

Towards a new zero food waste mindset based on holistic assessment

D4.1 Detailed design of social research analysis & ethics survey

Deliverable N°	D4.1	Work Package N°	4	Task/s N°	4.2
Work Package Title	Social research to foster changes in consumer behaviour and business practices				
Linked Task/s Title	Task 4.2: EX-ANTE comprehensive overview of the FW root causes and potential solutions perception				
Status	Draft			(Draft/Draft Final/Final)	
Dissemination level	PU			(PU-Public, PP, RE-Restricted, CO-Confidential)	
Due date	M6 (February 2023)		Submission date	24/02/2023	
Deliverable version					

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1. Introduction and scope

ToNoWaste is a project funded by the European Union under the programme Horizon Europe in the topic HORIZON-CL6-2021-FARM2FORK-01-13.

The project starts 01/09/2022 with a project duration of 48 months.

The mission of ToNoWaste is to encourage actors in European food systems, using evidence-based tools and lessons learned, to make better decisions towards more sustainable food production and consumption patterns.

ToNoWaste main objective is to provide farmers, supply chain companies as well as consumers and policymakers with more objective, integrated, and standardized information about the impacts and global co-benefits of their daily actions in terms of food waste. ToNoWaste will inspire them to co-create a portfolio of positively assessed pathways to shift Europe towards a healthier, more resilient, inclusive, and sustainable food production and consumption.

1.1. Specific objectives of the project

(O1) To Design an open innovation ecosystem that engages European researchers, municipalities, farmers, supply chains and citizens to share open access scientific knowledge about FWPR (Food Waste Prevention and Reduction) and its assessment. (WP1)

ToNoWaste seeks to create synergies with other ongoing actions related to FWPR at EU level keeping in touch with four H2020 sister projects to reuse data and collaborate in the actions assessment for avoiding duplication.

(O2) To unveil what better decision means in the fresh food value chain (FFVC), supporting the FWPR actions with the best impacts for the food system sustainability. (WP1)

ToNoWaste has selected FFVC because Milan urban food policy pact prioritized to make fresh food accessible for all due to its potential to solve dietary-related illnesses (e.g., diabetes, heart disease and cancer). Therefore, O2 will investigate how to make FWPR compatible with FFVC sustainable development with a cost-benefit approach (RO1).

(O3) To co-create a new science-based framework (SBF) for evidence-based decision making in food systems. (WP2)

O3 will look for synergies with H2020 sister projects, city councils and JRC to define logical steps for environmental/social/economic holistic impact FWPR assessment (RO2).

(O4) To transform the SBF into Quantitative Decision-Making Methods (QDMM) that supports researchers and professionals in decisions related to FWPR in the FFVC. (WP2)

O4 requires the SBF decomposition into specific workflows for the fresh products under study, considering its origin and business processes involved to establish the limits of acceptance/significance for each decision maker (RO3).

(O5) To engage more and more FSC actors in the mindset and behavioural shift offering open access to: i) consumer perception of the FWPR problem in fresh food value chain (FFVC) and potential solutions; ii) learning contents, technical guidelines to implement the best practices available - including date marking and smart food packaging, as well as iii)

apps that automate the participation and monitoring process for facilitating decision making for supply chain actors (WP4 and WP5).

The behavioural change will be prompted by results of social research (RO4) focused on understanding the consumers' and producers' perception of the problem and the solutions proposed by decision-makers. ToNoWaste will facilitate the co-creation of FWPR guidelines to identify hotspots of problems, plan actions, assess corrective solutions and document improvements. During Multi-actor workshops and other networking events, we will validate the tools (PR, DEM) by discussing the practical learnings (KH1) and quantitative data from actions assessment (KH2).

(O6) To take advantage of synergies among R&I projects and local/national FWPR actions to co-create specific accounting tools and an integrated platform for assessing the root causes behind FW along the value chain as well as fostering the most beneficial FWPR actions. (WP2 and WP3)

O6 will require the creation of accounting tools for professionals and its integration into an open platform for non-expert users (DEM) to facilitate the decision-making process to all the actors involved in the value chain. DEM will maximize the impact at EU level using open-source technologies as FIWARE. The previous/current FWPR actions in sister H2020 projects will be compared to detect the best practices that maximise the overall positive impacts.

