule to work around canteen staff's working hours, and the FPD receiving feedback from school facilitators on the dishes liked or disliked by children to adjust meal recipes and quantities, were also conditions required for the activities' implementation.

The MCA activities' *outputs (or direct effects)* affected different groups of actors. Children and canteen staff were the most directly impacted—the children by seven activities (more organic and local products; cutting kits; four-component meals; alternative eco-citizen meal; educational booklet and interactive map; generalization of waste sorting; waste-sorting tables) and the staff by eight activities (training sessions; cutting kits; improvement of recipes and portion weights; educational booklet and interactive map; bio-compostable meal containers; alternative eco-citizen meal; generalization of waste sorting; sorting table with an integrated scale). Farmers, dietitians, and CPU staff were directly affected by two to three activities. Parents were the least directly affected by MCA: of the 12 activities studied, only the new school meal booking system had direct effects on parents. It is important to note, however, that MCA also included an action whereby recommendations for evening meals and recipes, nutritionally balanced to complement the school lunches served during the week, are included in the menu schedules sent to parents. Though this activity was not selected for the IP analysis since it had only just started at the time of the study, it is expected to have a direct impact on the parents.

While most of the MCA outputs were classified as positive/beneficial, the analysis did identify some negative outputs, such as a workload increase for

different types of actors (canteen staff, dietitians). The IP analysis found that, provided the conditions for success were met, the outputs led or could lead to *outcomes (or intermediate effects)*. The outcomes allowed for the activities' spread to a wider pool of actors than the direct outputs: they affected the children and parents across all 12 activities. However, these outcomes' ability to extend to the parents was subject to certain conditions being met, including, in most cases, the children communicating about the activities to their parents. This involves the children having a good understanding of the activity objectives, a requirement that is indirectly dependent on the canteen staff or teaching team.

Moreover, the IP analysis revealed that *negative outcomes* could occur instead of or in addition to the expected positive effects. *Two types of negative outcomes were identified: avoidable negative outcomes*, that is, outcomes that occur if certain conditions are not met, *and unavoidable outcomes* that necessarily arise with the implementation of the activity and should be alleviated or accepted. For instance, the introduction of four-component meals (substituting the usual five-component meals) led to an avoidable negative outcome. Some children thought that the fifth component (starter or dessert) had been removed due to a problem with the preparation of the dish that had prevented it from being served, or as a way for the FPD to save money at their parents' expense. Such misunderstandings could then spread to the parents and discredit the school canteen. This highlighted the crucial role of canteen staff in explaining the MCA activities, so that children could properly understand the activities' objectives and be reassured if they had any concerns and could then communicate the right information to their parents. On the other hand, the workload increases indirectly induced by the implementation of MCA activities, for instance with canteen staff having to cover for their colleagues attending training sessions, could be considered as an unavoidable negative outcome that should be offset by other means.

The IP analysis identified *potential impacts on five dimensions of a sustainable food system* (environmental, health, socio-cultural, governance, and economical) and highlighted *sub-dimensions impacted by the activities under each pillar*. Not all dimensions were equally affected. The IP analysis confirmed that every MCA activity had an environmental impact. This was to be expected since the objective of the programme was initially geared towards reducing food waste and promoting a sustainable diet. Regarding the environmental dimension, the programme could have an impact on food waste reduction, greenhouse gas emissions reduction, the reduction of non-renewable resource use, and the promotion of organic farming. The IP analysis also revealed that the socio-cultural dimension of sustainability was highly affected by the programme: each activity had an impact on this dimension and did so by affecting a range of different sub-dimensions. The socio-cultural dimension involved the greatest number of sub-dimensions, indicating multiple ways to make an impact. The sub-dimensions identified were working conditions/quality of life at work, social cohesion/social ties, empowerment through knowledge, taste

