

Will the market transform when focus shift from generating product to avoiding waste?

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WIP

Abstract:

The main purpose of this paper is to investigate what constitutes a food market when looking at it from a food waste project. This is, however, closely linked to the purpose of reducing the amount of food being wasted. The Confederation of Norwegian Enterprises (NHO) is hosting a project with the ambitious goal to reduce food waste in Norway by 25% by 2015. One of the work packages in the project scrutinizes how industrial networks can contribute to food waste reduction. Several companies involved in producing, delivering or retailing different food categories are forming networks to discuss the causes for food waste in each supply chain and come up with solutions for reductions. This is the empirical setting. Business actors joining together to find the real causes for food being wasted anywhere from the farm to the shop floor. Their discussions and their findings are presented and analyzed with the aid of insights from sociology of translation and IMP researchers' translation of this scientific tradition. One finding is that the frames in food market exchange practices are overflows in a food waste project and vice versa. Sorting the overflows into exchange practices, normalizing practices and representational practices gives insights helpful to understand the important elements in food markets and paving the way for finding solutions on how to reduce food waste. Another finding is related to how consumers of food become more tightly connected to the representation of industrial activities in a network description when focus is on food waste. Both these findings can contribute to the ways markets (including consumers) are described in the IMP approach and thus also the constructive application of the approach.

Keywords: Market, retailing, sociology of translation, food waste

INTRODUCTION

Do you carry a shopping list when shopping your groceries? Do you plan in advance what you are having for dinner tomorrow and does it involve leftovers from today? Do you shop differently on a Friday than on a Monday? Do you shop according to the weather? Are any friends coming over? Is there a holiday coming up soon? If you haven't reflected much upon these issues, be sure that somebody has. Food manufacturers, wholesalers and retailers have all spent much time and effort to try to figure out how you will do your shopping. Still more human actors have been involved in laying out the shop design, designing and producing the packaging, carefully selecting shelf heights, controlling bacteria in food items, developing effective counters and influencing the whole range of other non-human actors involved in guiding your decisions. Where you buy. What you buy. How much you buy.

There is thus a wide network of actors involved in measuring, but also creating, demand for food items at points of sale. Many of these actors are actively seeking to earn profits or regulating how profits are earned. The network seems really efficient. People get food on the table. People in retail industry earn their income and so do food manufactures and farmers and packaging producers and others associated with producing, distributing or selling food. New food products are constantly (or at least three times a year in Norway) introduced to consumers who share an ever smaller amount of their income on food. However, 377 000 tons of food is wasted every year (Hanssen et al, 2011) where it is estimated that 52 000 tons are from producers, 2 000 tons from wholesalers, 68 000 tons from retailers and 255 000 tons from consumers. This is further estimated to have a total value of 18 – 20 billion NOK (~€ 2.5 billion), and it should be noted that figures from primary production, large households, hotels and restaurants are not included. The present food market – that is the organisation of exchange from raw materials to consumers – is thus not only providing food for people to it, it is also a giant waste bin. In addition, it should be noted that consumers are even worse at guessing their own demand than members of the food supply chain are in guessing the consumers demand.

The Confederation of Norwegian Enterprises (NHO) is hosting a project with the ambitious goal to reduce food waste in Norway by 25% by 2015. One of the work packages in the project scrutinises how industrial networks can contribute to food waste reduction. Several companies involved in producing, delivering or retailing different food categories are forming networks to discuss the causes for food waste in each supply chain and come up with solutions for reductions. This is the empirical setting. Business actors joining together to find the real causes for food being wasted anywhere from the farm to the shop floor. Here, the business actors are confronted with their view on the market, or what we can call 'frames'. Where frames are the conditions necessary for which, to rephrase Alderson (1965:26), "conglomerate resources in the natural state [can become] meaningful assortment in the hand of consumers".

One of the two purposes of writing this paper is thus practical and relates to the ambition of reducing the amount of food waste being generated. The other purpose is theoretical and relates to how markets can be described. These two purposes are interlinked as the basic preposition of the paper is that markets are performed, or being “ongoing practical accomplishments” in the words of Harrison (2010:3). This further means that the actors, both human actors involved in all aspects of supplying food and customers and non-human actors such as trucks, stores, regulations, food items and food waste are constantly configuring the market. Scrutinizing those heterogenous actors the market consists of can aid the understanding of who play a role in food being wasted. Thereafter, discussing the instrumental actors with representatives for production, distribution and sales of food can reveal which actors that are seen as unchangeable, that is absolutely necessary for the food market to exist. Hence, investigating food waste can contribute to knowledge to what constitute markets, which ‘frames’ do actors operate within. At least if one does not adhere to a rigid neo-classical view of what a market is. And this goes to the heart of a discussion pertinent to, and present in, the IMP group. Namely, how a relational-based network description of markets conform with empirical reality and how it opens for other managerial advices – or even other opinions on who can be viewed as managers – compared to almost tacit atomistic representations of markets.