(O7) To foster the organisational change with new coaching services and best practices in FSC. (WP6)

O7 is based on the creation of learning contents, training actions and a business coaching service oriented to support entrepreneurs. ToNoWaste will take advantage from current innovation HUBs related to urban FFVC where food companies (mainly SMEs) can co-create more sustainable business models.

(O8) To co-create new EU policies considering the diversity on regulatory ecology about FWPR. (WP6)

O8 will consider the new accounting and reporting methodology developed for ensuring a deeper integration of sustainability into the corporate governance and regulation of public supporting schemes for innovative businesses (KH4). The project will investigate how to transform the best FWPR actions in terms of KPIs into new standards and labels for fostering the organisational change. The project will use the Covenant of Majors and Milan Urban Food POLICY Pact for the open discussion of the white paper where other agencies like DG AGRI and JRC will be invited.

1.2. Scope of the deliverable

The aim of this deliverable is to summarise the initial experimental setup for the ex-ante analysis and the implications in the ethical area.

2. Study design – end consumer/household

This protocol outlines the ideal situation in regard to data collection. Deviations from this protocol are possible if the situation impedes the adherence to the protocol.

2.1. Theoretical background

The following protocol uses several concepts and theories from social sciences. The main model used is a holistic model of behaviour change, the COM-B model developed by Michie et al. (2011). This model states that behaviour is a result of motivation to perform the behaviour, if the person has the capabilities and opportunity to do so. This model integrates many contemporary models of behaviour and provides a framework for this multitude of models. The Theoretical Domains Framework (TDF; Cane et al., 2012; Michie et al., 2005) provides a further elaboration of the COM-B model by breaking down behaviour causation into 14 domains.

2.2. Experimental design

The effectiveness of social research actions during the ToNoWaste project will be assessed experimentally. Specifically field experiments are performed, meaning the experiment takes place outside of a laboratory setting, in an everyday environment. The nature of an experiment allows the detection of causal effects of the actions, meaning we can show whether the action actually leads to a reduction in food waste. This is due to the temporal nature of an experiment, with assessment taking place both before and after the action. In addition, a group exposed to the action is compared to a control group, which completes measurements at the same time without being exposed to the action.

The experiments will vary based on the actions which are yet to be determined. For every action, a separate experiment will be carried out. The following characteristics are shared across the experiments for all actions:

- Ex-ante and ex-post measurement to establish the effectiveness of actions
- At least two experimental conditions, one action group and a control group
- The same participants for both the ex-ante and ex-post measurement
- Measurement via a survey delivered through the ToNoWaste app (T4.1)

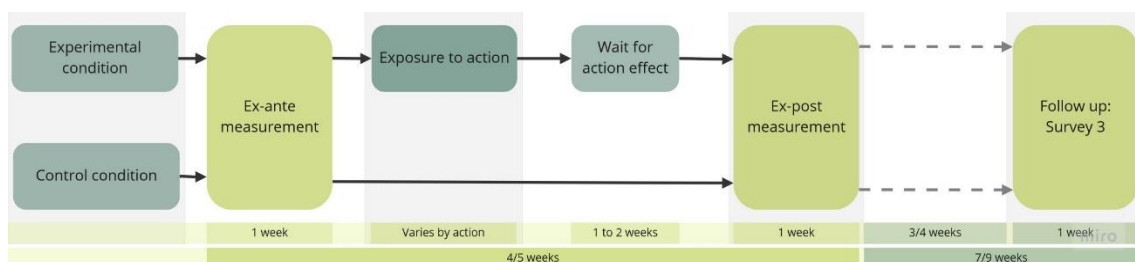


Figure 1. Example of an experiment's timeline

2.2.1 Ex-ante and ex-post measurement

Participants will complete a survey both prior to and after the action has taken place. The surveys in both instances are identical, but versions will be adapted to the different actions. Comparing results from before the action to results after the action allows the attribution of any differences to being caused by the action.