education, and the reduction of social inequality (in health and access to a sustainable diet). The health dimension was also impacted by most activities. Impacts on this dimension could relate to the fulfilment of children's nutritional needs, well-being, physical activity, and exposure to food contaminants (e.g., pesticides, endocrine disruptors). The governance component could be impacted through sub-dimensions such as trust in the school canteen system among parents, children, and canteen staff, and awareness raising on each actor's role and contribution to the system. The analysis revealed that several of the negative impacts classified as "avoidable" pertained to the governance dimension and could arise as a result of activities not being properly explained to children, parents, or canteen staff, leading to dissatisfaction or loss of confidence in the quality of the food supplied by the canteen. Regarding the financial dimension, the main impact that could occur would affect the economic structure of the territory, through support to local farmers. Moreover, activities either induced a higher cost for the municipality or, on the contrary, afforded budget savings and thus room for manoeuvre to invest in another action of the programme.

5.3.2 What are the factors hindering or enabling the achievement of sustainability goals?

Mapping out the IPs helped to visualize the processes whereby activities' outputs turn into outcomes and then impacts and shed light on the *barriers and enablers observed in this process*. Several factors that could either facilitate or hinder impact were identified and categorized as: 1) *conditions for success* (required to reach the expected impact); 2) *impact facilitators* (not necessary to reach the impact but conducive to its achievement); and 3) *barriers* (i.e., factors that limit the efficacy/performance of the programme).

A major condition for success that became apparent in the IP of several activities (e.g., four-component meals, alternative eco-citizen meal, reorganization of the booking system, etc.) was ensuring that the actors, particularly the children, canteen staff, and parents, had a good understanding of the purpose, benefits, and constraints associated with the activity. Without this, outputs could end up not having any impact, or even result in negative impacts (see Section 5.3.1) if the activity was misunderstood. This condition mainly relies on canteen staff and the teaching team, who are key points of contact for children and parents who have questions regarding canteen meals, meaning they themselves need to be trained/informed. Communicating and informing actors, in particular parents, about MCA activities proved to be a major condition of success to achieve greater sustainability, since impact in the field of governance was mainly contingent on communicating the objectives and benefits of MCA activities to the parents. Another important condition of success was ensuring that the activities' implementation did not affect the nutritional adequacy of the meals. This condition is entirely dependent on the FPD's dietitians, who are key to the programme's sustainability goals since nutrition is a core dimension

of a sustainable diet. Regarding activities in the area of food procurement policy, maintaining a multi-stakeholder working group to structure local supply chains was identified as an important condition of success.

Motivation among the actors involved in the implementation of activities was identified as a facilitating factor for several activities of the programme. For instance, the effectiveness of the waste-sorting tables and of educational tools would be enhanced by higher motivation to engage with them among canteen staff and children. Additionally, continuing to serve traditional dishes was also mentioned as a factor to facilitate the acceptability of certain activities. Some activities were considered to play a facilitating role in synergy, that is, they mutually supported their respective outputs. For instance, the educational tools implemented to raise children's awareness regarding food waste and sustainable diet could increase their motivation to use the waste-sorting tables in school canteens or help them better understand the benefits of introducing four-component meals or reducing the amount of animal products in school meals. Moreover, since some activities involve higher costs (introducing more organic products, using bio-compostable meal containers, etc.) and others afford cost savings (four-component meals, alternative eco-citizen meal), their simultaneous implementation is synergetic, as it allows the programme to be carried out at no additional cost.

Barriers appeared to relate either to the programme's context or to its implementation. For instance, at the time of the study the waste-sorting tables could not be set up in four schools due to structural reasons, which resulted in unequal access and limited the sustainability of the action. Another example of a context-related barrier pertained to the staff training sessions. The staff in charge of the children during mealtimes generally have a background in education/facilitation techniques but do not necessarily have knowledge or skills surrounding nutrition or children's mealtime needs. Since such skills are not included in current professional training, all staff involved had to attend the training sessions provided as part of the MCA programme. As a result, it took several years to achieve equal access to the benefits of this activity. Some barriers directly related to the programme's implementation: they included the workload increase for the dietitians (e.g., to provide training sessions), canteen staff (e.g., to sort waste) and farmers (the administrative burden of applying for calls for tenders), and the greater constraints placed on the parents with the new meal booking system. The cost and lack of availability of some food products on the territory were also identified as hindrances limiting the growth of local and/or organic food supplies.

