INTERNATIONAL FOOD WASTE COALITION
The EU-based International Food Waste Coalition (IFWC) is a multi-stakeholder initiative within the food-service industry, which aims to tackle the issue of food waste along the food supply (value) chain.

The association launched SKOOL (School Kitchen Optimisation, Organisation and Learning) in June 2015. It is the first programme of its kind: to build a school food value chain, where all players, from the food producers to the kitchen to the consumers, are involved in reducing or avoiding food waste. It is estimated that one child wastes around 17 kg of food during the course of one school year, and it is also children who can potentially change this in the future. The SKOOL programme is based on three related projects which aim to combat food waste and food loss along the school food chain:

1. Children’s Awareness
2. Food Optimisation
3. Value Chain Collaboration

**PILOT PHASE**
- SEPT. 2015 TO AUG. 2016
  - Test the tools that have been developed and integrate feedback

**EXTENSION PHASE**
- SEPT. 2016 TO AUG. 2017
  - Extend the number of sites and improve implementation, based on the feedback received

**ROLL OUT**
- SEPT. 2017
  - Programme freely accessible on a dedicated platform
  - Achieve global reach and global impact
THE PILOT PHASE TOOK PLACE IN FRANCE, ITALY AND THE UNITED KINGDOM BEFORE BEING EXTENDED ELSEWHERE ACROSS EUROPE:

Pilot phase duration: January to July 2016

**6 schools and 6 kitchens** involved

- Total number of children from 5 to 18 years old in the schools involved: 2,896
- 7,260 meals produced every day in kitchens involved in the pilot phase
- Amount of food estimated to have been produced during the programme: **114.4 tons**, corresponding to **286,100 meals served** during the days recorded at the sites.

Total food waste recorded in this time period: 14.3 tonnes - the equivalent environmental footprint of

- 26.6 tonnes of CO₂ emissions (emissions for the annual electricity consumption of 18 European households)
- the water equivalent of filling six Olympic-sized swimming pools

**OUTCOMES FROM THE PILOT**

A comprehensive education and kitchen package produced in three languages.

- 75% of kitchen and cafeteria staff trained in a food waste measuring and reporting system (powered by LeanPath)
- **1,392 children directly impacted; i.e., 48% of children within our scope.**
- 4,872 family members reached indirectly, and another 1,443 children also reached indirectly
- An average trend of **12% global food waste reduction** achieved by the sites from February to July:
  - Almost two tonnes of food waste avoided
  - The equivalent of 3,382 meals saved (an estimated €6,300 in monetary value)

Food Waste figures from the schools are available on request.

<table>
<thead>
<tr>
<th>STAGE²</th>
<th>AVERAGE # DAYS RECORDED</th>
<th>DAILY # OF MEALS</th>
<th>FOOD WASTE % OF MEAL</th>
<th>FOOD WASTE TREND OVER THE PILOT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRE-CONSUMER FOOD WASTE</strong></td>
<td>54</td>
<td>7,310</td>
<td>6%</td>
<td>- 12%</td>
</tr>
<tr>
<td><strong>POST-CONSUMER FOOD WASTE</strong></td>
<td>38</td>
<td>3,380</td>
<td>19%</td>
<td>- 11%</td>
</tr>
</tbody>
</table>

² Definitions of pre and post-consumer food waste is given p. 19 of this report
FOOD WASTE ANALYSIS

Three main reasons account for 98% of the food wasted in kitchens: estimation of amounts needed 51%, trimming waste 30%, and overproduction 17%.

Many different factors related to the consumption behaviour of the children and a lack of organisation and tools make estimating a daily challenge for kitchen staff. The most wasted type of food at the pre-consumer level is vegetables (26%), of which 87% is due to trimming. The second most wasted item is compound salad (7%), of which 81% is caused by mistakes in estimating the amount needed.

**TOP WASTE FOODS (WEIGHT)**

- **Vegetables**: 1500 kg
- **Compound Salad**: 1000 kg
- **Bread**: 900 kg
- **Pasta**: 800 kg
- **Melons**: 700 kg
- **Mixed Food with Meat**: 600 kg
- **Sauce**: 500 kg
- **Fruit**: 400 kg
- **Broth**: 300 kg
- **Soup-Vegetarian-Pasta**: 200 kg

The **lowest post-consumer waste** was recorded in a school where children from 11 to 18 years old pay for what they consume at the cafeteria every day, have multiple menu choices and choose their own portion size.

The **lowest pre-consumer waste** was recorded in a central kitchen producing **standardised and pre-packed meals**. The kitchen with the highest volume of pre-consumer waste had both multiple menu choices and the most difficulty with estimating the amounts needed (as the eldest pupils were able to choose each day whether to eat at the cafeteria or not).
3
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GOALS OF THE EXTENSION PHASE
PREPARATION FOR THE ROLL-OUT PHASE
The International Food Waste Coalition (IFWC) is a collaborative, farm-to-plate approach that aims to reduce food waste throughout the food-services value chain.

The coalition was born when Ardo, McCain, PepsiCo, SCA, Sodexo, Unilever Food Services and WWF all agreed to work together on the challenge of reducing food waste right along the food supply chain.

An inaugural meeting was held in Brussels, which brought together the founding members with a common aim and ambition: to join forces to reduce food waste. All the members were already taking separate action on this in their own businesses, but all also agreed that they should combine their efforts to have a wider impact. The objective was to create a collaborative approach across the field-to-plate value chain and beyond instead of simply creating a think tank. There were to be no unrealistic goals or promises, but instead a step-by-step process: small, concrete, measurable actions. The key principles were established with integrity and transparency at their heart, setting commercial interests to one side. A common mission was thus established: To work to reduce food waste throughout the food service value chain.

In line with this mission and the members’ combined areas of expertise, it was decided to focus efforts on fighting food waste associated with meals made outside the home, starting in Europe.

Three main aims were defined to guide the group’s activities and to take them forwards:

- To promote value chain collaboration
- To develop and implement action-orientated programmes, and
- To participate in debates and to drive decision-making.
A strategic approach was then defined, centred around these three aims. All the things that people throw away have one thing in common: they no longer see any value in them. The same goes for the food they waste. As long as people do not see food’s intrinsic worth, then it will continue to be wasted. Turning this around and fighting food waste requires people getting to know, see, experience and feel the value of food.

The strategic principle of the IFWC is as simple as it is far-reaching:

**Bring back the true value of food**

- Develop and implement action-oriented programmes
- Promote value chain collaboration
- Participate in debates and drive decision-making

The International Food Waste Coalition (IFWC) was officially created on 28th April 2015 under the international not-for-profit status and under Belgian law, being based in Brussels.
SKOOL, AN ACTION-ORIENTED PROGRAMME

PROGRAMME CONTEXT

The final SKOOL programme was the result of much lengthy discussion between the founding members. Once a clear vision and clear goals were set for the IFWC, the members wanted to launch its first action-oriented programme. They all agreed on two things at the start of the discussion: firstly, they should not try to reinvent the wheel and secondly, that any activities planned should reach out to the future generation and provide them with the knowledge to be aware of the true value of their food. Some trends and studies also influenced the choices that were made:

- An increasing demand in the public and private sectors for solutions to reduce food waste (including clients’ requests);
- Prevention being the best way to fight food waste and save money;
- Awareness & measurement being the most effective solutions;
- Prevention often requires collaboration and the spreading of costs, and benefits, across a number of stakeholders.

Based on this, the IFWC launched its first pilot project in schools. The coalition was aware that schools throw away massive quantities of food every day and that children are not totally aware of the issue, or what they can do to fight it. In total, almost one fourth of every child’s plate of food at the cafeteria ends up in the bin. A child can waste around 17 kg of food over one year at school. This is why children can make a huge difference. They are not only the best ambassadors of change for a better future, but they are also key players in potentially reducing food waste today. In addition, the opinion of the IFWC is that formal education, particularly reaching out to young people in schools, is key to reducing household food waste in the long term.

The coalition is also aware that any solutions to reduce food waste at school rely on the cooperation of the kitchen staff and all the participants along the whole food chain, in order to also provide kids with the best meals. Thus, it was important to address all aspects of food waste at school; not just educational, but also in collaboration with kitchens and cafeterias, and all those involved in food right along the food chain. We reviewed the existing tools and techniques for addressing this issue, and focused on how we could improve them and build on them.

Children (...) are also key players in reducing food waste today.
The FAO-IFWC partnership

The Food and Agriculture Organisation of the United Nations (FAO), had started to work on food waste education tools for children from 5 to 18 years old. It was a great opportunity to share our expertise and to join our fight against food waste. The FAO and the IFWC share a common vision of a future with less Food Loss and Waste (FLW). At the start of 2016, we decided to work together on this through joint collaborative actions in the field, such as SKOOL and other FLW reduction initiatives. We signed a partnership agreement aimed at reducing and preventing food loss and waste and its subsequent negative impact on people, natural resources and the environment, at local, national and global levels along the whole food supply chain.
SKOOL,
A COLLABORATIVE ADVENTURE
SKOOL is our first action-driven programme to help schools adopt a comprehensive approach to reducing food waste, and to enable children to play a part in this.

Through SKOOL, we are now building this comprehensive approach. Our ambition is to deliver targeted packages to those involved along the value chain - to educational teams, to cafeteria and to kitchen staff - on implementing methods to reduce waste along the whole food chain.

The SKOOL programme is based on three linked projects to address food waste and loss along the food chain:

1. **CHILDREN’S AWARENESS**
2. **FOOD OPTIMISATION**
3. **VALUE CHAIN COLLABORATION**

**RETHINK PROCESS AND PRACTICES**

**BRING BACK THE TRUE VALUE OF FOOD**

**LEVERAGE THE POWER OF THE VALUE CHAIN**
SCHOOLS WHICH IMPLEMENT ALL THREE PROJECTS, THUS TAKING A COMPREHENSIVE APPROACH TO REDUCE FOOD WASTE, WILL MAXIMISE THEIR OVERALL IMPACT.
SKOOL PROJECT

TIMELINE

<table>
<thead>
<tr>
<th>SEPT. 2015 TO AUG. 2016</th>
<th>SEPT. 2016 TO AUG. 2017</th>
<th>SEPT. 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>PILOT PHASE</td>
<td>EXTENSION PHASE</td>
<td>ROLL OUT</td>
</tr>
<tr>
<td>TEST THE TOOLS DEVELOPED AND INTEGRATE FEEDBACK</td>
<td>EXTEND THE NUMBER OF SITES AND IMPROVE IMPLEMENTATION BASED ON FEEDBACK</td>
<td>PROGRAMME FREELY ACCESSIBLE ON A DEDICATED PLATFORM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GLOBAL REACH AND GLOBAL IMPACT</td>
</tr>
</tbody>
</table>

SKOOL GOALS

Based on the IFWC approach to food waste, the SKOOL programme aims to:

- Create a food waste reduction ecosystem by facilitating connections, synergies and collaboration between relevant stakeholders;
- Provide resources, technical support and visibility to food waste initiatives and programmes;
- Facilitate access to the sites involved in pilot food waste initiatives and coordinate their implementation;
- Build and implement innovative projects with a distinctive value chain approach using relevant existing tools;
- Duplicate replicable programmes and share them globally;
- Reach a significant level of impact in order to communicate and influence the debate.
The IFWC’s mission is to reduce food waste by actively enabling and supporting collaboration between all the players and participants involved in the food value chain, and to act as a catalyst between them to identify ways of avoiding or reducing food waste. The coalition will facilitate this collaboration, and thus connect those involved in the food industry.

Its access to multiple players all the way along the food supply chain, means that the IWFC is uniquely placed to provide the opportunity for measuring, monitoring and reducing food losses at every step of the production and service processes.