Five sections follow after this introduction. The first presents a review of discussion of the concept market related to IMP. The second describes research approaches employed here to understand markets and how food waste can generate knowledge about the market for food. Thereafter, a case of food waste projects in Norway is presented. The fourth section gives an analysis of the case. Finally, a short discussion and conclusions are provided.

MARKETS AND IMP

Several contributions at IMP conferences and at the IMP group’s website have treated the theme of what characterises markets. Ulkuniemi and Tähtinen (2004) describe four different conceptualisations of markets in the marketing literature, namely market as: 1) a place; 2) a segment; 3) an exchange mechanism; and 4) process. They propose the use of market as process to be a conceptualisation “to better understand the phenomenon [markets] in the industrial marketing and purchasing context” (p. 19). Cantillon (2010) contrasts interaction in markets interaction in networks, or rather “theoretical assumptions which continue to underpin much of mainstream marketing... [with]... the views of IMP group researchers” (p. 33). She posits that, according to a neoclassical position: “The fundamental condition needed for the existence of a market, whether perfectly competitive or monopolistic, is the ‘impersonal relation between buyer and seller’ (Uzzi, 1996:676). ‘Research in economics and sociology assumes that the exchange system against which other organising forms are measured is the idealised atomistic market, which links actors through arm’s length ties’ (ibid)” (p. 35). Furthermore: “Price is the main signalling mechanism so that if the price of a product is high (relative to production costs), sellers will produce more, while in the event of the price falling, less will be produced (Levačić, 1991). In essence, price is seen to be all the

information that participants in the market need in order to make ‘efficient use of the available [scarce] resources’ (Milgrom and Roberts, 1992)” (p. 36). Snehota (2003) explores “how the perspective taken on ‘market’ affects the research in marketing and the way to act of those who act in or on, what they see as ‘market’”(p. 3). He puts forward three aspects of markets where market seen as price mechanism (neo-classical perspective) deviates from markets as described in IMP literature. For markets seen as price mechanism these are: 1) the nature of the relationships among actors where there is limited interaction and price conveys all information; 2) the boundaries of the market which are given by the product (and its substitutes); and 3) the dynamics of market evolution where markets are assumed to be stable or tend to stability. Snehota, Cantillon, Ulkuniemi and Täthinen thus give an account of the mainstream idea about markets, that we can expect many business managers (and regulators and other stakeholders) to act according to.

Cova and Salle (2006), however, criticize the IMP group for attacking an outdated reference with “a constant reassertion of the four challenges of industrial marketing” (p. 2). They advocate keeping up to date with prevalent research streams in consumer culture theory. Their agenda is rather to make the relevant connections between BtoB and BtoC marketing, but this is again related to basic assumptions about the workings of markets. Brennan (2003) is also attacking the “alleged dichotomy between industrial and consumer marketing” (p. 1). He presents a long list of perceived differences between B2B and B2C marketing categories into market structure differences, buying behaviour differences and marketing practice differences. Comparisons of industrial and consumer perspectives are criticized for prejudicial given by examples where for instance industrial capital purchases are compared to consumer convenience purchases, and Brennan concludes that “one does [...] get the feeling that the dichotomy between consumer and industrial marketing is deemed to be so obvious that a carefully argued justification is not really necessary” (p. 10). Although neither Brennan (2003) nor Cova and Salle (2006) aspire to describe the “true” nature of markets, they touch upon how the representations of markets in industrial marketing may lack important elements. A point further raised by Haugnes (2011) who investigates the role of consumers in industrial networks. She states that industrial network literature acknowledges that consumers are the overall purpose of what is going on elsewhere in the industrial network and the literature can be applied to end-consumer markets. Still, she continues: “consumers’ participation in business relationships, and thereby the industrial network, has not been considered particularly interesting or ‘crucial’ (e.g. Håkansson and Snehota, 2000:87)” (p. 4).

