Session T2

Food Waste Reduction – Possible Solutions

Chairs: Tomas Ratinger, Lenka Hebakova (Technology Centre of the Czech Academy of Sciences) and Mahshid Sotoudeh (Institute for Technology Assessment)

Food Waste is a global challenge related to the value of food in different cultures, efficiency of food supply chains, local and global markets, etc.

Global Initiative on Food Loss and Waste Reduction: „*The approach to reducing food loss and waste is embedded in the broader concept of promoting **sustainable food systems**, which encompasses sustainable food **production** on the one hand, and sustainable diets and **consumption** (such as through the reduction of food waste) on the other. The issue of food waste is high on the political agenda in industrialized countries and it is expected to constitute a growing problem in developing countries given the changes that food systems in these countries are undergoing because of such factors as rapid urbanization, expansion of supermarket chains, and changes in diets and lifestyles."* As a solution digitalisation is considered in agri-food systems as a support for smart measures for environmental protection, higher tractability in food systems and waste reduction (Ciampi Stancova and Cavicchi (2017)[1]. The main question is: What is the solution potential of different innovations?

The aim of the session is to identify TA-relevant issues on Food Waste reduction. Session panellists and audience will discuss public approaches towards sustainable consumption and food waste (EU projects PACITA/CIMULACT); use of nanomaterials for prolonging the food durability (GoNANO); problems and possible solutions to food waste in public catering (RedPot), different visions for digitalisation in food systems – values and consequences for food waste reduction etc. The social responsible behaviour towards food waste reduction and sustainability from the point of view of one of the key players on a food quick service market will be demonstrated through possible positive changes based on internal process improvement and new technologies involvement. Wide spreading activities on the field of waste prevention across the whole food system will be presented by the Czech based NGO.

Power of visions on digitalisation for food security from farm to grocery and landfill

Authors: Mahshid Sotoudeh, Steffen Bettin, Niklas Gudowsky (Institute for Technology Assessment)

Digitalisation is in the focus of research programmes on food security with expectations for improving efficiency and traceability in the food systems (raw material preparation, production, distribution, consumption, waste treatment) and contribution to the Sustainable Development Goals[2]. Different actor groups define their expectations within visions on digitalisation for food systems based on a number of hidden and apparent values: e.g. robotics start-up visions focus on the full automatization in farming production processes, considering digitalisation for more efficiency of

[1] Ciampi Stancova and Cavicchi (2017)Dynamics of Smart Specialisation Agri-food Trans-regional Cooperation, JRC Technical Reports, JRC107257.doi:10.2760/020864).

[2] "Digital technology for the sustainable development goals: …*The benefits of digital technology for the sustainable development goals (SDGs) is relatively well-integrated into the 2030 Agenda, not only through Goal 9 (industry, innovation, and infrastructure), but also through the Technology Facilitation Mechanism and its Science Technology and Innovation (STI) Forum…" https://www.diplomacy.edu/blog/digital-technology-sdgs* (access 29th March 2019)

production and a new market. Platforms of international stakeholders and commercial actors push a vision on direct connection of consumers with the production process (from farm to fork) with the promise of more traceability, new business models, new jobs, etc.[3] Some governments, policy makers and international organisations focus on visions, which follow a technology push strategy for economic growth or consider technology as a solution to deal with the "grand challenge" of food security.[4] These visions include also the promise of better connecting local markets to consumers.

In addition, all of these visions generated by innovators, experts and policy makers, include the promise of reduction of food wastes through efficiency improvement in the food supply chain and more information for consumers. Nevertheless, there are concerns about expected negative consequences for increasing food waste.[5] The power of visions on solutions for Sustainable Development Goals (SDGs) such as food security depends on their power to address infrastructure – inequality – Resilience nexus (Global Sustainable Development Report 2016).[6]

Against this background, we question whether experts' and stakeholders' visions (mostly on infrastructure) are compatible with visions of lay people or consumers with different special nutrition needs (considering inequality and resilience). Our experiences with citizens' visions show that citizens emphasize the need for knowledge about healthy nutrition and environmentally friendly production and consumption with less waste generation[7]. The power of visions on digitalisation for promoting food waste reduction, depends also on whether society is informed, prepared and willing to accept potential risks of changing infrastructure to a digitalised supply system.