In addition, the IFWC’s SKOOL programme, by operating within schools, can engage with young people and hopefully influence the next generation in the value that it places upon its food – in re-establishing the true value of food.
SKOOL PILOT PHASE

To test the SKOOL programme in different contexts, the IFWC team decided to launch a pilot phase in three European countries. The rest of this report documents how this launch was carried out, the challenges it faced, its results, and the conclusions that were drawn from these.

The objective of the pilot phase was to test our three-project model to see if it could be duplicated later by any school. As one of our members and our main partner on the SKOOL project, Sodexo opened its doors to identify sites where school and kitchen teams were the most demanding and were also keen to address food waste issues.

SCOPE OF PILOT PHASE AND NUMBERS

Three countries were chosen, in order to cover different food behaviours and habits (France, Italy and the United Kingdom) before the programme was extended further across Europe.

- Pilot phase duration: January to July 2016
- 6 schools (state & private) and 6 kitchens (central & on-site) were involved
- Total of 2,896 children from 5 to 18 years old in the schools involved
- Average total number of meals produced every day by kitchens of the pilot:
  - 2,560 (for four kitchens that started tracking food waste in February)
  - + 3,600 + 1,100 for two central kitchens that started tracking food waste later in May
- Food production estimate during the programme: **114.4 tonnes**, corresponding to an average weight of 400g per meal for 286,100 meals served during days recorded on sites.
- **Total food waste recorded**: **14.3 tonnes**.

Pilot phase: environmental footprint of food waste:

- 26.6 tonnes of CO2 emissions (emissions corresponding to the average annual electricity consumption of 18 European households).
- The water equivalent of filling six Olympic swimming pools.

It is important to bear in mind that it is not only edible food, but also inedible elements, such as chicken bones, banana peel, and commonly discarded food, such as fat from meat, fish skin, etc., that is recorded in the food waste total. We should also note that the SKOOL project was not able to measure food waste that occurred up-stream from the kitchens; the food waste measurements therefore only record food wasted in kitchens and cafeterias, from the children’s plates.

**DEFINITION:**

**Pre-consumer food waste** denotes every kind of food waste, avoidable or not, edible or not, that has not been served to a consumer, and every item thrown away by food service workers, from stock to preparation waste and overproduction.

**Post-consumer food waste** denotes every kind of food waste generated at consumer level (also called plate waste) and measured in cafeterias.
PILOT PROGRAMME LAUNCH

In the following section, the pilot phase and its implementation will be presented in more detail, as well as the outcomes reached by the sites, and the lessons learnt.

INSTALLING THE SKOOL PROGRAMME AT PILOT SITES

Once the sites had been identified and all the information to do with their configuration had been recorded (number of meals produced every day, type of kitchen, age groups of pupils at school, number of pupils, extra-curricular or class time dedicated to the programme, etc.), we presented our collaboration plan to get both the educational and kitchen teams involved.

Together with the site managers and educational coordinators, we agreed to implement the three projects at the same time, from January until the end of the school year. This was done as follows:

- **Measure** kitchen (pre-consumer) food waste and cafeteria (post-consumer) food waste every day. Collaborate with the IFWC to analyse this and identify actions that can be taken to reduce food waste, then test these actions and assess their success.

- **Implement** the educational project within the school to **raise children’s awareness** and measure the impact on food waste at the cafeteria.

- **Initiate dialogue** among selected players in the food chain to identify opportunities for collaboration to implement actions to reduce food waste right along the food chain.

We were then able to test and improve the SKOOL programme with all the stakeholder feedback on board, at the end of the pilot. We gave each site manager a **GENERAL DASHBOARD**, i.e., an Excel spreadsheet document designed to help the schools organise and plan initiatives on education and ways of reducing food waste during their implementation of the programme.

**We then organised launch days for each site with an IFWC representative in attendance.**
Launch with kitchen team, key points:

- We discussed why we consider food waste to be an important issue and how the programme can help schools to address this effectively.

- We trained the staff to use the computer tablets provided by LeanPath4 to record all food waste being thrown out in the kitchen. We identified and defined the role of the “food optimisation coordinator”.

- **Action 1:** Measurement methodology: when food is about to be discarded, it must be weighed and the item logged (meat, vegetables, rice, etc.) as well as the reason for the waste (spoiled, trim waste, overproduction, etc.).
  - **Who:** every member of staff handling food
  - **When:** every day during production time
  - **Scope:** all food waste generated in the kitchen, edible or not
  - **Means:** tablet guide: “How and what to track guide” for staff.

- **Action 2:** Consistent collaboration with the IFWC to monitor and reduce food waste through the testing of specific actions attempting to reduce the waste.
  - **Who:** chef and site manager
  - **When:** every 1-2 months after food waste report discussion and analysis.
  - **Means:** monthly report on food waste analysis (where and why food waste occurs), either via a call or a SKOOL project manager visit on site.

- Posters were given to the kitchens to remind staff of their commitments and the key issues to bear in mind when tackling food waste.

- **Action 3:** Staff trained to weigh pupils’ food waste from the cafeteria.
  - **Who:** cafeteria or kitchen staff, depending on the organisation, and sometimes the children, as a means of making them feel involved
  - **When:** every day at lunch
  - **Means:** scales to weigh food waste bags and tablet to record data. Some sites could even weigh starter / main course / dessert / bread separately.

4LeanPath is a tracking and monitoring automated system: http://www.leanpath.com/
Launch with educational team - key points:

- Presentation of the teaching materials being provided to schools. These are adapted to three main age groups (5 – 9 years, 10 – 13 years and 14+ years) and include a complete teaching guide to help teachers/educators to use the materials.

- **1 presentation:**
  An illustrated story with an accompanying text [voice-over] to help children understand food waste and related issues such as the consumption of natural resources, climate change, hunger, and biodiversity- PDF / PPT / BOOK format – printable – 45 minutes– 1 hour;

- **Between 5 and 7 follow-up activities**
  pdf / word format - printable, time resource needed depends on the ways they are used

- **videos**
  to show in class, at lunch or during special events – 5 minute format.

These teaching materials can **be implemented in a flexible manner** and integrated into several academic courses. In the pilot, schools were free to decide when and how to implement the programme:

- **Class and/or extra-curricular time**

- **With all /some classes or groups of children**

- We defined the presentation with a voice-over as being the minimum tool to use to raise the children’s awareness. Follow-up activities and projects were considered to be additional means to help children learn how to create less waste. Teachers and educators were free to develop the activities in ways that were creative, challenging, and motivating.
We [the IFWC team] provided various communication media tools to encourage the children’s participation, as we considered it was important to remind them regularly of the key messages to reduce food waste at the cafeteria. These comprised:

- **Poster** templates to communicate and help the children to monitor their own food waste performance - PPT / Printable.

- **Monitoring of food waste performance**: an Excel document that helps schools to monitor their food waste performance and calculate the different indicators to be communicated to the children - Excel worksheet.

- **5 posters** to share the programme’s messages with the children and to support long-term communication, to be displayed in the cafeteria; and 1 EDUCATIONAL POSTER for the classrooms - A3 / A4 – printable.

- **Printed napkins** offered by IFWC member SCA, to carry messages on food waste reduction to remind the children at lunchtimes - 3 models.

Once training was completed, we began to implement the programme. After training, staff in the kitchens were given a one-week period to get used to the tracking process, and then data were recorded online from then on, until the end of the school year. Food waste baselines for both pre- and post-consumer waste were set, based on the first month of recorded data.
IMPLEMENTATION AT SITES, AND THE OUTCOMES

Next, we will take a closer look at the site descriptions to get a better understanding of the different project contexts and outcomes. This section describes the main results achieved in reducing food waste at both pre- and post-consumer levels. It also includes an interpretation of child awareness practices that could have impacted post-consumer food waste.

ITALY

SITE 1: MUNICIPALITY OF CALCINATO

FOOD LOSS AND WASTE DATA ANALYSIS FROM FEBRUARY 1 TO JUNE 1.

<table>
<thead>
<tr>
<th></th>
<th>PERCENTAGE OF THE MEAL’S WEIGHT WASTED</th>
<th>TREND COMPARED TO FIRST MONTH’S BASELINE</th>
<th>NUMBER OF DAYS RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-CONSUMER WASTE</td>
<td>6%</td>
<td>- 22 %</td>
<td>72</td>
</tr>
<tr>
<td>POST-CONSUMER WASTE</td>
<td>31%</td>
<td>+ 4 %</td>
<td>73</td>
</tr>
</tbody>
</table>

CRISTINA CANETTI, SITE MANAGER, CALCINATO KITCHEN

We hope to show the data recorded to the client in future, in order to propose changes to the menus and replace the recipes that are less appreciated with other equally balanced recipes which are liked better by the children. This would help us reduce our food waste even more.
The great results achieved by Calcinato team (a reduction of 22% in pre-consumer food waste over the period) were due to the staff’s great commitment to the food waste tracking process.

It was quickly and fully integrated and led by the Chef. He received excellent support from a coordinator who checked the food waste items written in by each staff member on the sheet she provided every day. Whenever the data recorded did not make sense; for example, if one menu item that she knew should have generated food waste, was not written in, the coordinator would ask the person in charge of the item how it had been processed.
Post-consumer waste accounts for 85% of total food waste at the Calcinato site.

Note that in Calcinato, of the 380 meals produced daily and fully integrated in the pre-consumer food waste measurement, SKOOL measured post-consumer food waste for only 160 meals served at the Ponte San Marco school where, unlike some other sites:

- Bread was mainly recorded as post-consumer waste, of which it accounted for 15%.
- All food that went out of the kitchen unserved was more likely to be recorded as post-consumer rather than pre-consumer food waste.

The kitchen team will use the post-consumer waste data to propose changes in the menu to the municipality, to match the children’s tastes better.
In regard to children’s awareness of the issue, we assumed that implementing the project with three classes out of 10 was not enough to achieve a reduction in post-consumer food waste (which actually increased slightly). There were no special events organised, neither for the whole school nor for the cafeteria. Nevertheless, we still believe that the educational aspect was a great success, because three classes dedicated four hours per week for a period of five weeks, to implementing a full educational programme on food waste. This shows that the educational package can result in a complete curricular programme.

The children worked in class with all the different components of the SKOOL educational material. They made their own posters and a booklet on food waste. They learnt about related topics, such as climate change, greenhouse gases, and biodiversity through follow-on activities delivered via the educational package. Anna, Francesca and Luigi, the teachers of the three classes involved, used the package to create their own complementary activities: role-playing games, waste follow-up activities, research on global warming and more.

FRANCESCA MUSTICA,
TEACHER AND EDUCATIONAL COORDINATOR FOR CALCINATO MUNICIPALITY

The materials are easy to use. The food super-heroes used in the presentation inspire and motivate the children. The presentation boosted the children’s motivation, and follow-on activities have inspired their teachers to create additional material.
SITE 2: MUNICIPALITY OF CARUGATE

No educational programme was implemented because January - when we launched SKOOL - was viewed to be too late for the municipality to integrate new topics into the educational curriculum.

### FOOD LOSS AND WASTE DATA ANALYSIS FROM MAY 10 TO JUNE 7.

<table>
<thead>
<tr>
<th></th>
<th>% OF THE MEAL’S WEIGHT WASTED</th>
<th>TREND COMPARED TO FIRST MONTH’S BASELINE</th>
<th>NUMBER OF DAYS RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-CONSUMER WASTE</td>
<td>5%</td>
<td>Not relevant</td>
<td>12</td>
</tr>
<tr>
<td>POST-CONSUMER WASTE, GINESTRINO CAFETERIA</td>
<td>10%</td>
<td>Not relevant</td>
<td>3</td>
</tr>
<tr>
<td>POST-CONSUMER WASTE, ROMA CAFETERIA</td>
<td>26%</td>
<td>Not relevant</td>
<td>17</td>
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</table>

We organised a kitchen training day in April, based on our experience at Calcinato. Implementation was delayed for three weeks due to technical problems (tablet configuration, electrical adapters). Although the data from the kitchen only accounted for 12 days, the food waste patterns were the same as in Calcinato. **Vegetables accounted for 72% of pre-consumer waste, and trimming was the main reason for waste.**

**Tracking pre-consumer food waste**

**Post-consumer food waste is a major issue**

We were not able to organise a visit to Carugate’s Roma cafeteria. It would be interesting to compare the lunch organisation at Ginestrino and at Roma and the levels of post-consumer food waste with the same menu.
FRANCE

SITE 3: MUNICIPALITY OF NANCY

FOOD LOSS AND WASTE DATA ANALYSIS FROM MARCH 31 TO JUNE 24.