Regarding the discussions presented above, we are left to understand that every account produced within the IMP approach is applying a model in contrast to the taken-for-granted neoclassical market model. Still other researchers associated with the IMP group have explored a different trajectory to expand and develop knowledge of markets. Azimont & Araujo (2007, 2010), Brekke (2009) Hagberg & Kjellberg (2010), Harrison & Kjellberg (2010), Hoholm (2009), Kjellberg & Helgesson (2006, 2007), and Mattsson (2003) have all applied ideas or concepts or ways of performing research borrowed from sociology of translation (or Actor-Network Theory (ANT) or Anthropology of Science and Techniques if you like) to complement approaches found under the IMP umbrella. Many of these have been

investigating both how marketing-as-theories is influencing markets and how marketing as a scientific discipline should encompass a wider definition of market actors and recognition of marketing-as-practice. To cite Kjellberg and Helgesson (2006, p. 844), the questions are: “How can ideas affect reality, or more specifically, how can ideas about markets affect real markets?” (p. 844). This is based on the proposition that “marketing produces markets – not only, nor on its own, but still” (Araujo, Finch and Kjellberg 2010, p. 1).

This paper follows in this latter tradition, trying to understand how marketing has produced the food market, but also how focusing on waste can change the frames. More information on the theories underpinning the paper and the research design is given in the next section.

THEORETICAL STARTING POINTS

Sociology of translation began with studies of how science is produced (see for instance Callon and Latour 1979) and brought attention to markets when Callon (1998a) started investigating how economics partake in economies. Relying on studies on how stability is (or isn't) achieved in heterogeneous networks consisting of human and non-human actors, the conditions required for the existence of markets are explored. In Callon's (1998a) terms the concepts of framing and overflowing are used to describe how transactions are made possible through establishing a boundary within which interactions take place and how interactions are challenged by the surrounding context. The concept of frame is borrowed from Goffman (1971). Callon (1998b) writes: “Goffman emphasizes the dual nature of this framing process. Clearly it presupposes actors who are bringing to bear cognitive resources as well as forms of behaviour and strategies which have been shaped and structured by previous experience: the actors are capable of agreeing (an agreement which does not have to be explicit) on the frame within which their interactions will take place and on the courses of action open to them. But the framing process does not just depend on this commitment by the actors themselves; it is rooted in the outside world, in various physical and organizational devices. This is why framing puts the outside world in brackets, as it were, but does not actually abolish all links with it” (p. 249) Frames are thus the entire situation, not a context the situation is occurring within that determines the rules for how to behave. Callon asserts: “This concept of framing is easily applied to the interactions that interest economists, whether in the form of classic commercial transactions or contract negotiations. To negotiate a contract or perform a commercial transaction effectively presupposes a framing of the action without which it would be impossible to reach an agreement, in the same way that in order to play a game of chess, two players must agree to submit to the rules and sit down at a chessboard which physically circumscribes the world within which the action will take place.” (p. 250) He further claims that economists often perceive framing as the norm and focus their effort “on the identification of leaks and the formulation of devices for creating more effective frames” (p. 251). In constructivist sociology, the viewpoint is the opposite: “instead of regarding framing as something that happens of itself, and overflows as a kind of accident which must be put right, overflows are the rule and framing is a fragile, artificial result based upon substantial investments” (*Ibid*, p.252).

Such a viewpoint may seem counterintuitive to us as ordinary food shoppers. Going to a supermarket, one can easily get the impression – given the standardized layout – that this is the only way of getting us food. Kjellberg & Helgesson (2007) have shown us, however, the immense amount of work required to create the self-service store. Still, economic orders, when in place, may be quite stable and Hoholm and Olsen (2012) argue that ANT lacks a good understanding about the “industrial economic aspect of organisational networks and the conservatism of past investments in resources” (p. 3). This does not mean that Callon claims overflows easily change an existing frame. In fact, he states that: “Overflows are devoid of economic significance unless they give rise to evaluations and measurements. The theory of externalities requires a metrological framework – ie, measuring instruments – that allows the different agents to negotiate an agreement by calculating their respective interest” (Callon 1998b, p. 259).

Calculation is thus a very important term in this respect, as further explained by Callon and Muniesa (2005). Calculation doesn’t need to involve numerical operations. Instead, they write that: “Calculation starts by establishing distinctions between things or states of the world, and by imagining and estimating courses of actions associated with those things or whit those states as well as their consequences” (p. 1231). Cochoy (2008) extends this further when he introduces the term ‘calqulation’ to denote measures of economic actors’ interest as a mix of quantitative and qualitative calculations from more than two actors. “Calqulating means anticipating, measuring, testing, influencing and correcting the discrepancies between one’s position and that of one’s partner, and the other way around” (p. 30).