5.3.3   *Suggestions of actions to limit the barriers identified and/or to promote levers, and the conditions required or desirable for the deployment of the programme in other communities/territories (scaling out)*

The barriers and conditions of success that emerged from the analysis of the IP maps were discussed with the different stakeholders during the second

participatory workshop. The actors suggested different actions to limit the barriers identified and/or to foster the conditions required for success, which could be split into two categories: *1) actions to improve communication and better inform the actors* (children, parents, canteen staff) about the MCA activities' objectives and benefits; and *2) actions to stimulate actors' motivation and involvement in the programme despite the additional workload*. To improve communication, the participants suggested using different media like posters to be displayed in the canteen and in front of the school, or a short movie that could be shown to children by the teaching team and sent to the staff and parents. They also suggested mobilizing and involving the teachers, as well dedicating teaching time to helping the children understand MCA. They recommended minimizing the disconnect between teaching time and after-school time and argued that school meals could provide a valuable teaching tool to address environmental issues and the concept of sustainability. Another suggestion was to organize a school trip to visit local suppliers, the CPU and the Montpellier Market of National Interest (MIN), and to encourage parents to go on such visits, so as to foster transparency/full disclosure and trust. Regarding actions to stimulate the actors' motivation and involvement, the participants showed a strong interest in building a multi-actor committee to bring together all school canteen stakeholders. They advocated widening the existing working group focused on the structuring of supply chains to include other actors (parents, teachers, and children in particular). The participants suggested organizing a school canteen commission for each of the eight districts of Montpellier and highlighted the need to continue carrying out multi-actor workshops.

Participants were also invited to share their perspectives on the conditions required or desirable for the deployment of the MCA programme to other territories (scaling out). The availability of inputs, such as a primary processing facility or human resources, was mentioned as a condition required in order to replicate the programme. The participants thus recommended a strategy of expansion with adaptation to the territorial context rather than replication per se. The MCA programme's systemic approach, with actions across the four pillars—food procurement policy, production management, meal distribution, and sustainability awareness—ought to be maintained, while the activities to implement could be selected/prioritized based on available inputs. Participants suggested creating a charter or a brand defining a common set of priority actions that could be implemented in any context, and a list of additional activities to be selected according to the territorial context. Finally, they stressed that scaling out the programme would require training on the MCA approach and concepts and pointed to the role of groups comprised of different stakeholders or municipalities in providing inspiration and ideas to promote more sustainable food systems.

5.3.4   *MCA's social inclusion challenges highlighted by the Urbal approach*

The application of Urbal to the MCA programme shed light on several issues relating to social inclusion. One example is the different ways in which MCA

actions can be interpreted. While only serving organic bread and offering meals free of animal-based foods are spontaneously welcome as positive developments among certain social groups, for others this is not so straightforward. Suspicions and even criticisms regarding these two actions were shared with us (Lepiller & Valette, 2021). Some parents and children criticized the cost of the organic bread measure, considering that price reduction should be a higher priority. Others perceived the introduction of animal-free menus as a strategy to cut costs at the expense of end users or saw it as depriving the children of animal protein. Collecting these observations was particularly made possible by including children in the Urbal process. Bringing the various social groups concerned together to co-develop actions and better communication, for example to demonstrate that the actions carried out are cost-neutral, appeared to constitute possible solutions to address the differences in interpretations. The Urbal process also highlighted the importance of progressive social pricing as a tool to ensure that efforts to improve food quality can benefit all audiences, including the less affluent. This progressive pricing, which is already practised in Montpellier, has been further developed since the implementation of Urbal. Moreover, the study of the IPs of the alternative eco-citizen meal raised a point of caution: in certain highly socially disadvantaged groups, school catering plays a more important role in ensuring children's access to meat and its nutrients of interest (in particular iron) than in other communities. More precise nutritional studies should therefore be carried out to assess the relevance of that action for these groups.