<table>
<thead>
<tr>
<th></th>
<th>% OF THE MEAL’S WEIGHT WASTED</th>
<th>TREND COMPARED TO FIRST MONTH’S BASELINE</th>
<th>NUMBER OF DAYS RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-CONSUMER WASTE</td>
<td>2%</td>
<td>Not applicable</td>
<td>25</td>
</tr>
<tr>
<td>POST-CONSUMER WASTE, DIDION CAFETERIA,</td>
<td>33%</td>
<td>Not applicable</td>
<td>15</td>
</tr>
<tr>
<td>POST-CONSUMER WASTE, BUTHÉGNÉMONT CAFETERIA</td>
<td>22%</td>
<td>Not applicable</td>
<td>22</td>
</tr>
</tbody>
</table>

Tracking pre-consumer food waste

Nancy’s central kitchen produces meals one to three days in advance in order to optimise production and to ensure a large number of meals. To avoid meal shortages, the kitchen plans production for a minimum, (but still large), number of meals. Estimates were the only cause of pre-consumer food waste recorded in Nancy’s central kitchen. This was the smallest proportion of pre-consumer food waste observed at any pilot site.

Unlike the other kitchens, Nancy did not weigh every item that could generate food waste during the production phase, because the quantities were not considered to be significant: a few green beans left in the container, a few grammes of meat stuck in the slicing machine...

The food waste measured came from:

- **Surplus packaged meals**, after the final quantities to be delivered were communicated to the kitchen by the schools;

- **Quantities overproduced** by the kitchen for any necessary “re-adjustments”.

The difference between the two is that the first are packaged and ready to be delivered, and the latter remain in a container in a special fridge in the kitchen.

At Nancy, two meetings and training sessions were organised to explain the programme to the staff and to adapt it to the local context of a central kitchen. Next year, the role of the kitchen coordinator will be reinforced to support the team tracking food waste better, find potential solutions, set targets and assess results.
With 33% of the meal’s weight wasted, Didion cafeteria had the highest rate of post-consumer food waste in the pilot phase. No one particular reason should be inferred from this, as there were many different causes: children unable to choose their own portions, the children’s habits (how they eat bread, bringing snacks in from home, etc.), the overall atmosphere in the cafeteria, and the methodology used to measure food waste (for example, at Buthégnémont, the other cafeteria at Nancy, bread is not recorded in post-consumer waste), etc.

At Nancy, the two services of 65 pupils enabled each component of post-consumer waste to be measured separately. Feedback from the educators estimated that it took an average of 10 minutes to weigh each component of food waste separately. After each component of the meal had been served, the children collected their leftovers in the same plastic container in which they had served themselves. One child per table then took the leftovers from their table and tipped it into the appropriate bag. At the end of the meal, the eldest children weighed the bags and recorded the data using the tablet.

At both the Didion and Buthégnémont cafeterias, meat and fish protein and sauce were the main items wasted in absolute terms; however, proportionally, dairy food and starter courses were clearly the most wasted foodstuffs. For example at Didion, almost 50% of dairy was wasted. The Municipality of Nancy and its central kitchen are very interested in analysing the data to identify potential lessons on improving meal specifications to be more in line with the children’s requirements.

From our observations and exchanges with kitchen staff, we noted that specifications and tenders are often considered to be a significant cause of food waste. We therefore believe that having the ability to record the different components of post-consumer waste separately is a valuable thing. This will be recommended during the extension phase, although we know that it may not be possible to do this at every site.

At Nancy, the project to raise children’s awareness was implemented during extracurricular time, with the educators in charge of organising activities for the children. Head educators from the two schools coordinated the implementation of the programme together with their educational teams. The educators suggested that the children join the “anti-waste” club. It was not compulsory and children could participate one day and not another. “If it was sunny outside, there weren’t likely to be more than five children, but some days we had twenty.” However, all the children eating at the Buthégnémont and Didion cafeterias were told about the project and were involved during the lunchtimes in sorting and weighing their food waste.

Not all the educators had access to all SKOOL tools, and their use was limited by extracurricular time constraints. It was clear there is a need to organise and prepare all activities in advance more, in order to ease implementation in the field, i.e., print the material needed, and provide a guide to help educators organise activities with the children.

Implementing the SKOOL programme during extracurricular time provides great flexibility [i.e. it can take place every day as required, in different contexts – at school during lessons, lunchtime, in extra curricular time at school, or at home], and can fill just two hours, or up to 50. However, it also makes things harder to formalise. The educators think it would be very useful to be able to organise a breakdown of the programme with the classes, and for teachers to go into more depth to help children to understand the issues and to raise awareness amongst all the children.
ENGLAND

SITE 4: EAGLE HOUSE SCHOOL

FOOD LOSS AND WASTE DATA ANALYSIS FROM FEBRUARY 1 TO JULY 1.

<table>
<thead>
<tr>
<th></th>
<th>% OF THE MEAL’S WEIGHT</th>
<th>TREND COMPARED TO FIRST MONTH’S BASELINE</th>
<th>NUMBER OF DAYS RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-CONSUMER WASTE</td>
<td>6%</td>
<td>+ 12.5%</td>
<td>51</td>
</tr>
<tr>
<td>POST-CONSUMER WASTE</td>
<td>8%</td>
<td>- 27%</td>
<td>65</td>
</tr>
</tbody>
</table>

Tracking pre-consumer food waste

At Eagle House, the Head Chef had already tried to reduce food waste by trying to re-use what had not been served, and to maintain it in cold chain for the next meal, since it is a boarding school. The big challenge when dealing with multiple-choice menus is to anticipate the children’s choices; perfectly accurate anticipation is impossible, but communication with the school to know about the activities planned, impact of weather, knowledge of children tastes, etc. are key. At Eagle House, the first month’s baseline is pretty low. We can either assume that little-by-little, the measuring process has become more accurate and exhaustive, or that, at the end of the year when the weather is more pleasant, the children prefer to eat quickly, which makes estimating harder. This goes some way towards explaining why pre-consumer food waste increased slightly over this period.
Post-consumer food waste, as a percentage of total food waste, is 70%; however, corresponding to 8% of the meal’s weight, it is the second lowest post-consumer food waste rate from the pilot schemes.

This means that clean plates at Eagle House are not the exception. This is due to many factors, among them:

- **Staff engagement at the counter and at the table to help children choose the right portion sizes.** Cafeteria staff reminded the children when they passed through the counter, that it is better to choose the right portion size for them rather than simply a very big portion.

- **The SKOOL programme was completed, together with activities to raise children’s awareness across the whole school.**

The significant post-consumer waste reduction (~27%) is almost certainly due to the programme being deployed across the whole school:
The teachers involved used the teaching materials in class to help the children to get a global understanding of the food waste issue. Then, the children in the whole school got involved in the programme for a period of one week. At the main school assembly, the Headteacher presented some information on global food waste and the status of food waste in their school to the children. They were also presented with tools to reduce their food waste and information about what they would be learning over the week. The presentation launched the "Make a difference week – Action against food waste”. All the children participated during the week:

- **Years 5 - 8 (9–13 year olds):** a one-hour workshop and discussions about food production, the problems associated with waste for the individual, shops, manufacturers, farmers and the planet, and what we can do to help.

- **Various areas of the curriculum looking at the subject of food, and where it comes from, etc.** The Art and Design Department looked at slogans and posters to promote the topic.

- **Years 1 - 4 (5-8 years old):** 30 minutes to one hour of talking about the issues and producing posters, etc.

- **Ongoing updates in the cafeteria and in assemblies about how the school manages its food waste.**

- **Pre-Prep competition to see which tables had the cleanest plates at lunch.** Senior pupils worked towards reducing their waste. They could receive rewards when they cleaned their plates. They also carried out food waste activities (calculation of the miles travelled by products in a typical family’s shopping bag for example).

Organising this week-long event for the whole school was a great success:
Post-consumer waste decreased by 25% during the week and the week after, compared to the baseline.

A letter was sent to parents about the initiative and how home and school could help. This is also key, as we know that parents and what is done and said at home has a major impact on changing children’s behaviour.
SITE 5: EMMANUEL SCHOOL

FOOD LOSS AND WASTE DATA ANALYSIS FROM FEBRUARY 1 TO JULY 1.

<table>
<thead>
<tr>
<th></th>
<th>PERCENTAGE OF THE MEAL’S WEIGHT</th>
<th>TREND COMPARED TO FIRST MONTH’S BASELINE</th>
<th>NUMBER OF DAYS RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-CONSUMER WASTE</td>
<td>16%</td>
<td>- 12%</td>
<td>79</td>
</tr>
<tr>
<td>POST-CONSUMER WASTE</td>
<td>13%</td>
<td>- 8.4%</td>
<td>70</td>
</tr>
</tbody>
</table>

Tracking pre-consumer food waste

Around 16% of the weight of the meal is wasted in the Emanuel kitchen. This is the most significant rate for the pilot schemes, for which the average was around 5%. First of all, 20% of Emanuel’s pre-consumer waste comes from food waste that is not measured at other sites, such as broth, sauce and soup. Of all the pilot sites, Emanuel’s kitchen staff has certainly been the most precise regarding the implementation of the food waste tracking methodology. Then, there is the estimation issue, and the fact that Emanuel has the biggest on-site kitchen of the pilot schemes, and is the only school located in the town where teachers and the older pupils can have lunch outside. Finally, as with other on-site kitchens, Emanuel is committed to cooking fresh food, thus generating trim waste, especially from vegetables.

Emanuel staff achieved a 12% pre-consumer food waste reduction during the pilot. They made themselves available to identify and implement actions to reduce food waste, together with the IFWC, to be tested at the end of the pilot.

We proceeded to implement the following actions to reduce food waste on site:

- Sending of data analysis reports to site managers and to chefs to highlight topics with the highest potential for reducing food waste;
- Discussions on relevance and feasibility;
- Agreement on actions to be tested and target setting.

CURTIS JOHNSON,
CHEF AT THE EMMANUEL KITCHEN

The tracking system has proven effective and has helped us get an accurate idea of what we waste and why.
Below is an outline of what was agreed in June, for testing during July at Emanuel:

**BREAD**
Bread waste appears 48 times out of the 60 days of FOOD WASTE recording. Average weight of bread wasted every day = 3.5 kg

**REASONS:**
- Over production = 62 kg
- Estimation = 101 kg
- Spoiled = 3 kg

**ACTIONS:**
- Try to optimise the quantity of home-baked bread produced;
- Implement a weekly test with reduced quantities to make sure that children will not be missing out on bread;
- Find processes to systematically adapt the quantity produced to the type of meal;
- Set a reduction target.

**COMPOUND SALAD ANALYSIS, AND SUGGESTIONS TO BE SHARED WITH THE EMANUEL SCHOOL AUTHORITY:**
Compound salad waste appears 41 times out of the 60 days of food waste recorded. Average weight of compound salad wasted every day = 7.2 kg

**REASONS:**
- Over production = 63 kg
- Estimation = 244 kg

We can investigate more thoroughly the different causes which can impact compound salad waste, in order to identify effective solutions to suggest and test.