Azimont and Araujo explore such broader calculation techniques in how manufacturers of non-alcoholic beverages contribute in (per)forming markets through category reviews (2007) and in classifying petrol stations (2010). Such ideas are used here to search for how and which measurement technologies (e.g. which categorizations) are established for food waste.

Relating this to the market for food, we can expect to find measures and indicators in and between organisations that reflect the prevailing view on markets. The paper seeks to identify such calculation tools both in the situation where the focus is on providing a product to a consumer and where the focus is on avoiding food waste to contrast and compare these. This will inform about the present and a possible future state of the food market.

Furthermore, the title of the paper suggests that we actually know the state of the food market at present. How else could we try to describe its transformation? Of course, as can be deduced by the discussions above, the approach taken here means that the state of the food market at present is dependent on the tools employed for describing it. Descriptions of the possible transformation and the present state must therefore be produced simultaneously.

We do however know a few things about what we will find in the case as reasons for food being wasted. We know that one of their findings will be that the expiry date has exceeded, as several studies has found this to be a main cause for food being wasted. But that is not sufficient as an input for action. We need to know why the expiry date was exceeded. Did someone order too much? Was the distribution chain inefficient? Is the regulation with regard

to remaining days for consumption too strict? Did consumers behave in ways different from normal? We need to investigate the properties of the food product and its packaging. Should the expiry date have been prolonged? Why is it set as it is? And we need to relate all this information about the product, its packaging, the organisations that handle it, the forecasting of the consumer and the regulations in place to other theories: theories of how markets function, theories of consumption and theories of food (including issues such as culture and health). Hopefully, the shift of focus in the networks from the everyday activities of producing, distributing and selling food to reflecting on practices and how they generate food waste can bring up better understanding about the actors, resources and activities that are involved. The process of tracing the causes of food waste occurring is a process of opening the ‘black boxes’ and discussing what the market for food stuff really comprises. Human actors in several supply chains for different food categories are coming together to discuss what are the important elements (human and non-human actors) in making food available for consumers. Furthermore, they discuss which of these elements are changeable and which are absolutely essential in order to be part of ‘the food market’. Thus, discussions may reveal what are within the frame of food exchange and what should be regarded as overflows.

In addition, the paper draws on a model “to assist in sorting empirical observations” (Kjellberg & Helgesson 2006, p. 842). The model differentiates between three interlinked categories of market practice: 1) exchange practice denoting actual exchanges, 2) normalizing practice denoting acts to create the rules, and 3) representational practice denoting the activities that bind actual exchanges to a certain view of the market. This model is used to sort different actors - (or actants in ANT (see for instance Latour 2005), and can be ideas as well as physical entities, organisations and individuals) – identified in food waste projects.

Although traditional IMP literature is left out of this description, the IMP approach has contributed to the understanding of how economic activities should be traced and described. Literature discussed in the later paragraphs in the chapter on Market and IMP have all contributed to connect sociology of translation and IMP, enriching both approaches and clearly influencing the how the case work is performed and the case written.

CASE DESCRIPTION

The case is one of a project, or rather two projects, on food waste in Norway. One is a development project called ForMat with the ambition to reduce food waste with 25% until the end of 2015. The other is a tightly connected research project called Food Waste Prevention with the aim to generate knowledge about amounts of food waste being generated at different locations and the reasons for its generation. The case is looking both at the making of the projects and the content in the projects running. Descriptions of what actors are present, directly or through discussions, will illustrate the content of the food market and the nature of the actors. The author of this paper is part of the research project and has participated in network meetings and subnetwork meeting (and is soon about to conduct detailed interviews outside the organized network settings).

Organizing food waste projects

Projects on reducing food waste in Norway were first initiated in 2008 when Ostfold research did a pilot project to estimate food waste for the largest Norwegian retail chain called NorgesGruppen. From the report, one can read that “the project was commissioned by NorgesGruppen, as a part of their environmental strategy to increase retailing’s environmental and resource efficiency” (Hanssen & Olsen 2008, p.6).