5.4   Conclusion and prospects

5.4.1   *Learnings to improve the implementation of the Urbal approach*

The MCA case study offers numerous learnings for the Urbal process. Two categories of learnings stand out, namely regarding the composition of the workshops and their preparation.

5.4.1.1   *Learnings about the composition of the workshops*

By bringing together a diverse range of actors and points of view, the participatory approach of the Urbal framework allowed for building collective and, significantly, shared knowledge on the IPs of MCA activities. The confrontation of points of view during the workshops enabled us to collect the perspectives of the widest possible range of actors involved in and/or impacted by the activities, all at once and in a same place. Such an approach ensures collective control of what is said, as the format of the workshop involves speaking publicly, while also avoiding illegitimate spokes-personship effects. The public nature of the situation, as well as the cumulative process of the consecutive group discussions, likewise encourages impact assessments that are collectively balanced. For instance, when a group arrived at a table at which mostly negative impacts had been identified, they tended to think about more positive ones.

In the MCA workshops, the research team failed to fully apply these principles, as no child was present in the first workshop, and no teacher attended either of the workshops. The workshop facilitation method could have been adapted so as to directly involve children, and a solution could have been found to reach teachers and motivate them to attend. Teachers' attendance was difficult to secure due to the strong separation between extracurricular activities and school, in terms of both the times of days when they take place and the administrations governing them. Ultimately, the research team was constrained by this limitation and was unable to overcome it. Yet some teachers are very interested in food and are even involved in educational projects on the topic. If they took part in the MCA programme and the city of Montpellier's food policy, they could play an active role in this innovation towards more sustainable food.

5.4.1.2 Learnings about the preparation of the workshops

The preparation of the workshops could have been improved to facilitate the participants' contribution to the mapping, and consequently facilitate the analysis work performed by the research team. It appears crucial to very precisely define the different activities discussed during the workshops, so as to be able to easily explain them to the participants and avoid any ambiguity in the formulation of the impacts. Moreover, as mentioned above, the first workshop produced raw material that could not really be considered as IP maps, but only maps of impacts, without intermediate effects or causality chains.

To focus the discussion more directly on IPs, or even the barriers, levers, and conditions of success, and thus make better use of the workshop time, it would be more beneficial to prepare the IPs upstream, perhaps with the MCA programme designer, and to have them discussed and validated collectively during the workshop. The participants could thus be shown IP maps—at least the most obvious ones. Finally, a phrasing rule could also facilitate the post-workshop analysis significantly, namely asking the participant to systematically define the impacts following this simple formula: *who/what does what to who/what?*

Both the FPD and the research team saw the second Urbal workshop as a good opportunity to collectively explore the conditions required to scale out the programme. It is important to note, however, that this was optional and that other topics could be explored, depending on the context in which the innovation is deployed.

5.4.1.3 Summary of the methodological and conceptual recommendations to facilitate the mapping of impact pathways

The IP analysis highlights the inputs, outputs, outcomes, and impacts of an action. To facilitate the IP analysis, we recommend categorizing *inputs* as either *conditions of implementation* (i.e., necessarily required to implement the activity)

or *implementation facilitators* (i.e., not required but conducive to implementation), and to identify whether they are *context-related, material, or organizational inputs*. For the *outputs and outcomes step*, we recommend specifying which group of actors they affect, and categorizing them as either *positive or negative effects*. In addition to this, negative effects should be categorized as either *avoidable or unavoidable effects*, in order to subsequently identify how the former could be avoided, and how the latter could be alleviated. As a *last step in the analysis of impacts*, we recommend *identifying the sub-dimensions* that could be affected by the activities targeting each sustainability dimension. As much as possible, the set of sub-dimensions identified should be standardized across the different activities studied, to make the maps easier to read. Finally, we recommend identifying the *barriers and enablers associated with each IP* and categorizing them as 1) *conditions of success* (required to reach the expected impact), 2) *impact facilitators* (not necessary to reach the impact but conducive to achieving it), or 3) *barriers* (i.e., factors that limit the efficacy/performance of the programme).