**ACTIONS:**
- Focus on two favourite compound salads instead of three; make suggestion to the Emanuel school authority
- Experiment with Just-in-Time production to avoid inefficient refills.

A discussion of the report with the Site Manager and Chefs led us to believe that we should not propose action on vegetable trim waste as a priority:

**TRIM WASTE FROM VEGETABLES IS DEFINITELY NOT A PRIORITY ACTION AND SHOULD NOT BE AN ACTION WE FOCUS ON. REASONS AGREED FOR THIS STATEMENT:**
- Trim waste is necessary; one would not eat an onion with its skin on;
- The kitchen is dedicated to cooking fresh food and thus produces more vegetable trim waste as a result;
- The nutritional value of trim waste is variable.

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Frame p. 48 of this report gives more details about issue related to trimming and food waste measurement.
Testing these kind of methods to reduce waste caused a shortage of bread and pasta once or twice. It is very important to inform parents, children and the school staff that, although shortages can happen very occasionally when testing specific activities to reduce food waste, the ultimate goal is to find out how we can avoid wasting food and obviously is not to promote scarcity at the cafeteria. However, if ambitious food waste reduction targets are to be set, this will necessarily cause changes in the way counters are refilled and in people’s behaviour.

Emanuel School reduced its post-consumer food waste by 8% during the pilot phase, achieving a low proportion of the meal as waste (13%).

Unfortunately, the teachers at Emanuel could not go any further with the programme as time for individual pupils was limited from April onwards, since classes were working towards their summer exams.

When time in class is not available, the programme can still be implemented in an effective way, provided that projects are launched at the whole-school level to get pupils involved.

We should learn from the Emanuel case: the school’s pupils achieved a 17% decrease in post-consumer waste without using the teaching materials. They relied on activities during the lunch period such as:

- Advertising the Waste Less Week in the School Newsletter and setting up two competitions to encourage pupil participation:
  - A competition for senior pupils – Tweet a photo of your empty plate to @2EatEmanuel to win a tuck shop or café voucher;
  - A competition for junior pupils – Every time you clear your plate, sign the board to win the prize draw for a tuck shop or skip-the-queue voucher;

- Staff were briefed to encourage pupils to ask for smaller portions and to eat everything on their plates;

- Each day, the kitchen staff measured plate food waste, recorded the results and posted them in the cafeteria.

This shows how important it can be to encourage and set incentives for children during their lunch break.
### SITE 6: WEST KIRBY GRAMMAR SCHOOL

**FOOD LOSS AND WASTE DATA ANALYSIS FROM FEBRUARY 1 TO JULY 1.**

<table>
<thead>
<tr>
<th></th>
<th>PERCENTAGE OF THE MEAL’S WEIGHT</th>
<th>TREND COMPARED TO FIRST MONTH’S BASELINE</th>
<th>NUMBER OF DAYS RECORDED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRE-CONSUMER WASTE</strong></td>
<td>3%</td>
<td>- 26 %</td>
<td>82</td>
</tr>
<tr>
<td><strong>POST-CONSUMER CAFETERIA OF GINESTRINO</strong></td>
<td>5%</td>
<td>- 8 %</td>
<td>37</td>
</tr>
</tbody>
</table>

**Tracking pre-consumer food waste**

West Kirby had the lowest on-site rate of kitchen pre-consumer food waste and the lowest rate of post-consumer food waste of the pilot scheme.

In the kitchen, the whole team got involved and food waste measurement was quickly put into daily practice. **The 82 days recorded over the period amounted to almost 95% of the time. This certainly helped the staff reach the highest rate of decrease in pre-consumer waste over the pilot (a reduction of - 26 %).**

Considering that the children can bring in their own food, estimation was logically the main cause of food waste at West Kirby. The estimation performance is the highest among the pilot schemes, considering that pupils can bring their own lunch boxes and that West Kirby offers a multiple-choice menu. As food waste was recorded mainly as a mix of food with meat, corresponding to surplus food left on the counter at the end of the meal period, we are unable to discern if the issue of estimation is more obvious for a specific item other than sandwiches.

**Post-consumer waste at West Kirby was the lowest of the pilot schemes.**

Post-consumer waste decreased by 8 %. Knowing that children who bring their own food throw away their food waste in the same bins, the proportion – already the lowest of the pilot [5 %] – of post-consumer food waste can be overestimated. We can assume that, **for teenagers, buying what they eat at the checkout counter helps to reduce post-consumer waste by increasing the perceived value of food for pupils, and making them think twice about spending money on overly large portions.**

For the project on raising children’s awareness, the materials provided acted as a launch pad for other materials that the educational coordinator looked at with groups of pupils; for example, a document on hunger sent to help pupils organise a special stand for the Personal Social Health & Economic (PSHE) day, was used as a ‘way in’ for looking at ‘junk food cafe’ projects, in which waste food is used to create dishes. The students were generally shocked by the hunger fact sheet and planned to launch a new community project in Malawi.
OVERALL OUTCOMES FROM THE PILOT

1,392 children were directly impacted, and we directly raised awareness in 48% of children in our scope.

4,872 family members indirectly reached.

75% of kitchen and cafeteria staff trained on the measurement and reporting system (powered by LeanPath).

A comprehensive educational package produced in three languages.

A detailed kitchen methodology designed in three languages.

An average 12% reduction in global food waste achieved by the site.

- Almost two tonnes of food waste avoided from February to July.
- Equivalent of 3,382 meals saved, equivalent to €6,300.

8 Households: €3529 / ton of edible food waste.
http://www.eufusions.org/phocadownload/Publications/Estimates%20of%20European%20food%20waste%20levels.pdf

Food Waste figures available from the schools:

<table>
<thead>
<tr>
<th>SITE</th>
<th>NUMBER OF DAYS RECORDED</th>
<th>DAILY NUMBER OF MEALS</th>
<th>FOOD WASTE % OF MEAL</th>
<th>FOOD WASTE TREND</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ITALY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CALCINATO KITCHEN</td>
<td>73</td>
<td>380</td>
<td>6%</td>
<td>-22%</td>
</tr>
<tr>
<td>PONTE SAN MARCO CAFETERIA</td>
<td>72</td>
<td>160</td>
<td>31%</td>
<td>4%</td>
</tr>
<tr>
<td>CARUGATE KITCHEN</td>
<td>12</td>
<td>1,100</td>
<td>5%</td>
<td>Not applicable</td>
</tr>
<tr>
<td>CARUGATE GINESTRINO CAFETERIA</td>
<td>3</td>
<td>380</td>
<td>10%</td>
<td>Not applicable</td>
</tr>
<tr>
<td>CARUGATE ROMA</td>
<td>17</td>
<td>400</td>
<td>26%</td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>UNITED KINGDOM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAGLE HOUSE KITCHEN</td>
<td>51</td>
<td>500</td>
<td>6%</td>
<td>13%</td>
</tr>
<tr>
<td>EAGLE HOUSE CAFETERIA</td>
<td>65</td>
<td>500</td>
<td>8%</td>
<td>-27%</td>
</tr>
<tr>
<td>EMANUEL KITCHEN</td>
<td>79</td>
<td>830</td>
<td>16%</td>
<td>-12%</td>
</tr>
<tr>
<td>EMANUEL CAFETERIA</td>
<td>70</td>
<td>830</td>
<td>13%</td>
<td>-8%</td>
</tr>
<tr>
<td>WEST KIRBY KITCHEN</td>
<td>82</td>
<td>850</td>
<td>3%</td>
<td>-26%</td>
</tr>
<tr>
<td>WEST KIRBY CAFETERIA</td>
<td>37</td>
<td>850</td>
<td>5%</td>
<td>-8%</td>
</tr>
<tr>
<td><strong>FRANCE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NANCY KITCHEN</td>
<td>25</td>
<td>3,650</td>
<td>2%</td>
<td>Not relevant</td>
</tr>
<tr>
<td>NANCY DIDION CAFETERIA</td>
<td>15</td>
<td>130</td>
<td>33%</td>
<td>Not relevant</td>
</tr>
<tr>
<td>NANCY BUTHÉGNÉMONT CAFETERIA</td>
<td>22</td>
<td>130</td>
<td>22%</td>
<td>Not relevant</td>
</tr>
</tbody>
</table>
A package for each project within the programme will be available for the extension phase. The three projects are all linked. They directly impact each other and therefore, are inseparable. We will present the content of each in turn, in order to facilitate greater understanding.
OUR 3 PROJECTS IN MORE DETAIL, AND WHAT WE WANT TO DELIVER
RAISING CHILDREN'S AWARENESS

THE PACKAGE

In partnership with the FAO, we developed an educational package about food waste to be used by teachers and educators in schools, available in three languages and for three different age groups.

The objective was to produce a package that would be accessible to a large audience, simple to use (depending on field constraints) and which could be used flexibly. SKOOL delivers a flexible package consisting of modules which can be implemented individually according to each school's organisational needs, ie.:

- Time available in class, sessions during lunch time, or other extra-curricular time periods;
- To be used with all school classes – some classes – group(s) of children, etc.;
- A minimum 45 minute presentation in one or multiple sessions, teaching materials integrating follow-on activities and help for teachers/educators to build interactive projects with children on food waste related issues;
- No maximum time: teaching materials and activities based around the SKOOL programme, with imagination being the only limit.

LYNNE PALMER, DEPUTY HEAD (PASTORAL) AT EAGLE HOUSE

We may want to use a simpler presentation for 6-7 year-old children to facilitate their understanding of concepts related to food waste.

For 8-9 year-old children, the teachers gathered complementary information on global warming, greenhouse gases, pollution and desertification to work on with the children. […] As teachers, we know that what we do at school needs to be backed up by actions at home in order to help children achieve a sustainable change in behaviour. Creating activities and materials to help children talk about food waste at home would allow children to become real “food waste ambassadors” in their homes.

NATACHA BRIOT, EDUCATION COORDINATOR FOR NANCY MUNICIPALITY

The package provided educators with turnkey material to work with children. This has been a precious means of support for us. We selected the teaching material that best answered our needs.
Thanks to this, children can understand food waste and its related issues, and learn new skills and practical tips to waste less food.

An important goal of the package is to provide schools with ideas and materials that are good enough to get everybody involved and to set up creative and positive projects. Such projects are essential to empower children to make a real change.

The philosophy behind the package is as follows:

1. Starting with information on food waste, children must derive real knowledge to understand why, how and what they can do to make a difference;

2. Ultimately children should experiment with specific actions, such as weighing and monitoring their food waste, a food waste diary challenge at home, eating misshapen fruits and vegetables, interviewing food banks and more, to encourage them to adopt proactive behaviour toward food waste.
GOOD PRACTICES

In the following section, we will outline good practices implemented or identified during the pilot scheme. Guidelines to implement them will be provided in the educational package.