Where deemed appropriate, a longer term follow up survey will be conducted.

2.2.1.1. Ex-ante measurement

The ex-ante measurement takes place in the week prior to the action. Participants will be asked to be mindful of their fresh food waste for an entire week and report on their generated food waste at the end of the week, together with questions to be able to monitor the reasons about their food waste. This survey has to be completed prior to the action being introduced.

- Participants are notified that they should collect their fresh food waste in a bin bag starting the following morning.
- Exceptionally, if the participant is unable to start the next morning, they can choose to delay the start up to 24 hours later (so, until the following morning).
- Collection of food waste starts the following morning (or within the following 24 hours), and lasts seven days (minus any delay, for those who exceptionally could not start on time. This will be considered in the data analysis).
- On the day after the last collection day, participants will be prompted to report on their generated food waste complete a survey to better understand the possible causes for the food waste generated.
- Participants have 48 hours to complete the survey.

The following example indicates the ideal situation for data collection and the actual experiment may differ:

- Participants receive a notification on Saturday that starting from the next morning, they should collect their food waste.
- Participants collect food waste in a dedicated bin bag from Sunday morning to the next week Saturday night.
- On the Sunday after food waste collection has ended, participants will be asked to report on their generated food waste.
- The survey closes at the end of Monday.

The process outlined above has to be completed before the introduction of an action. Meaning that at least 10 days prior to an action, participants have to receive the first notification to start collecting their food waste.

Participants are asked to start the survey on a specific day and have 48 hours to do so. Once the starting date has been set in the app, it will automatically prompt them to complete the survey after the week of food waste collection has passed. In summary, participants just fill in the survey once at the end of the week and before the start of the action, the only thing they must do day by day is to collect their fresh food waste in the bags provided (see Section 3.1.2).

2.2.1.2. Ex-post measurement

The ex-post measurement assesses the effects of the action and therefore takes place once the action can reasonably be assumed to have taken effect. This may differ per action (i.e. an action targeting cognitions may take longer to take effect than an action teaching applicable skills, such as a cooking workshop). Participants will again be asked to collect

their food waste during a week. The process of the data collection is the same for the ex-ante and ex-post measurement.

The ex-post measurement will be started within 14 days after the conclusion of the action, depending on the action. Participants are more restricted in their starting time, to ensure everyone completes the survey timely. However, a small deviation (24hours) in starting day is acceptable.

A control group completes the surveys at around the same time as the group of participants that was exposed to the action.

2.2.1.3. Long term follow-up

This is an optional additional measurement, only to be conducted under specific circumstances. To gain an understanding of longer term effects of an action, participants may be asked to complete a survey three or four weeks after the latest survey was completed. This survey is only completed depending on the type of action. The ToNoWaste app will automatically schedule the follow-up study. From the moment that the survey is prompted, participants have two days to start the survey at a time convenient for them.

2.3 Participants and recruitment

2.3.1. Sample requirements

The sample for the experiments needs to consist of a group of people who are able to expose themselves to the action under study. This means they have to be from the local area and interested in helping our research. They also have to be willing and able to complete the surveys over a longer period of time, and want to either download the ToNoWaste app, use a Qualtrics survey, or be willing to be contacted by phone (should they have any disability that impedes them to respond via online means).

Every experimental group is required to have at least 50 participants in the ideal situation. However, if this cannot be acquired, study design will be adapted accordingly.

Some requirements for the sample are:

- One participant represents one household, so only one participant per household
- Participants are at least 18 years old
- Participants are responsible for most (if not all) food-related tasks in the household (i.e. meal-planning, shopping, cooking, storing)
- Inclusiveness and gender parity will be considered in all phases of the research. The wording and the design of the survey (accessibility) will ensure that any interested person that complies with the requirements can participate and feels included.