The work in the pilot project was continued in a project called “Matavfall – avfallsforebygging og emballasjeoptimering” (Food waste - waste prevention and packaging optimization), abbreviated EMMA, led by Norges Emballasjeoptimeringskomité (The Norwegian committee for packaging optimization) and LOOP (the branch organization for material recycling companies), and financed by the Norwegian Ministry for Environment. Operationally, Ostfold Research and Mepex Consult AS (a consulting firm in the waste sector, also capable of providing sorting analyses of waste) were responsible for conducting studies to provide statistics on amounts of food wasted in households and reasons for waste being generated. Special emphasize was placed on how features of packaging (e.g. size, mechanisms to open and close, technologies to manipulate atmospheric or barrier conditions, etc.) were influencing on the amount of food waste.

The EMMA project was also used to develop two proposals for continuation of the project. One turned into a business driven project called ForMat (but sponsored by the Ministries of Agriculture and the Environment, public financing for innovation, and by industry) and the other into the research project Food Waste Prevention led by researchers and financed by the Norwegian Research Council.

The ForMat project consists of four subprojects: 1) mapping of “usable” food waste in Norway; 2) network projects (two networks related to profitable durability and one network related to mapping); 3) communication and reporting; and 4) preventive measures (from the project report by Hanssen & Schakenda 2011). Similarly, the project Food Waste Prevention has four work packages: 1) food waste in the retail sector – what, why and how to prevent; 2) Food waste in the consumer stage – detailed studies of what, by whom, why and how to prevent – includes a PhD program at SIFO (in social anthropology), 3) Food Waste Prevention through industrial networks in value chains – included post doc education; and 4) Food Waste Prevention technologies – packaging and distribution (from a presentation by Brekke 2012). Ostfold research is heavily involved in both projects and they are, as can be seen, partly overlapping.

The ForMat project emphasises collection of data on amounts of food waste generated in different life cycle stages (e.g. at the food producers, at the wholesalers and at the consumers), formulation of measures to prevent food waste (especially from actors involved in food value chains), and communication to involved parties and the general public. The Food Waste Prevention project, on the other hand, has its main focus on causes for food waste being generated throughout food value chains. It consists of cross-disciplinary research

spanning from social anthropology to bacteriology and produces output on such diverse themes as consumers' food purchasing decision, the constitution of food markets (!) and different surface treatment of food stuff to prolong durability. Even persons involved in both projects may have problems in separating them but this interwoven character is also used as a positive argument about synergies. ForMat is said to provide background data for Food Waste Prevention to dissect, and understand, the "right" causes. The information about causes is fed back to ForMat to focus the implementation of measures. Although the picture is more messy than this superficial description, the financing sources are happy to see that they "get more for the money" by gaining access to an additional project.

In practice, the recruiting of organizations has been secured by the anchoring in relevant branch organizations (through NHO) for manufacturers, wholesalers and retailers. The retail sector in Norway is exceptionally concentrated and includes four large retail chains which, according to Stenmarck et al (2011), have "a market share of about 100%". The food industry is also characterised by a few large players covering the substantial part of food products to Norwegian customers (problematised in the largest Norwegian newspaper *VG* 2012). Thus, the number of organisations involved is relatively small. All the retail chains are involved in the network project focused on reducing food waste in value chains. Companies in the food industry were selected from categories where the value or the amounts of food waste was found to be largest. Subnetworks were formed according to these categories. One of the first issues to be discussed was the need for confidentiality agreements but the organizations decided that if information complied with competition legislation it could be shared.

The projects have generated massive media coverage on television and in newspapers and have organised events that brings the message to the public. In none of these incidents has there been any opposition to reducing food waste and there doesn't seem to be any opposition to the ambition of reducing food waste. Considering the rather large amounts of food waste being generated, there must be resistance (or pure ignorance) somewhere. Perhaps the non-verbal actors play a central role?

The description of these projects has mainly displayed the human actors (mostly in the form of organizations) and only few references have been made to materials the projects are referring to (non-human actors such as the food waste, packaging and distribution systems). This picture will change when, in the next section, focus is turned to meteorology developed in the projects.

Calculating food waste

Ever since the first pilot project, one of the main tasks have been to define and delimit what food waste is. The pilot project used a rough estimation of food waste from statistics on organic waste multiplied by an assumed portion of the waste being food waste.

In the ForMat project, the name of the object to be studied was changed from "matavfall" to "matsvinn". The first term can be directly translated to food waste in English, while the

second term designates a loss of food. This change of term was induced to clarify that what is studied is exactly not waste, but the opposite. This discussion is also brought up in the Nordic project where the terms “avoidable” and “unavoidable” food waste are used (Stenmarck et al 2011). “Avoidable” food waste is used to designate “disposed food that could have been consumed if managed differently” (*Ibid*, p. 9), which differs from for instance uneatable parts of fruits, vegetables or animals. However, as the researchers are unable to compile statistics according to such a distinction, they are added to one category denoted “total food waste”.