INTERACTIVE ASSIGNMENTS

<table>
<thead>
<tr>
<th>AT HOME</th>
<th>GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOOD WASTE DIARY</td>
<td>Raise children’s awareness and knowledge</td>
</tr>
<tr>
<td></td>
<td>Involve families in the project</td>
</tr>
<tr>
<td>SHOPPING LIST WITH PARENTS</td>
<td>Implement a simple action with parents</td>
</tr>
<tr>
<td></td>
<td>Identify the child’s family needs</td>
</tr>
<tr>
<td></td>
<td>Understand meal planning principles</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IN CLASS/ AT THE CAFETERIA</th>
<th>GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>REWARD CHILDREN/TABLES/CLASSES WHEN THEY CLEAN THEIR PLATES</td>
<td>Adapt portions to each child’s needs</td>
</tr>
<tr>
<td></td>
<td>Incentivize and reward children involved</td>
</tr>
<tr>
<td></td>
<td>Reduce food waste at the cafeteria</td>
</tr>
<tr>
<td>GET CHILDREN TO WEIGH THEIR FOOD WASTE AND COMMUNICATE WEEKLY PERFORMANCE</td>
<td>Follow food waste at the cafeteria to make children feel responsible for theirs</td>
</tr>
<tr>
<td></td>
<td>Use good indicators to raise the children’s awareness about the multiple impacts of food waste</td>
</tr>
<tr>
<td></td>
<td>Help children understand their influence as an individual on global results</td>
</tr>
<tr>
<td></td>
<td>Reduce food waste</td>
</tr>
<tr>
<td>LEFTOVER RECIPES</td>
<td>Discuss in class what leftovers could be made into at home</td>
</tr>
<tr>
<td></td>
<td>Discuss how to avoid or to eat them and ask children to test out these solutions</td>
</tr>
<tr>
<td>BRING YOUR MISSHAPEN FRUITS AND VEGETABLES</td>
<td>Inform parents why they should use misshapen fruits and vegetables</td>
</tr>
<tr>
<td></td>
<td>Discover what misshapen fruits and vegetables are and where they can be found</td>
</tr>
<tr>
<td></td>
<td>Show in class that they taste the same</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AT SCHOOL</th>
<th>GOALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORGANIZE A FOOD WASTE CHALLENGE</td>
<td>Launch a whole school dynamic</td>
</tr>
<tr>
<td></td>
<td>Opportunity for creative projects</td>
</tr>
<tr>
<td></td>
<td>Measure the impacts on food waste at the cafeteria</td>
</tr>
<tr>
<td></td>
<td>Stimulate exchanges and new ideas</td>
</tr>
<tr>
<td>DESIGN A ZERO-WASTE MENU WITH THE CHEF</td>
<td>Visit the kitchen</td>
</tr>
<tr>
<td></td>
<td>Get to know the kitchen staff</td>
</tr>
<tr>
<td></td>
<td>Think of smart recipes</td>
</tr>
<tr>
<td></td>
<td>Understand health and safety rules</td>
</tr>
</tbody>
</table>
THE PACKAGE

The SKOOL project provides a package to empower school teams, in kitchens and cafeterias, to measure food waste on a daily basis. Food waste monitoring and analysis guidelines allow teams to identify specific actions to reduce food waste from the data recorded. Developed in partnership with LeanPath.

FOOD WASTE REDUCTION PACKAGE

1. FOOD WASTE TRACKING SYSTEM
2. BRIEFING NOTES FOR FW-REDUCING ACTIVITIES
3. COMMUNICATION SUPPORT
4. PACKAGE GUIDELINES

Implemented daily at:
kitchen + cafeteria

Co-designed with the IFWC and tested by kitchen staff

To help you get all stakeholders involved:
- Posters
- Templates
- Information letter

To help you implement the project
The package helps chefs, site managers and municipalities to implement a complete food waste tracking system consisting of:

1. Know what to track and how.
2. Motivating your staff and defining key roles;
3. Implementing an effective food waste monitoring system to analyse the data recorded, identifying actions needed to reduce food waste, and setting targets together with the staff;
4. Fostering collaboration with the educational team to communicate outcomes and increase children’s involvement in monitoring cafeteria food waste.

HOW LEANPATH HAS CONTRIBUTED TO THE PILOT PHASE OF SKOOL

LeanPath® is a professional solution for food services, designed to help staff track, monitor and reduce food waste. Thanks to the computer tablets used, staff were able to record and send food waste data online, and the IFWC project manager had access to every site’s data in real time. Data were processed and LeanPath online reporting software provided staff with summary graphs and indicators to identify activities designed to reduce waste.

In addition to global project management support, LeanPath provided:

- 22 tablets to address pilot and extension phase needs;
- Essential LeanPath materials, such as training content and organisation, launch day guidelines, the champion’s role and practical tips to help kitchen staff reach their goals.

The collaboration with LeanPath® has proved to be effective and has made the food optimisation package easier to implement and more far-reaching. However, the whole package delivered by the IFWC is designed to be implemented with and without LeanPath.

KEY PERFORMANCE INDICATORS (KPIS) FROM THE PILOT

- 55 kitchen and cafeteria staff trained to follow food waste using LeanPath;
- Total pre-consumer food waste was 6,783 kg (maximum total number of meals produced per day was 2,560 from February to June, and 7,310 throughout July);
- Total results since the start of the programme: 11% pre-consumer waste reduction / savings of 828 kg;
- Equivalent number of meals saved: 1,632 (data recorded from February 1 to July 1);
- Total post-consumer food waste 7,530 kg (maximum total number of meals produced per day: 2,340 from February to June and 3,380 throughout July);
- Total results since the start of the programme: 12% post-consumer waste reduction and savings of 1,012 kg;
- Meals saved equivalent 3,382 (data recorded from February 1 to July 1).

SHAUN MCDONNELL
FACILITIES MANAGER AND CHEF,
WEST KIRBY GRAMMAR SCHOOL
We get to know how the girls eat. On certain days, there are more girls coming in and eating. So there are peaks and troughs and we can gauge that. We can also gauge what the favourites are so that we can provide more of what they want.

"LeanPath is a tracking and monitoring automated system: http://www.leanpath.com/"
GOOD PRACTICES

Here we list the good practices implemented or identified during the pilot. Guidelines to implement them will be provided in the food optimisation package.

<table>
<thead>
<tr>
<th>LED BY KITCHEN STAFF</th>
<th>GOALS</th>
</tr>
</thead>
</table>
| IMPROVE ACCURACY OF ESTIMATION OF AMOUNTS NEEDED | • Develop meals cooked to order  
• Improve communication from schools and teachers about attendance |
| COOK USING LEFTOVERS AND TRIMMINGS | • Make soup from leftovers  
• Create new recipes with fruit and vegetable trimmings |
| BREAD-RELATED ACTIVITIES | • See if bread can be prepared as French toast, etc.  
• Adapt quantities to menu |
| REFILL HOTEL SERVING PANS WITH SMALLER QUANTITIES | • Avoid surplus at the salad bar and the food counter  
• Get as close to cooking-to-order as possible |
| ADAPT RECIPES | • Use food waste figures to adapt recipes and quantities |

<table>
<thead>
<tr>
<th>LED BY CAFETERIA STAFF</th>
<th>GOALS</th>
</tr>
</thead>
</table>
| PRODUCE A BOOKLET TO HELP YOUR STAFF IMPROVE THE CHILDREN’S LUNCHTIME EXPERIENCE | • Organise a calm and peaceful cafeteria  
• Make sure children ask for the right-size of portion  
• Encourage children to taste new food  
• Allow children to come to the counter a second time |
| WEIGH CAFETERIA FOOD WASTE WITH CHILDREN | • Get help from the children  
• Increase communication with the children |

<table>
<thead>
<tr>
<th>LED BY SITE MANAGER</th>
<th>GOALS</th>
</tr>
</thead>
</table>
| IMPROVE ACCURACY OF ESTIMATION OF AMOUNTS NEEDED | • Develop meals cooked to order  
• Improve communication from schools and teachers about attendance |
| PLAN FOOD WASTE MONITORING MEETINGS | • Collect food waste reduction ideas  
• Set targets with kitchen staff  
• Validate with the client  
• Implement reduction actions  
• Assess results |
| LIAISE WITH THE EDUCATION TEAM TO ORGANISE A FOOD “WASTE LESS” MENU | • Work with kitchen staff on a special menu  
• Organise activities at the cafeteria  
• Promote the activities to the children, school and parents |
| FACILITATE MENU CO-DEVELOPMENT | • Improve the food acceptance rate and then reduce plate waste  
• Get students and parents involved in the process  
• Improve sales by giving children what they like  
• Get the opportunity to explain recipes and products and share the value of food with children and parents |
VALUE CHAIN COLLABORATION

THE PACKAGE

Food waste in some areas of the food chain is actually caused in other areas. We were able to observe this during the pilot phase:

Tenders and specifications do not currently address nutrition and food waste issues in a satisfying and comprehensive way, and advocate for some requirements that do not make sense. These could be revised to give children healthy food adapted to their needs and allow the setting of ambitious food waste reduction targets at the same time.

Recipes do not take into account food waste throughout the whole value chain. When only one piece of the chicken is cooked, it is the producer’s responsibility to deal with the remaining edible parts. However, when a small part of a fennel is cooked, the other major part is trim waste. These issues can be solved through communication and value chain collaboration.

This is why the value chain approach that the IFWC has based its identity on remains a priority objective for the SKOOL programme. The SKOOL value chain collaboration package is designed to help map food waste along a school’s food chain and to build connections between the relevant stakeholders.

GUIDELINES FOR COLLABORATIVE FOOD WASTE REDUCTION

1. DISCUSSIONS ON SPECIFIC ISSUES
2. BRIEFING NOTES ON INNOVATIVE SOLUTIONS

Organised by the IWFC in some specific sites before being extended to relevant schools
Based on outcomes from the discussions, to be tested in some schools and kitchens and value chain stakeholders

The package will help schools to launch collaborative food waste reduction through:

1. Dialogue
   - What can we expect from dialogue?
   - Who should participate?
   - How can dialogues be initiated and implemented?

   and

2. Innovative solution briefing notes
   - Presentation of solutions that schools can implement
   - What are the concrete outcomes?
   - How has this been implemented elsewhere?
GLOBAL KNOWLEDGE OF FOOD WASTE AT SCHOOL DERIVED FROM THE PILOT

WHAT IS WASTED IN PILOT SCHOOLS AND WHY?

The pilot phase recorded post-consumer food waste at eight cafeterias out of 19 that received food from kitchens where pre-consumer food waste was also recorded. Thus, in the graph below, post-consumer waste accounts for 55% of the total food waste recorded. However, if we measure post- and pre-consumer waste for the same number of meals, post-consumer food waste accounts for 75% of food wasted at school.

Three reasons account for 98% of food wasted in the kitchens:

- estimation 51%
- trimming waste 30%
- overproduction 17%.

With regard to estimates, some sites are now trying to find effective ways to provide kitchen staff with accurate information, at the right time, on the number of children having lunch and their menu preferences. Overall, the issues of multiple factors impacting the children’s consumption behaviour and the lack of organisation and tools, make estimating amounts with any accuracy a real daily challenge for kitchen staff.

---

10All reasons for waste are explained in the glossary.
The foodstuff wasted most often at pre-consumer level is vegetables (26%), of which 87% is due to trimming. The second most wasted item is compound salad (7%) of which 81% is caused by mistakes in over-estimating the amounts needed.

### TOP WASTE FOODS (WEIGHT)

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables</td>
<td>1500</td>
</tr>
<tr>
<td>Compound Salad</td>
<td>800</td>
</tr>
<tr>
<td>Bread</td>
<td>600</td>
</tr>
<tr>
<td>Pasta</td>
<td>400</td>
</tr>
<tr>
<td>Melons</td>
<td>300</td>
</tr>
<tr>
<td>Mixed Food with Meat</td>
<td>200</td>
</tr>
<tr>
<td>Sauce</td>
<td>100</td>
</tr>
<tr>
<td>Fruit</td>
<td>75</td>
</tr>
<tr>
<td>Broth</td>
<td>50</td>
</tr>
<tr>
<td>Soup-vegetarian-Pasta</td>
<td>25</td>
</tr>
</tbody>
</table>

During the pilot, we measured edible and non-edible food waste together. Data would be more accurate/actionable if we could measure the two separately. This would improve the capacity for identifying the best options to reduce food waste, as well as recycling options (animal feeding, energy generation, compost). For example, regarding trimmings, this separation would help in answering questions such as: what part was avoidable and edible? In this regard, the modular approach of the FLW Standard\(^\text{11}\) should be a baseline to develop an improved measurement process.
WHAT WOULD A SCHOOL WITHOUT FOOD WASTE LOOK LIKE?