To discuss the best possible ways of food security and food waste reduction, results of participatory foresight studies in Technology Assessment (TA) should be analysed regarding the types of knowledge adherent in different visions of different actor groups. In addition to emotions, pragmatic knowledge and cognitive knowledge, visions include knowledge influenced by normative values (Sotoudeh and Gudowsky 2018). Through the exercise, a pluralism of values will be unmasked in foresight TA studies in a systematic way.

We plan to present some examples for different visions for digitalisation in food systems and discuss the embedded values and their consequences for food waste reduction during the discussion with plenum in this session (or within a World Café discussion).

Reference:

Sotoudeh M., Gudowsky N. (2018) TATuP 27/2. PP. 53-59.
http://www.tatup.de/index.php/tatup/article/view/135/199 (access 29th March 2019)

[3] e.g. https://www.stratus.com/about/ or http://www.rfid-f2f.eu/index2.asp (access 29th March 2019)

[4] e.g. https://www.oecd-forum.org/users/107548-marie-agnes-jouanjean/posts/32816-the-internet-of-tractors-how-digital-technologies-are-impacting-the-way-we-grow-and-distribute-food

[5] e.g.: https://www.grocerydive.com/news/grocery--online-grocery-shopping-could-cause-food-waste-to-pile-up/534429/ (access 29th March 2019)

[6] https://sustainabledevelopment.un.org/content/documents/10816Executive_Summary_GSDR2016_booklet.pdf (access 29th March 2019)

[7] http://futurefoods.ages.at/futurefoods/ (access 29th March 2019)

Food Waste Reduction in Public Catering

Authors: Tomáš Ratinger, Lenka Hebáková and Iva Vančurová (Technology Centre of the Czech Academy of Sciences)

Reducing food waste has a potential to save resources we use to produce food we eat. Food waste reduction has become a strong social issue in connection with the EU Action Plan for Circular Economy[8].

The national research project RedPot (*Food waste reduction in public catering* under the financial support of the Technology Agency of the Czech Republic, contract No. TL 010000071) has been focusing on quick food services (i.e. fast food restaurants and canteens) as it is a substantial segment of the NACE 56 sector.

The research has the following specific objectives:

- to define and classify food losses and waste
- to identify common critical points of food waste production in diversified quick service restaurants,
- to measure and analyse food waste at each of the critical points and outlets
- to identify the reasons of food waste, and
- to suggest potential solutions of food waste reduction with regard to the technological, organisational as well as institutional impacts.

Data have been collected in 12 outlets of the 3 selected chains of quick service restaurants, i.e. 4 outlets per chain in various locations and business conditions (city centre, suburb, shopping mall, drive thru etc.). The field research involved 63 days of measuring food losses and two surveys of consumers´ attitudes to food waste in the investigated outlets. During this period, restaurants prepared 37 tons of meals and beverages for about 10 thousand customers and generated almost 3 tons of food waste. The food waste (loss) rate is about 11% (111 g on 1 kg of prepared meals) if we exclude beverages. The measuring phase was followed by 6 round tables with the management of the investigated outlets and the headquarters of the quick service restaurant chains.

The research has adopted a participatory multi actors design including quantitative and qualitative methods. Methodological framework thus includes a range of diverse methods from clustering food waste/losses, over organisation of the measurement of food losses on the spots, statistical and graphical analyses of the collected values, stakeholder involvement approaches, to fuzzy cognitive mapping and modelling. Round tables with internal stakeholders have been organised for each of the three participating quick service chain to discuss the field research results, and to identify reasons for food waste, possible solutions for its reduction, internal and external positive factors for their implementation and envisaged or experienced barriers.