To be able to provide solutions to the food waste problem, it is not enough only to provide quantifications of the total amounts of food waste generated. The ranking of what food categories are the more important, what reasons for food ending up as waste are important and what types of stores wastes more are used to make the problem able to handle. The first project on food waste for NorgesGruppen already sorted stores into two categories, one high end label with a fresh food department and a low end label with only prepacked food. Food waste was sorted according to food type and it was found that fresh bakery products and fresh fruits and vegetables contributed most to waste. Shops without a fresh food department had only two categories to explain the reason for food being wasted, either 1) the expiry date was exceeded (or quality loss for fresh fruits and vegetables), or 2) the product was damaged in storage or transport. The fresh food department had more categories but few were used. For both types of stores, exceeding the expiry date was by far the most important reason (approximately 90% of all registrations were in this category).

Information was sorted by the researchers and plots were made. There were large variations between stores for the same product categories and there were large variations between different food categories. An example from one food category is shown in Figure -11 where the percentage of food wasted is plotted against the turnover for each product across the thirty stores in the sample.

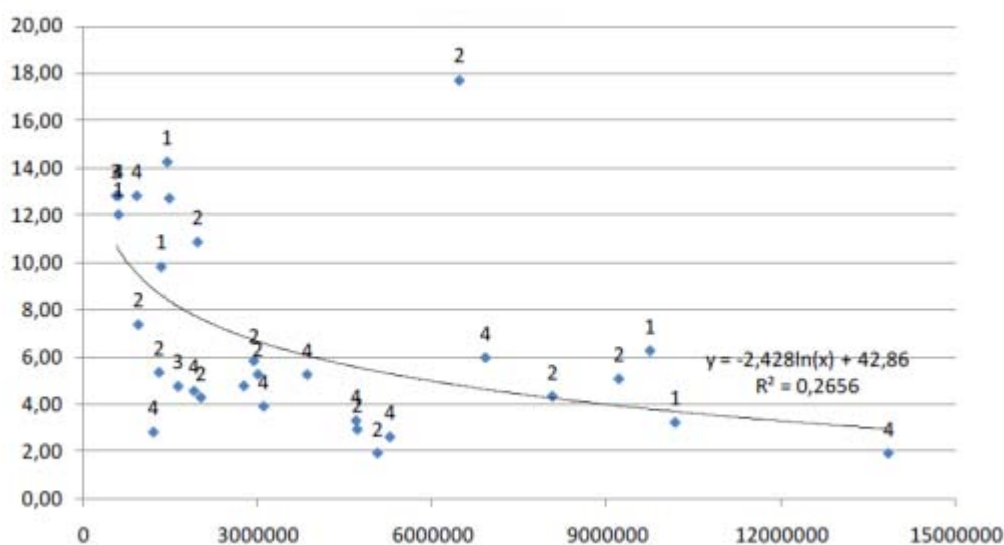


Figure -1 Waste relative to turnover for a food category

The numbers assigned to each point in the plot are denoting the perishability of the individual products. A low number means the product is short-lived (less than ten days in category 1) while a higher number means longer product life (more than 31 days in category 4).

In parallel with ongoing registration in the 30 stores, more detailed information on waste generated in households have been collected. This has been done partly by sorting analyses of waste two places in Norway during one week in the spring and one in the fall, and partly by telephone surveys where consumers are asked if they waste food, what food they waste and the reasons for food being wasted. One of the obvious findings was that people claim to throw away less food than what was found from sorting analyses. The food categories with most waste correspond to the categories with most waste found at the retail level.

An important aim of the projects has been to standardise methods to register food waste in different parts of the value chain and to export these methods to companies in the food industry, wholesalers and retailers. Still, the actors in the projects call for more fine grained methods to be able to get the correct amount of specific food products.

Discussing measures to reduce waste

One work package in the ForMat project (coordinated with a work package in the Food Waste Prevention project) is focusing on how industrial networks can join to find solutions to reduce food waste in industrial networks. The term network is here used to coin groups of actors from one or more supply chains that are invited to work together (i.e. a narrower definition than one would employ in IMP or ANT research). The project management in ForMat has invited retailers and wholesalers in addition to companies in the food industry pertaining to the four most important waste categories: fresh bakery products, fresh fruits and vegetables, meat, and processed food. One company in the food industry wanted to include dairy products, so a fifth category was added. Every network was assigned one representative from a retail chain and at least one representative from a food producer.