2.3.2. Recruitment

There are several options for recruitment techniques to populate the sample. This may differ based on the specific action. There is no financial incentive for the participants, but participants will be explained that participating may help them reduce their spending and have a positive impact on the environment. They will also be rewarded with tips to for

example, reduce their own food waste, improve their economy, and make their diet healthier. The sample used will be a convenience sample, meaning anyone available and easily accessible may participate in the study.

Some possible recruitment techniques are:

- Snowball sampling. Every participant is asked to share a link to the ToNoWaste app with others, and those with others etc.
- Social media and related forums. A link to the ToNoWaste app is shared on social media accounts of project partners and related meetings/forums.

People are given the following information as part of the recruitment process:

“You are invited to participate in a study about food management in your household. You will gain better insight in your own food use. This may help you reduce your spending on food purchases and have a positive impact on the environment. In the study you may take part in an action to help you manage food in your household.

During the duration of the study, which takes place over x to x weeks, you will be asked to complete a survey twice. In the survey you will be asked to indicate how much food you have thrown away. There are a few things to keep in mind regarding the type of food measured:

- It only includes edible, perishable food.
- Any food which needs to be stored in controlled temperature conditions (such as the freezer or fridge).
- Food with a maximum shelf life of no more than 30 days.
- Cooked dishes are included, both homemade and prepared elsewhere and brought into the home (such as ready-made meals, deliveries and catering).
- The source of the food does not matter, it includes food bought at a (super)market, homegrown or otherwise acquired.
- This also includes products that are spoiled or past their expiration date.
- Drinks are **not** included.
- Inedible parts of food such as shells, bones and peels are **not** included.
- It does not matter if you would throw the food away in the general trashcan, food waste container, compost heap or gave it to an animal (pet, birds, etcetera), or otherwise.

For ease of measurement and accuracy, we ask you to keep discarded food in a dedicated bin bag. At the end of the week, you will be asked to weigh the bag of food waste, after which it can be discarded. The survey also includes some questions to gain insight into what caused you to be unable to eat the discarded foods.

Your data will be anonymised and any personal or identifying information will be removed. Results will only be used for research regarding food use and food management in the household, which may inform policy regarding food use. You may continue using the app to gain helpful insights and tips regarding your personal food management, including healthy recipes to make the most out of your food at home, and your money. “

In addition to the above information, meant to introduce participants to the study and try to entice them to participate by highlighting personal gains, participants are also asked to give their informed consent. Information regarding the informed consent can be found in section 4.2 of this protocol.

2.4. Experimental conditions

The mere collection of food waste in a dedicated bag and answering the surveys could in itself decrease the food waste, that is why with a control group we can better determine the effect of the action itself.

During the experiment, participants are assigned to one of two groups, an experimental group and a control group:

- **Experimental group:** This group is exposed to one of the planned actions. This happens after they have completed the survey for the first time. Depending on the action, participants are either randomly and evenly assigned, or, in the case sign-up is required, a certain number of participants can sign up until the required sample size is reached.
- **Control group:** The control group is not exposed to any action but otherwise receives the same information as the experimental group. This group completes surveys at the same time as the experimental group. All things other than the action exposure are required to be equal. By keeping all other things equal, any differences observed in the ex-ante and ex-post measurement can be attributed to the action.

Depending on the action and sample size, it is possible to have multiple experimental groups, but there is always at least one experimental and one control group.

2.5. Survey

The survey is based on literature regarding food waste and related factors. Some requirements for the survey are:

- It is easily understood by participants
- It is easily translated in several languages (at least German and Spanish)
- The survey takes no more than 20 minutes to complete
- Questions in a format that is easily visible on a mobile phone and accessible with people with visual handicaps.
- All questions are quantifiable

The following sections will describe the types of questions in the survey.

2.5.1. Socio-demographics

In the registration part of the survey participants will be asked to share their gender, age, household composition, household income, education level (of the person filling in the survey, who will be in charge of at least half of the household's food management), employment status, shopping frequency, type of diet (optional). These have been shown to possibly be associated with food waste generation.