5.4.2   *Learnings and prospects for the MCA stakeholders*

5.4.2.1   *Learnings on the impact pathways of the MCA programme*

The Urbal approach allowed the research team to identify the different groups of actors directly or indirectly impacted by the MCA actions. While children and canteen staff were the most directly affected by the programme, intermediate effects and impacts reached a wider pool of actors, in particular parents. The programme has the potential to have an effect on the five dimensions of sustainability, especially the environmental and social dimensions. The analysis highlighted that most negative impacts categorized as "avoidable" pertain to the governance dimension, and mainly involve a loss of confidence in the school canteen quality caused by a lack of understanding of the activities implemented. Clearly informing the actors (children, parents, canteen staff) about the objectives and expected benefits of each activity implemented was thus identified as a major condition of success. This in turn underscored the decisive role of canteen staff—as key points of contact for children and parents—in ensuring the programme's success. When discussing ways of improving communication and the information on the programme, participants showed a strong interest in forming a multi-actor committee bringing together all school canteen stakeholders. The IP analysis also highlighted the complementarity of different MCA activities, which particularly allowed for balancing the cost of the programme by combining activities involving higher costs with ones that afford budget savings. Furthermore, complementarity was found to mutually enhance the results of different activities, or to offset negative effects with positive effects, either within a same activity or across several activities.

5.4.2.2   *After the impact pathway mapping: Identifying indicators for a quantitative assessment of impact*

For stakeholders requiring a quantitative evaluation system, the in-depth and nuanced analysis, using collective intelligence, of the processes of change induced by a programme (IPs) can play an important role in the preparation or improvement of quantitative sustainability assessments (Chapter 10). The development of a standardized quantitative evaluation framework to document and monitor the impacts of MCA, and if necessary adjust actions, was requested by the FPD. Quantified indicators carry great weight in the evaluation of public policies. But the core question remains: what should be measured and how? The Urbal qualitative approach helps to answer this question by identifying socially relevant indicators. Focusing on the processes of change rather than on the results, and building on multi-stakeholder dialogue, the Urbal approach can guide the choice of indicators by prioritizing certain key elements that support or hamper the achievement of sustainability objectives, and by taking into account the context and the views of stakeholders.

The FPD already had a basic set of indicators to assess the results of the MCA programme, and intended to demonstrate the implemented actions' alignment with and contribution to the multi-scale normative frameworks on food sustainability to which it has committed, including the agri-food policy of Montpellier (called P2A, "*politique agroécologique et alimentaire*"), the French Food law (EGalim), and the Milan Urban Food Policy Pact.

To meet the FPD's needs, it therefore seemed valuable to test the usefulness of the knowledge acquired through the application of the Urbal approach by refining a set of existing MCA indicators, so as to enhance their relevance and better align them with the three abovementioned normative frameworks. The last chapter (Chapter 11) of this book discusses the study of the use of Urbal results to guide the development of relevant indicators, and the experiment conducted around Ma Cantine Autrement.

Acknowlegment

Note

1 The Markets of National Interest ("*Marchés d'intérêt national*", MINs) are wholesale markets located near major cities. There are about 20 such markets in France. The MIN status, created in 1953, is a public service status. The management of MINs can be carried out directly by a public authority, or it can be delegated to a public or private actor. The best-known MIN is that of Rungis, which supplies Paris and the Ile-de-France region. The Montpellier MIN was created in 1965.

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