The pilot phase results showed us what a school without food waste would look like

The school would be able to implement teaching materials in class and complete them with creative activities organised during extra-curricular time. Children take the lead in co-developing a year-long project (videos inside school, school food garden, etc.). Lunch time is also used to incentivise children to play their part in reducing food waste: children who leave clean plates are rewarded, challenges organised to follow the trend in food waste, kitchen visits are arranged, and children given the opportunity to weigh their own food waste, etc.12

Parents are informed and actively engaged in the food waste reduction programme by implementing some food waste assignments with their children at home.

The school works on tenders and specifications together with chefs, nutritionists, food service providers and public services to give children healthy food adapted to their needs and to set ambitious food waste reduction targets at the same time.

The kitchen develops its menu with children and works in partnership with local suppliers to minimise food waste in the kitchen and upstream in the food chain.

Cafeteria staff make the dining experience feel more relaxed and create a pleasant environment in which pupils feel more able to enjoy their food.

For the 6 to 11 age group, educators take time to help children to organise their lunch and to enjoy their food. We noticed that post-consumer waste tends to be high for this age group. The children socialise a lot during lunchtime, and eating is not their first priority. They talk and sometimes forget to eat. Time goes by quickly when children have roughly 15 minutes to eat their main course during a lunch period of 40 to 50 minutes, and the busier it is at lunchtime, the more that children of this age group will tend to eat more quickly and to eat less of their food...

For the 11 to 18 age group, the school lets students pay for what they consume, have a multiple menu choice and choose their portion size.

The school has a cafeteria with multiple-choice menus where children can choose their portion size, to let them become participants in their meal. We found that the three pilot sites with the lowest post-consumer food waste rate were cafeterias with multiple choice menus. Other cafeterias with a single menu, which is either packaged and left on the table, or served on a plate, recorded two to three times more post-consumer food waste.

The kitchen implements food waste tracking and monitoring policies, fixes targets and assesses the outcome of the different activities to reduce food waste implemented each month.

Note that the kitchen with the lowest pre-consumer food waste is a central kitchen producing standardised and pre-packed meals. The kitchen with the highest pre-consumer food waste has both multiple menu choices and the highest estimation issue (in addition to the multiple choices, pupils can also choose every day whether or not to eat at the cafeteria).

12For more information on lunch time activities, see Good Practices p. 42 of this report.
LESSONS LEARNT AND IMPROVEMENTS TO THE PACKAGE

This section describes how the package that the SKOOL programme aims to deliver could be improved.

LESSONS LEARNT FROM RAISING CHILDREN’S AWARENESS

The educational coordinator must support teachers/educators consistently, to identify which materials they want to use, and how they can implement food waste assignments/activities to help the children take action to reduce food waste. A user guide will be designed to facilitate this task.

The more that the education project is deployed in class, in extra-curricular time and at home, the more that children will change their behaviour.

Internal tools should be developed to obtain feedback and outcomes from the implementation of the educational package. Some of the detailed information on the ongoing implementation of the package within schools was missed. Receiving an automated monthly report so that they could see what has been done so far, what is planned and what support schools need, would help educational coordinators and IFWC project managers to coordinate and monitor their activities and would help them to save time.

Regular events/activities should be developed and their direct impacts on post-consumer food waste should be measured. We have seen that events, especially during lunchtime, can produce a significant decrease in post-consumer food waste, but we have also seen that schools do not necessarily know how to organise such events/activities with limited time and resources.

Children’s food waste awareness-related Knowledge, Attitudes & Practices should be assessed before and after SKOOL is implemented in schools, in order to measure the specific results of the programme.

The teaching material should be adapted, based on feedback from schools.
LESSONS LEARNT FROM FOOD OPTIMISATION

Staff commitment is key. Staff must be able to feel that the time they dedicate to the project is not wasted, and that the data collected is valuable. A set of improvements could help identify and implement actions taken to reduce food waste during the implementation of the programme:

1. **Setting reduction targets and thinking of smart ways to reward staff** when targets are reached should be the first step;

2. **If reduction-related actions are to be taken, then kitchen staff should check how the client should be informed and involved**;

3. The reports that we produced to help staff analyse kitchen food waste were read by them, but did not form the basis for discussions on concrete action that could be taken to reduce waste and be tested out. LeanPath online has been used by site managers and chefs, but not as a weekly food waste monitoring tool. On most of the pilots, these weaknesses in monitoring and analysing explain why identifying and testing food waste solutions have been difficult. At the beginning of the programme, **processes to monitor food waste should be agreed, that can then lead to the testing out of specific activities to reduce food waste during the programme’s implementation**.

4. **Develop internal tools for food waste performance monitoring, data processing and feedback collection**.
   - Exchanges of email and phone calls to find out what has been done so far on site are time-consuming. **Project monitoring could be improved with a monthly report to be sent to the IFWC**.
   - We could develop more accurate food waste analysis if we registered and processed the following on a daily basis:
     - Number of actual meals produced every day
     - Number of children at the cafeteria every day

LESSONS LEARNT FROM VALUE CHAIN COLLABORATION

At the end of the pilot phase, we found that we lacked information about food waste occurring at upstream areas of the food chain; for non-local products, Kitchens often have superficial links with suppliers that are managed at overall level (regional and national). To work effectively on this aspect, children and kitchen staff are vital to identify which players could collaborate on common food waste issues. Integrating relevant participants in the value chain will be the most challenging part of the SKOOL project and it is one of our objectives for the extension phase.

Two things can be done to address food chain collaboration at macro-level and local level:

1. **At macro-level**: we could identify one food item that could be targeted to assess the food waste occurring along the value chain. Focusing on this item allows us to identify the main supplier and producers to assess whether they have a significant amount of food loss and waste, and then to discuss the reasons. This would remain a macro-level analysis however, therefore implementing reduction-related activities might be complex.

2. **We could identify a local supplier to assess their food loss and waste and understand the reasons. At local level we could**:
   - **Bring relevant local suppliers into the SKOOL food optimisation process**
   - **Launch food waste reduction activities with local suppliers**
   - **Identify the regulation barriers contributing to food waste and take action all along the value chain.**
SKOOL EXTENSION PHASE, 2016-17 SCHOOL YEAR

GOALS OF THE EXTENSION PHASE

The extension phase aims to scale up the project by:

- Involving new European countries in the programme from September 2016 onwards and enabling the incorporation of feedback and finalisation of the packages before free access expected from summer 2017;
- Doubling the number of children directly informed by implementing the programme in new schools and classes;
- Doubling the total amount of food production covered by the programme.

It also aims to finalise the three project-driven packages that will be delivered online for the 2017-18 school year:

- Teaching materials, food waste assignments and activities will be completed;
- The SKOOL programme implementation guide will be adapted and the general user guide designed to help educational and kitchen coordinators;
- Good practices will be integrated at the educational and kitchen levels;
- All good ideas and improvements that come up during the extension phase will be integrated.

Foster collaboration along the value chain:

- Conceive guidelines for value chain collaboration based on new activities launched during the extension phase;
- Assess the outcome of actions implemented through collaboration by participants along the value chain.
PREPARATION FOR THE ROLL-OUT PHASE

The IFWC and the FAO will start work on an online platform to ensure easy access to the SKOOL programme for the 2017-2018 school year.

Building and nourishing the SKOOL community, to enable schools and players to share experiences and good practice, is also an important objective of the programme. The content of SKOOL will be improved based on their feedback. For example, each time the SKOOL programme is translated into a new language, it should be shared for others to use via the online platform, in line with our collaborative approach.

The ideal platform would allow tracking of the overall food waste reduction achieved by sites through SKOOL implementation.

THIS IS HOW WE WOULD LIKE TO ENVISAGE SKOOL DEVELOPING OVER THE NEXT 5 YEARS

This is a vision for the SKOOL programme that we want to share. We are uncertain whether this could be achieved, but if we are allowed to dream, this is what SKOOL could bring together in the next five years:

- **A platform** which is a reference for resources, tips and the full methodology to build a school without food waste. The platform could be a worldwide portal gathering all existing information on food waste at schools.

- **A community** that exchanges good practice, shares experiences and continuously works to enrich SKOOL packages in order to have greater impact.

- Resources dedicated to the development of the platform and to the follow-up and monitoring of results from the worldwide implementation of SKOOL, updating pre and post-consumer statistics, total food savings and more.

The pilot phase of SKOOL recorded that 25% of a children’s meal is lost or wasted, with an average of 5% in the kitchen and 20% being left over by the children.

In the case of edible food, we can thus assume that one meal is wasted every five meals.

This could be less and there will always be room for improvement. SKOOL is a seed encapsulating the essence of a concept that we expect to grow in the future.
LISTE OF CONTRIBUTORS
We are grateful to all the kitchen and cafeteria staff, and the educational teams and pupils that contributed in implementing the SKOOL project and making it successful:

- **Calcinato Municipality, Eagle House School, Emmanuel School, Nancy Municipality, Sodexo France, Sodexo Italy, Sodexo UK, West Kirby Grammar School**

Lynne Palmer, Teacher Deputy Head (Pastoral), *Eagle House School*

John Hales, Teacher, *Emanuel School*

Mike Thomas, Teacher, *West Kirby Grammar School*

Elisabeth Bourot, Educational Services Director, *Nancy Municipality*

Natacha Briot, Educational Coordinator, *Nancy Municipality*

Nadia Muller, Educator, *Nancy Municipality*

Fanny Parmentier, Educator, *Nancy Municipality*

Francesca Mustica, Teacher, *Calcinato Municipality*

Anna Ferrari, Teacher, *Calcinato Municipality*

Luigi Lecchi, Teacher, *Calcinato Municipality*

Phyllis Street, Catering Manager, *Sodexo UK*

Curtis Johnson, Sous Chef, *Sodexo UK*

Richard England, Head Chef, *Sodexo UK*

Tracy Boland, Catering Supervisor, *Sodexo UK*

Pauline Huxtable, General Services Manager, *Sodexo UK*

Kristy Wilcock, Head Chef, *Sodexo UK*

Shaun Mcdonnell, Facilities Manager, *Sodexo UK*

Linda Rainford, Food Services Assistant, *Sodexo UK*

Laurent Cotinaut, Site Manager, *Sodexo France*

Yves Schouller, Head Chef, *Sodexo France*

Sandrine Garrido, Head Chef, *Sodexo France*

Stefania Giudici, Executive Assistant, *Sodexo Italy*

Cristina Canetti, Site Manager, *Sodexo Italy*

Filipo Pini, Chef, *Sodexo Italy*

Elena Cherubini, Kitchen staff, *Sodexo Italy*

Cristina Cappello, Site Manager, *Sodexo Italy*

Francesca Violante, Head Chef, *Sodexo Italy*

Luca Granata, Assistant Cook, *Sodexo Italy*

Rosanna Russo, Kitchen Staff, *Sodexo Italy*

Teresa Marcodoppido, Kitchen staff, *Sodexo Italy*

We thank all the contributors of the SKOOL program:

- Ardo, FAO, Interjuli, LeanPath, McCain, Nina Sophie Gekeler, Pepsico, SCA, Sodexo Group, Unilever Food Solutions, Utopies, WWF.
SCHOOLS PROFILE

ITALY

SITE 1: MUNICIPALITY OF CALCINATO

FOOD OPTIMISATION

<table>
<thead>
<tr>
<th>Kitchen Coordinator</th>
<th>Site manager, Sodexo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen</td>
<td>Central kitchen at the Ponte San Marco site</td>
</tr>
<tr>
<td></td>
<td>160 lunches on site</td>
</tr>
<tr>
<td></td>
<td>220 lunches delivered to 3 other cafeterias in Calcinato</td>
</tr>
<tr>
<td>Menu Information</td>
<td>A single menu (except for special diets)</td>
</tr>
<tr>
<td></td>
<td>Menu rotation over 5 weeks</td>
</tr>
<tr>
<td>Production Check</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Every morning at 09:30, just before production starts (food waste for estimation purposes is 11.3%)</td>
</tr>
</tbody>
</table>