During the start-up, fresh food and vegetables never got out of the starting block because of disagreements between the owners of the largest production company. Fresh bakery products had a slow start due to restructuring of the company that had been part of a pilot project. The other network projects got under way and were challenged by the ForMat project management to come up with numbers on the most important food products related to waste. Detailed information from formerly conducted analyses was not given to put pressure on the participants to gather their own data. The project management gave two reasons for this. One was that they wanted all retail chains to start registering amounts of food waste in a similar fashion to NorgesGruppen. The other was that they wanted to compare original data to see if the assumptions about statistic relevance held. Both the food producer(s) and the retail chain present in each network were asked to compile data on the products generating most waste. As one of the participants said: "If a product turns up to be important on both lists we know

that we should focus on why this is a problem product; and if different products are important on both lists it's even more interesting.”

Before start-up, all participants had been given a document explaining a ten-step methodology to scrutinize the “real” causes for a problem. This was meant as a template for how to conduct the projects. All of initial project meetings started with discussions about the subnetworks mandate and how they would go about to come up with interesting results. Several participants expressed concerns that one would only end up with general findings of the type: “there are too many product varieties” and end up in a report to be left on the shelf. Their organisations, they claimed, would rather want specific information on how they should deal with for instance the mango yoghurt. Representatives from the project meetings were present in the initial meetings and emphasised that they would want each of the subnetworks to rank the most important products according to amounts of waste and then to scrutinize the most important causes. Discussions were further held on how they should get the necessary data and systems for information handling (like SAP) were brought up. In one of the meetings, the hosting company's SAP tool was put up on the screen and a representative from the company tried to generate a list on the fly. It soon became clear that the numbers weren't that easily accessible. This action also led to two other themes; one was the way waste was being registered and information communicated between the companies and the other was what indicators that were used to manage the relationship between the food producer and the retail chain. The first of these themes gave statements like: “It was easier to find amounts and causes before when each store had to file a complaint on a pink note every time a product had to be wasted. Nowadays we have a frame agreement regulating a certain amount that can be wasted”. The second theme was triggered by a graph displaying the company's service level achieved towards each of the four retail chains the last week, and a question if the company had any similar indicator related to the amount of food being wasted (which they had not).

Three of the networks had found time for a meeting and had come up with an initial list of causes before a first joint meeting between all the subnetworks. In the meeting, all the networks had a plenary presentation of preliminary results. Unsurprisingly, considering the presence of the ForMat project's management in all the preliminary meetings, the results were quite similar across the subnetworks although they were at different stages concerning data collection and they had different ways of visualising the list of causes. One of the networks was praised for its clarity in presentation and the two other networks presenting both said they would use it as a template for further work.

Causes of food waste presented were: wrong prognoses (including going in and out of season, campaigns and calendar mismatch), late or wrong ordering, regulation, short product lives, size of distribution packing, product launching, quality problems and products with low rotation.

Some of these issues were more a subject of discussion than others. Regarding regulation, especially one standard called STAND 001 was discussed. This regulates how to denote expiration dates (as “best before” or “last day of consumption”) and the share of the

product's life available to each actor in the supply chain. Eggs were used as an example of a product that should have a longer product life as Norwegian producers of eggs believe they should be exempted from EU regulation as there never has been any Salmonella outbreak in Norway. Representatives from NHO said they would discuss the issue with authorities. Regarding prognoses and ordering, part of the discussions were focusing on product diversity, where several of the actors said: "We don't want to go down that road. Of course, if we had only one product everything would be easier, but..." They were making clear references to an ongoing discussion in Norwegian society about the lousy product diversity (according to a consumer interest organisation) in Norwegian food stores.

The preliminary lists of problematic products showed many products with labels specifying the exact season, such as "Christmas salad". A researcher said that it would be wiser not to have such names to be able to sell the product even in January. The immediate response from industry being that more and more products get such labels and that is just the general trend. One of the products on list showed a result of more than 100 % waste. Surprising to everyone. Unfortunately, the representative from the organisation responsible for the list was not present and the issue left unexplained.

All the subnetworks were challenged to refine the list of causes and the list of products generating waste. Since then, all the networks have held at least one meeting (still except fresh fruits and vegetables), discussing the issues further. That is where we are now. In the middle of the process. Still uncertain about the actual outcome.