The round tables showed three lines of solutions.

i) improvements in the kitchen including education and skill acquirement of outlets' staff, adoption of new technologies (e.g. for freezing and defrosting of cooked meals, or on-line ordering)

[8] https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1453384154337&uri=CELEX:52015DC0614

ii) improving consumer choice and better communication with consumers (options for saving food)
iii) establishing “new contract” with customers on food waste prevention.

The first two points represent technological and organisational innovations, while the latter refers to the redefinition of values. Consumers are asked to include “saving food” in their preferences and quick service restaurants to reflect them in their marketing concepts.

Closely related to this is a particular case of the very high share (63%) of unavoidable food waste in one of the selected chains. It calls for rethinking the concept since the first two food waste solution lines (i) and (ii) can have only limited effects.

Even all the above measures are settled there still will be some food left unsold, because the demand cannot be perfectly predicted and not all food can be prepared on request if the service has to be quick. The investigated quick service restaurant chains see the option in donating unsold food/meals to charities (while strongly rejecting the possibility to sell it for discount price); however high transition costs of complying with the current food safety legislation discourage them to do it.

It is worth to stress that the approached quick service restaurant chains have reduction of food losses on the agenda and the project results (quantitative as well as qualitative) have provided important input in their internal debate on appropriate measures in two of them.

Introductory presentation of TC CAS aims to show findings of this participative process as a starting point of a wider discussion with the session participants in a World Café format. The discussion will be further stimulated by 2 invited stakeholders.

References:

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Food waste reduction in canteens and quick service restaurants

Authors: Petr Brož and Blanka Menzelová (Compass Group CZ)

Compass Group Czech Republic s.r.o. is part of Compass Group, PLC, the world's largest gastronomy group with over half a million employees in fifty countries, serving more than five billion meals a year. The Czech branch is an industry leader with 25 years of presence in the Czech Republic and Slovakia. About 4,000 employees of Compass Group Czech Republic s.r.o provide services in over 370 restaurants, serving more than 200 thousand meals a day. The subsidiary Scolarest provides catering in over 200 schools and kindergartens. Compass Group Czech Republic ltd. observes internationally recognised quality management standards, environmental management standards and occupational health and safety management standards, and have an integrated management system in place.

Compass Group Czech Republic ltd recognises its social responsibility. Therefore, the initiative of the RedPot project, led by the Technology Centre of the Czech Academy of Sciences, fits to our concern about food losses and waste generated on our outlets in business centres, industrial companies and schools. Firstly, the project has provided exact figures on extent, origin and nature of food losses and waste which we had missed before. Secondly, round tables organised with our company´s employees (managers) within the project have helped us to collect and structure opinions and ideas on the food losses causes, solutions addressing them and overall conditions for the success of possible measures.

The Compass Group Czech Republic ltd has set up an internal project (task force) to deal with food losses as a response to the RedPot project outcomes. We see three steps to be done shortly to achieve some positive changes, and these are:

1. To communicate the extent of food losses and possible ways for their reduction; it also assumes continuous monitoring of food losses in the restaurants;
2. To educate staff, client (ordering the service) as well as consumers;
3. To negotiate actions for reductions (within the firms and with clients and consumers).

Technologies can definitely help the process:

i) Cook and Chill process shall help to deal with varying demand (consumption);
ii) ICT can help to get more precise information on demand and consumers preferences;
iii) ICT can also transmit a more accurate information to consumers on menu and its nutritional and qualitative attributes.

Donation options are a specific issue. Because most of the outlets/restaurants are closed for public, we cannot join the internet based auctions for discounted meals. However, the meals which were not sold within the lunch period can be given to food charities. According to the EU guidelines (C(2017) 6872 final), the remaining food can be frozen and then donated. The problem is that the charities are than not much interested because they lack the equipment for defrosting of the meals.