LUNCH ORGANISATION AT PONTE SAN MARCO, THE PEDRINI E. CARLONI SCHOOL

<table>
<thead>
<tr>
<th>Cafeteria</th>
<th>Post-consumer food waste measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>= 50% of scope of pre-consumer food waste measurement</td>
</tr>
<tr>
<td></td>
<td>160 children from 5 to 10 years old</td>
</tr>
<tr>
<td>Lunch Time</td>
<td>45 minutes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Queuing (trayless)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trolleys enter the dining hall. The children get up from the table and queue with their plate to get their meal. All three parts of the meal are served at the same time in compartmented plates. This way, the children are more likely to eat everything before asking for another portion rather than eating too much of their starter and having no room left for the main course.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Children Can Get Refills</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Once they've finished their plate. It appeared that children asked for more at the very last minute, in a hurry.</td>
</tr>
</tbody>
</table>

Meal | The children sit at the tables by class and the teachers eat with them (1 teacher for 20 children). The teachers say it is too difficult for them to organise the weighing of post-consumer waste by the children. The kitchen staff take care of this. |
Trimming is the major reason for pre-consumer waste: 438 kg

Vegetables are primarily responsible for trimming waste, due to fresh food preparation.
EDUCATIONAL PROJECT

<table>
<thead>
<tr>
<th>EDUCATIONAL COORDINATOR</th>
<th>Teacher Deputy Head</th>
</tr>
</thead>
<tbody>
<tr>
<td>THOSE DIRECTLY REACHED BY AWARENESS RAISING</td>
<td>3 classes out of 10</td>
</tr>
<tr>
<td>PROGRAMME IMPLEMENTATION PERIOD</td>
<td>5 weeks</td>
</tr>
<tr>
<td>TYPE OF IMPLEMENTATION</td>
<td>In class</td>
</tr>
<tr>
<td>TIME DEDICATED</td>
<td>20 hours</td>
</tr>
<tr>
<td>PERSONS WORKING WITH THE CHILDREN</td>
<td>Teachers</td>
</tr>
<tr>
<td>TEACHING MATERIALS USED</td>
<td>100 %</td>
</tr>
<tr>
<td>COMMUNICATION MEDIA USED</td>
<td>Posters at the cafeteria, printed napkins</td>
</tr>
<tr>
<td>FOOD WASTE MONITORING WITH CHILDREN</td>
<td>None</td>
</tr>
<tr>
<td>EVENTS/ACTIVITIES ORGANISED</td>
<td>In class</td>
</tr>
</tbody>
</table>

SITE 2: MUNICIPALITY OF CARUGATE

FOOD OPTIMISATION

<table>
<thead>
<tr>
<th>KITCHEN COORDINATOR</th>
<th>Site manager, Sodexo</th>
</tr>
</thead>
<tbody>
<tr>
<td>KITCHEN</td>
<td>Central kitchen at the Ginestrino site</td>
</tr>
<tr>
<td></td>
<td>550 lunches on site</td>
</tr>
<tr>
<td></td>
<td>550 lunches delivered to two other cafeterias in Carugate.</td>
</tr>
<tr>
<td>MENU INFORMATION</td>
<td>A single menu (except for special diets).</td>
</tr>
<tr>
<td></td>
<td>Menu rotation over 5 weeks.</td>
</tr>
<tr>
<td>PRODUCTION CHECK</td>
<td>Every morning at 09:30, just before production starts (food waste for estimation purposes is negligible)</td>
</tr>
</tbody>
</table>

LUNCH ORGANISATION AT GINESTRINO

<table>
<thead>
<tr>
<th>CAFETERIA</th>
<th>Post-consumer food waste measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>= 63 % of scope of pre-consumer food waste measurement:</td>
</tr>
<tr>
<td></td>
<td>Ginestrino [primary school] 350 children,</td>
</tr>
<tr>
<td></td>
<td>Roma [primary school] 350 children</td>
</tr>
<tr>
<td>LENGTH OF LUNCHTIME</td>
<td>45 minutes</td>
</tr>
<tr>
<td>TYPE OF SERVICE</td>
<td>At the table</td>
</tr>
<tr>
<td></td>
<td>Trolleys pass by the tables to serve children on their plate.</td>
</tr>
<tr>
<td></td>
<td>The three parts of the meal are served one after another.</td>
</tr>
<tr>
<td>CHILDREN CAN GET REFILLS</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Children cannot really ask for more once they have finished their plate, as the trolleys are in the kitchen to prepare the next part of the meal.</td>
</tr>
<tr>
<td>MEAL</td>
<td>Children sit by class and the teachers monitor them at the tables (1 teacher for 25 children).</td>
</tr>
<tr>
<td></td>
<td>The teachers say it is too difficult for them to organise the weighing of post-consumer waste by the children.</td>
</tr>
<tr>
<td></td>
<td>The kitchen staff takes care of this.</td>
</tr>
</tbody>
</table>
RAISING CHILDREN’S AWARENESS

We were not able to implement the SKOOL education programme in Carugate because the Municipality’s education authority would not consider integrating new topics during the current year.
# France

## Site 3: Municipality of Nancy

### Food Optimisation

<table>
<thead>
<tr>
<th>KITCHEN COORDINATOR</th>
<th>Site manager, Sodexo</th>
</tr>
</thead>
<tbody>
<tr>
<td>KITCHEN</td>
<td>Central kitchen</td>
</tr>
<tr>
<td></td>
<td>7,000 total meals</td>
</tr>
<tr>
<td></td>
<td>3,700 delivered to 10 Nancy schools</td>
</tr>
<tr>
<td>MENU INFORMATION</td>
<td>A single menu (except for special diets)</td>
</tr>
<tr>
<td></td>
<td>Menu rotation over 5 weeks</td>
</tr>
<tr>
<td>PRODUCTION CHECK</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>Every morning at 10:00, schools confirm the number of children actually at school for lunch (a pilot programme with an online application to be tested in 2016-17 for parents). Meals are produced 48 hours in advance and delivered early in the morning: usually the kitchen has a small backup and/or organises a dispatch (sites in need, sites with a surplus) or may launch extra meal production when needed. Food waste for estimation purposes is significant.</td>
</tr>
</tbody>
</table>

### Lunch Organisation at Didion

<table>
<thead>
<tr>
<th>CAFETERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-consumer food waste measurement</td>
</tr>
<tr>
<td>= 7% of scope of pre-consumer food waste measurement:</td>
</tr>
<tr>
<td>130 children at Didion primary school (6 to 11 years old)</td>
</tr>
<tr>
<td>130 children at Buthégnémont primary school (6 to 11 years old).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LUNCH TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 minutes</td>
</tr>
<tr>
<td>First service for CP – CE1 – CE2: 12:00 to 12:50</td>
</tr>
<tr>
<td>Second service for CM1-CM2: 13:00 to 13:50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE OF SERVICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the table. Trolleys pass by all tables to deliver pre-packed plastic containers with 7 portions per container. The children help themselves and are helped by an educator (one educator for 2-3 tables).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CHILDREN CAN GET REFILLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
</tr>
<tr>
<td>Individual portions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MEAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>The different parts of the meal are served one after another. Starters are already on the plates on the table when the children get to the table. The children must ask if they want any bread. After the main course, the children sort their leftovers to put protein and side dishes in the appropriate container, and help the educators and cafeteria staff to weigh post-consumer waste, when there is enough time.</td>
</tr>
</tbody>
</table>

The two cafeterias of Nancy are the only sites where post-consumer waste has been measured separately for the different components of the meal. The separation and measurement of the food waste collected took between 5 and 10 minutes every day.
DIDION POST-CONSUMER WASTE BREAKDOWN

TOP WASTE FOODS (WEIGHT)

BUTHÉGNÉMONT POST-CONSUMER WASTE BREAKDOWN

TOP WASTE FOODS (WEIGHT)
## RAISING CHILDREN’S AWARENESS

<table>
<thead>
<tr>
<th>EDUCATION COORDINATOR</th>
<th>Municipality’s educators’ coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td>THOSE DIRECTLY REACHED BY AWARENESS RAISING</td>
<td>Volunteer children, “anti-waste” super-heroes club proposed to the children</td>
</tr>
<tr>
<td>PROGRAMME IMPLEMENTATION PERIOD</td>
<td>5 weeks</td>
</tr>
<tr>
<td>TYPE OF IMPLEMENTATION</td>
<td>Extra-curricular time</td>
</tr>
<tr>
<td>TIME DEDICATED</td>
<td>Extra-curricular time available for SKOOL: 1 hour before school in the morning, 50 minutes after or before lunch, 1 hour after classes</td>
</tr>
<tr>
<td>PERSONS WORKING WITH THE CHILDREN</td>
<td>Educators</td>
</tr>
</tbody>
</table>
| TEACHING MATERIALS USED | 50 %
- The presentation with voice-over
- Some follow-on activities |
| COMMUNICATION MEDIA USED | Posters at the cafeteria, printed napkins |
| FOOD WASTE MONITORING WITH KIDS | Not formally, sometimes children checked data displayed on the tablet about their last report |
| EVENTS/ACTIVITIES ORGANISED | YES
- An inter-class challenge for the best “anti-waste” superheroes poster.
- Special events after class with parents: whole-school general presentation of the programme, food waste quiz, recipe tests, challenge posters awarded |
UNITED KINGDOM

SITE 4: EAGLE HOUSE SCHOOL

FOOD OPTIMISATION

<table>
<thead>
<tr>
<th>KITCHEN COORDINATOR</th>
<th>Site manager, Sodexo</th>
</tr>
</thead>
</table>
| KITCHEN              | On site  
500 lunches served daily on average (a boarding school that also produces breakfast and supper, but these were excluded from our scope) |
| MENU INFORMATION     | Multiple choices menu |
| PRODUCTION CHECK     | NO  
As this is a boarding school, attendance issues at mealtimes are less of a concern with regard to estimation and waste, than the multiple-choice food menu offered. |

LUNCH ORGANISATION

<table>
<thead>
<tr>
<th>CAFETERIA</th>
<th>Post-consumer food waste measurement = 100% of scope of pre-consumer food waste measurement: 500 meals (68 nursery/reception 3 to 6 years old + 400 from 7 to 13)</th>
</tr>
</thead>
</table>
| LENGTH OF LUNCHTIME | 45 minutes  
First service for nursery 12am to 12:45.  
Second service for years 1 to 8 12:45 to 13:45 |
| TYPE OF SERVICE | On the table for nursery  
To the counter for years 1 to 8. |
| CHILDREN CAN GET REFILLS | NO  
The counter zone is quite tiny, and with limited time for lunch, children are not allowed to come back to the counter. |
| MEAL | Children queue to get to the counter. They sort their waste. |
### TOP LOSS REASONS (WEIGHT)

- **Post Consumer**: 1,103 kg
- **Estimation**: 309 kg
- **Trim Waste**: 136 kg
- **Overproduction**: 118 kg
- **Contaminated**: 15 kg
- **Spoiled**: 14 kg

- **Estimation** is the major reason for pre-consumer waste.
- **Trimming** is the second reason and results from a commitment to cooking with fresh vegetables.