CASE ANALYSIS

Introducing food waste as a most relevant issue for everybody involved in producing, distributing and selling food can be seen as an overflow. That is, food waste is not part of the original frame for exchanging food between agents anywhere from production of food until the food leaves the shop out the wrong door. The actors in the food business have kept track of food waste and even more so in the past, but the information has clearly not been used to reduce the overall amounts of waste. Whether the establishment of food waste projects have an effect on food markets is too early to tell, but it has certainly created new frames. What we have seen in the case is that what pertains to the frame in food markets become overflows in the food waste projects, exemplified by representatives from the food industry and from the retailers' reception on issues like product diversity and seasonal labels.

By focusing on these controversies between the frames involved in food exchange and the frames involved in understanding food waste, the issues at stake can be identified. Some of these are presented according to the three practice categories (exchange, normalizing and representational) in table 1.

Table 1 Important issues related to food waste sorted according to practices and important actors.

	Issues	Human actors	Non-human actors
Exchange practices	Making food available for customers for a longer time Smaller packaging sizes	Regulatory bodies Distribution Packaging producers Retail companies Families	The food itself Handling and storing equipment Production planning equipment Packaging material
Normalizing practices	The unethical practice of wasting food Food diversity as important to life quality	?	?
Representational practices	Food categories Customers want large amounts displayed Customers want many varieties (even at late hours)	Marketing people Customers Shop workers Customers Purchasers	Shelves The food itself Shop arrangements Shop arrangements

Such an attempt, as in table 1, on sorting important issues related to food waste into different practices and identifying the relevant actors can aid the understanding of why food waste is generated and who has the key to come up with solutions. This can both be useful for advancing research and for actually reducing the amounts of food waste. Each of the issues relates to human and non-human actors that may or may not be instrumental with regard to defining the frames for which exchange of food can take place.

The question marks in the cells belonging to actors (both human and non-human) in the normalizing practices dimension are deliberate. Although normalizing practices are played out in actual situations, for instance as in text in a newspaper chronicle stating that the unequal distribution of food in the world is unethical or as the father telling the child to finish her plate, the important actors may be difficult to pin down. This can be relevant concerning some of the project participants' fear of the project just ending up as talk about the big issues rather than practical solutions for small issues. The clash between the normalizing practices pertaining exchange of food and the normalizing practices pertaining (avoidance of) wasting food was explicated by an industry representative as: "We probably have waste built into our models as the punishment is much larger for running empty than for generating waste". It may be easy to revert to explanations like food waste being just a side effect of capitalism or of the working of society or another "big" placeholder.

Users (or rather non-users) are pulled into the discussion by the waste analyses. The organizations in the food market have tended to utilize a neoclassical market view where price conveys the necessary information. Turning to a discussion of waste being generated,

brings the consumer into the equation, and the equation is no longer just a calculation of price. For what dimensions in the industrial network make the food item not to function in different locations? How is the food manufacturer impacting on the consumers' decision to throw a product in the waste bin rather than consuming it? In relation to this, all of a sudden the market for food is not only a market for products. It is rather entangled in the market for getting rid of waste. We are left uncertain whether we should use production metrics or waste metrics and in what way these are connected.

CONCLUSIONS

Can we understand markets without focusing on actual transactions? This paper has not focused on the transaction, but rather the opposite, the goods unsold, the remains, the losers in the economic world, those that have been offered to the market but not wanted. Thus, every time an amount of food finds its way to the waste bin it signals that one or more element in the food market has malfunctioned. Investigating food waste thus requires everybody involved to scrutinize every element in normal practice to see whether this contributes to food being wasted. This is a first attempt on characterising what the food market looks like when standing in a food waste project.

The case showed that the framing of food exchange is challenged by overflows when focusing on food waste. Actors pushing for reduction of food waste are confronted with physical objects and structures that inherently generate waste.

The work performed can give insight to the IMP approach, both by enriching the description of what the market is and by tying the consumers closer to the industrial activities. As the project continues, more actors in the food market will be thoroughly investigated. This will probably lead to better descriptions of how calculations are used to make decisions and what actors become part of the frame and what actors become overflows. From the outset, food waste is described as a cost but there are reasons to believe that the amount of waste would be reduced if it was a cost to everyone. The question of who eventually gains from waste being generated is one for further empirical investigations.

Hopefully, the study of markets will also lead to better understanding of what actors which are important for reducing food waste and concrete actions in this respect.

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