Zachraň jídlo – Dealing with the Issue of Food Waste in the NGO Sector

Author: Barbora Kebová (Zachraň jídlo)

According to the UN, up to one-third of all food in the world is being thrown away. Food waste is an enormous wastage, not only of the calories and nutrients, which could have been eaten by people, but also of all the resources needed for the food to be produced – water, energy, fossil fuels, fertilizers, healthy soil, and nutrients... The problem of food waste has irreversible consequences on our environment, society and economy. Zachraň jídlo (in English translation "Save Food") is a Czech-based NGO focused on reducing the amount of wasted food across the whole food chain. We work with government, academia, businesses and other NGOs to stir up public debate and continue to look for innovative solutions. The essence of our activity is to spread information about food waste, and connect people with a similar attitude.

The multifaceted activities of Zachraň jídlo started in 2013 with a huge happening called "Feast For a Thousand" where we shared a meal prepared from 450 kilos of wonky vegetables. Thanks to that, we managed to highlight the problem of the 15% VAT, which the merchants had to pay for the donation of food to charities. The tax was cancelled in December 2014. So far, we have organized many other unconventional happenings – e.g. Wonky Soup, Jam Session or Disco Salad. Because, from our experience, the best way to draw attention to the problematics of food waste is to organize unforgettable events.

A crucial part of our activity is the Gleaning Project. Since 2015, we have been picking thousands of kilos of fruits and vegetables every year – the products that would otherwise have remained abandoned in the fields or rejected in the warehouses. We donate it all to various food banks.

Also, we know that nowadays the power of media should not be underestimated. That is why we communicate with journalists and create informational campaigns to raise public awareness about food waste. For example, with the campaign „I Am Ready", we have focused on the issue of "imperfect" fruits and vegetables and the specific attempts to find possible solutions. Thanks to that we've collected more than 10 thousand signatures for a petition, and motivated three main supermarket chains in the Czech Republic to start to sell wonky fruits and vegetables.

For Zachraň jídlo, it is important to gain an accurate insight into the issue of food waste – to understand where are the major imperfections of the whole food chain, who are the stakeholders, how exactly the problems could be solved. Therefore, we started to focus more on research projects, mainly to get the unique data about food waste in the Czech Republic.

Currently, we are participating in the national research project RedPot (Food waste reduction in public catering under the financial support of the Technology Agency of the Czech Republic, contract No. TL 010000071), together with the Technology Centre of the Czech Academy of Sciences (TC CAS) and other partners. In this project, our role is mainly to support the inter-sectoral cooperation and involvement of stakeholders in the participatory processes and technology assessment activities. Thanks to this project, companies, mainly the ones that have been involved in the field research, have started to discuss with us their role in the food waste reduction as their social responsibility and strategic as well as environmentally friendly behaviour which shall be more and more stressed in the economic outlook of the food industry as such. We plan to promote the methodology of RedPot in our participatory activities.

We regard ICT and social networks as very supportive for:

i) Informing public about the food waste issue, uncovering hidden problems in the food chain.
ii) Mobilising people to take action (petition, change of behaviour, volunteering, gleaning etc.).
iii) Educating people about how they can reduce the amount of food waste themselves (sharing tips for shopping and storing food, sharing recipes utilizing leftovers…).

Also new technologies could be beneficial in:

i) The food business – e.g. new technologies helping to monitor and reduce the amount of food waste in professional kitchens.
ii) Redistribution of excess food – e.g. apps that enable to sell leftover meals in food service with discount.
iii) Retail – e.g. for better tracking of product's shelf life and more efficient management of the stock.

The presentation of Zachraň jídlo aims to describe the specific, multifaceted role of non-governmental organisations in dealing with important social and environmental issues. Our work and experience demonstrate on specific examples how the problem of food waste can be addressed in practice. Here, we see a significant potential of ICT and new technologies for finding innovations in each stage of the food chain.