### RAISING CHILDREN’S AWARENESS

<table>
<thead>
<tr>
<th>EDUCATIONAL COORDINATOR</th>
<th>Teacher Deputy Head (Pastoral)</th>
</tr>
</thead>
<tbody>
<tr>
<td>THOSE DIRECTLY REACHED</td>
<td>Only the nursery (68) pupils were not in the scope, all other 336 pupils (years 1 to 8) were reached directly.</td>
</tr>
<tr>
<td>BY AWARENESS RAISING</td>
<td></td>
</tr>
<tr>
<td>PROGRAMME IMPLEMENTATION PERIOD</td>
<td>4 weeks</td>
</tr>
<tr>
<td>TYPE OF IMPLEMENTATION</td>
<td>Class and extra-curricular time</td>
</tr>
<tr>
<td>TIME DEDICATED</td>
<td>1 hour of class time and 5 days’ extra-curricular time + updates during 3 weeks at lunch</td>
</tr>
<tr>
<td>PERSONS WORKING WITH THE CHILDREN</td>
<td>Teachers</td>
</tr>
<tr>
<td>TEACHING MATERIALS USED</td>
<td>70% The presentation and voice-over Some follow-on activities</td>
</tr>
<tr>
<td>COMMUNICATION MEDIA USED</td>
<td>Posters at the cafeteria, printed napkins</td>
</tr>
<tr>
<td>FOOD WASTE MONITORING WITH KIDS</td>
<td>Updates on food waste figures displayed at the cafeteria during 1 month</td>
</tr>
<tr>
<td>EVENTS/ACTIVITIES ORGANISED</td>
<td>Many activities during the special week-long event and in class</td>
</tr>
</tbody>
</table>
SITE 5: EMANUEL SCHOOL

FOOD OPTIMISATION

<table>
<thead>
<tr>
<th>KITCHEN COORDINATOR</th>
<th>Site manager, Sodexo</th>
</tr>
</thead>
<tbody>
<tr>
<td>KITCHEN</td>
<td>On site</td>
</tr>
<tr>
<td></td>
<td>830 lunches</td>
</tr>
<tr>
<td>MENU INFORMATION</td>
<td>Multiple choices menu</td>
</tr>
<tr>
<td></td>
<td>3-week menu repeated over one trimester</td>
</tr>
<tr>
<td>PRODUCTION CHECK</td>
<td>NO</td>
</tr>
</tbody>
</table>

LUNCH ORGANISATION

| CAFETERIA             | Post-consumer food waste measurement  |
|                       | = 100% of scope of pre-consumer food waste measurement: |
|                       | 260 lower school pupils (10 to 13 years old) in a separate area of the dining room. 625 middle school (14 to 16) and 6th form (16 to 18 years old): dining hall |
| LENGTH OF LUNCHTIME   | 45 minutes |
|                       | Lower school: 13:15 to 13:45; 13:00 to 14.00 for others; with large numbers arriving together at 13:15. |
| TYPE OF SERVICE       | At the counter |
| CHILDREN CAN GET REFILLS | YES |
| MEAL                  | The buttery, where the lower school eat, is calm, but the main dining room is crowded and quite noisy. 6th formers are allowed to lunch outside. |

TOP LOSS REASONS (WEIGHT)

- POST CONSUMER: 3,133 kg
- ESTIMATION: 2,026 kg
- OVERPRODUCTION: 1,061 kg
- TRIM WASTE: 958 kg
- SPOILED: 49 kg
- SUPPLIER ISSUE: 14 kg
- OVERCOOKED: 7 kg
- EXPIRED: 6 kg
- TEST DISH: 5 kg
**TOP WASTE FOODS (WEIGHT)**

- **Compound salad** is the major item responsible for estimation food waste: **248 kg**
- **Bread** is the 3rd one: **136 kg**
- **Sauce** is not a priority objective.

---

**RAISING CHILDREN’S AWARENESS**

<table>
<thead>
<tr>
<th>EDUCATION COORDINATOR</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>THOSE DIRECTLY REACHED BY AWARENESS RAISING</td>
<td>30% Year 6, 7 and 8 account for 265 out of 880</td>
</tr>
<tr>
<td>PROGRAMME IMPLEMENTATION PERIOD</td>
<td>1 week</td>
</tr>
<tr>
<td>TYPE OF IMPLEMENTATION</td>
<td>Extra-curricular time</td>
</tr>
<tr>
<td>TIME DEDICATED</td>
<td>No precise feedback</td>
</tr>
<tr>
<td>PERSONS WORKING WITH THE CHILDREN</td>
<td>One teacher involved</td>
</tr>
<tr>
<td>TEACHING MATERIAL USED</td>
<td>None</td>
</tr>
<tr>
<td>COMMUNICATION MEDIA USED</td>
<td>Posters at the cafeteria, printed napkins</td>
</tr>
<tr>
<td>FOOD WASTE MONITORING WITH KIDS</td>
<td>Updates on food waste figures displayed at the cafeteria during 1 week</td>
</tr>
<tr>
<td>EVENTS/ACTIVITIES ORGANISED</td>
<td>The Waste Less Week</td>
</tr>
</tbody>
</table>
SITE 6: WEST KIRBY GRAMMAR SCHOOL

FOOD OPTIMISATION

<table>
<thead>
<tr>
<th>KITCHEN COORDINATOR</th>
<th>Facilities manager, Sodexo</th>
</tr>
</thead>
<tbody>
<tr>
<td>KITCHEN</td>
<td>Kitchen on site, 850 lunches served daily on average, children from 11 to 17 years old.</td>
</tr>
<tr>
<td>MENU INFORMATION</td>
<td>Multiple choices menu</td>
</tr>
<tr>
<td>PRODUCTION CHECK</td>
<td>NO</td>
</tr>
</tbody>
</table>

LUNCH ORGANISATION

<table>
<thead>
<tr>
<th>CAFETERIA</th>
<th>Post-consumer food waste measurement = 100% of scope of pre-consumer food waste measurement: On site, one dining room, pupils are allowed to bring their own meal from home.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LUNCH TIME</td>
<td>45 minutes, by age groups</td>
</tr>
<tr>
<td>TYPE OF SERVICE</td>
<td>At the counter with a biometric cashless system. Children pay for what they take at the counter, from one cookie to a complete meal and take their food on a tray.</td>
</tr>
<tr>
<td>CHILDREN CAN GET REFILLS</td>
<td>NO</td>
</tr>
<tr>
<td>MEAL</td>
<td>Pupils queue by age group at the entrance of the dining room. Some bring their own meal and others (on average 800/1,135) go to the counter. After eating, they put their food waste in dedicated bags.</td>
</tr>
</tbody>
</table>

TOP LOSS REASONS (WEIGHT)

- POST CONSUMER: 620 kg
- ESTIMATION: 517 kg
- TRIM WASTE: 385 kg
- SPOILED: 4 kg
- OVERPRODUCTION: 4 kg
### TOP WASTE FOODS (WEIGHT)

![Graph showing top waste foods by weight]

### RAISING CHILDREN’S AWARENESS

<table>
<thead>
<tr>
<th>Educational Coordinators</th>
<th>Assistant Head teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children at School</td>
<td>1,135 pupils, 11 to 17 years old</td>
</tr>
<tr>
<td>Those directly reached by awareness raising</td>
<td>32%, 360 out of 1,135</td>
</tr>
<tr>
<td>Programme Implementation Period</td>
<td>4 months</td>
</tr>
<tr>
<td>Type of Implementation</td>
<td>Class and extra-curricular time</td>
</tr>
<tr>
<td>Time Dedicated</td>
<td>No precise feedback</td>
</tr>
<tr>
<td>Persons working with the children</td>
<td>Teachers, extra activities coordinated by Mike and Ruth</td>
</tr>
<tr>
<td>Teaching Materials Used</td>
<td>All</td>
</tr>
<tr>
<td>Communication Media Used</td>
<td>Posters at the cafeteria, printed napkins</td>
</tr>
<tr>
<td>Food Waste Monitoring with kids</td>
<td>No</td>
</tr>
<tr>
<td>Events/Activities Organised</td>
<td>Related projects initiated at the end of the year. Follow-up next year to see outcomes.</td>
</tr>
</tbody>
</table>
annex 2

DESCRIPTING THE DIFFERENT CONTEXTS OF THE PILOT SCHEMES

In Italy, the commitment to cooking fresh food seems even greater than elsewhere. This explains why vegetable trimming waste is the leading reason for food waste. It also seems that the food waste issue had not been addressed as a priority before, unlike at other sites (for example, as in England and France where kitchen staff had already implemented activities to control food waste). Calcinato kitchen managed to achieve the highest pre-consumer food waste reduction of the pilot.

INDICATOR FOR FOOD WASTE ISSUE MATURITY

LOW

HIGH

In France, the site identified is a central kitchen that produces 7,000 meals every day (pensioners, private individuals, schools and nursery school). Focusing on Nancy school production made more sense, and was also a way to adapt the food waste measurement process to a central kitchen context, described in more detail in the pre-consumer food waste analysis section (Site 3). In general, this central kitchen uses less fresh food and uses very precise quantities to deliver packaged meals, therefore producing little food waste.

In this case, food waste is likely to occur upstream in the food chain. It is worth conducting an overall assessment to identify priority issues that could be addressed together with suppliers/ producers.

The Municipality of Nancy has covered the issue of food waste at school since 2012, organising weeks of weigh-ins at pilot schools and activities with children. SKOOL was welcomed as a complementary programme to reinforce and complete what could already be considered good practice in food waste management: children’s groups participating in recipe tests, weeks of food waste measurement, etc.

INDICATOR FOR FOOD WASTE ISSUE MATURITY

LOW

HIGH
The three pilot schools in England work with a kitchen on site. This makes food waste easier to assess as pre-consumer and post-consumer food waste both have the same parameters. SKOOL was implemented directly in these private schools without coordination from local authorities.

One important issue was the commitment of the three schools to provide between two and five different menus every day. The three schools also organise a lot of different activities (sport, clubs, etc.) during the lunchtime that limit the amount of time available at the table. Some children would come to the dining room to grab a sandwich rather than sit down. The three schools still had quite different contexts (see details in the site descriptions) with a range in the number and age of children and lunch organisation. This explains the very different results from their project implementation. Overall in England, food waste is an issue that is recognised even though practices are not necessarily already formalised. For example, the three schools are already used to organising waste-less weeks to raise children’s awareness.

**INDICATOR FOR FOOD WASTE ISSUE MATURITY**

<table>
<thead>
<tr>
<th>LOW</th>
<th></th>
<th></th>
<th>HIGH</th>
</tr>
</thead>
</table>

Pre-consumer food waste corresponds to every element of food waste, avoidable or not, edible or not, that has not been served to the consumer, and every item thrown away by food service workers from stock to preparation waste and overproduction.

Post-consumer food waste corresponds to every element of food waste generated at consumer level, also called plate waste and measured in cafeterias.

Reasons for Loss and Waste

Post-consumer waste
- **Plate waste**: Uneaten leftover food on plates/trays that is discarded by the consumer for various reasons.

Pre-consumer waste
- **Overproduction**: Edible food that must be disposed of because too much of it was produced and has no alternative use or ability to be stored.
- **Estimation**: Edible food that must be disposed of because quantities kitchen staff intended to produce was not appropriate to real need. Often because of difficult-to-anticipate on menu choices by children or by children’s attendance.
- **Overproduction**: Edible food that must be disposed of because too much of it was produced, compared to planned quantities [mistake by kitchen staff].
- **Expired**: Food that is no longer edible because it exceeded time or date limits, or temperature boundaries.
- **Trim waste**: Trimming of products during preparation (typically fruits, vegetables, meat) are unavoidable food waste.
- **Handling**: Food unfit for consumption due to dropping or cross-contamination.
- **Equipment failure**: Food rendered inedible due to malfunction of equipment.
- **Spoiled**: Food that is now inedible due to rot, mould, or other defects.
- **Overcooked**: Food that was overcooked or burned
- **Supplier and stock issues**: Food that is thrown away from the stock or because of supplier errors, resulting into food waste.