2.5.2. Food waste measurement

The following definition of household food waste (van Herpen et al., 2019) is used: “food intended and appropriate for human consumption within the household, that is nonetheless not consumed by humans but instead discarded.”

There are a few options for the measurement of food waste, the use of these is decided closer to the actions and may vary by action.

2.5.2.1. Plan A: Weighing generated food waste

Participants will collect fresh food waste they have generated into a small bin bag provided to them at time of recruitment. However, because of the used recruitment methods, it may not be possible to provide a bag.

If this is the case, they may use any method of measuring their food waste, with some given suggestions (i.e. they may weigh a storage container when it is empty and submit the weight of this container. When weighing the food waste, they can instead weigh the whole container).

In any case, this measurement assumes the participants are able to weigh their week food waste on a kitchen scale. This includes waste from any household member and also waste that would usually be composted, fed to animals or otherwise repurposed. It excludes non-fresh food, unavoidable waste, such as egg shells, bones or peels that are not edible. After one week of collecting food waste, participants will weigh their generated food waste and submit the weight in the survey.

2.5.2.2. Plan B: Using the household food waste questionnaire

In the unlikely case that it is not feasible for someone to weigh their food waste, they can instead use the household food waste questionnaire (van Herpen et al., 2019). In this survey, participants are asked for many food categories if they have discarded anything in the past week. It is shown that participants underestimate their food waste in this survey, but the measure does highly correlate with other known food waste measurements.

2.5.3. Measuring food waste factors

Factors of food waste are derived from the COM-B model (Michie et al., 2014). This theory suggests that capabilities and opportunities to perform a behaviour, will allow motivation to lead to the actual behaviour.

Every survey will ask the participants to answer generic questions regarding each construct of the model. These questions are based on the Theoretical Domains Framework (TDF; Michie et al., 2005; Cane et al., 2012). The theoretical domains framework has synthesised multiple behaviour change theories and identified 14 constructs important for behaviour change. The TDF also ties into the COM-B model through the behaviour change wheel (BCW; Michie et al., 2014). Known factors related to food waste and corresponding survey questions are extracted from literature and linked to TDF domains. At least one question is formulated for each of the 14 TDF domains deemed applicable.

Following the generic questions, some specific questions will be asked depending on the action. If, for example, an action targets cooking skills, then questions to assess cooking skills before and after the action are added to the survey.

The following table outlines the survey questions relating to COM-B and TDF components. The statement will be rated on a 7-point Likert scale (1 “strongly disagree”, 2 “disagree”, 3 “somewhat disagree”, 4 “either agree or disagree”, 5 “somewhat agree”, 6 “agree” and 7 “strongly agree”).

Table 1. Theoretical Domains Framework (TDF) generic survey questions

COM-B Component	TDF Domain	Question	
Psychological capability	Skills	I have the skills to manage food to avoid food waste in my household	
	Memory, attention and decision making	I have too many things on my mind other than avoiding food waste	
	Knowledge	I know what I can do to avoid wasting food in my household	
		I am aware of how much food I waste	
	Behavioural Regulation	I have a clear plan on how I can avoid wasting food	
Physical Opportunity	Environmental context and resources	I have sufficient time to take actions to avoid wasting food	
		I have sufficient resources to avoid wasting food, such as storage containers, storage space, a fridge and freezer	
Social opportunity	Social influences	People who are important to me think I should avoid wasting food	
	Descriptive norms	Most of my friends avoid wasting food	
Reflective motivation	Social/professional role and identity	It is my responsibility as a citizen to avoid wasting food	
		I want to ensure I can always provide enough food for my family and guests	
		I think of myself as an environmentally friendly consumer	
	Beliefs about capabilities	For me, avoiding food waste costs little effort	
	Intentions	I try to waste no food at all	
	Goals	Avoiding food waste is a priority for me	
	Beliefs about consequences;	<i>Environmental</i>	If I avoid wasting food, it will be good for the environment
		<i>Moral</i>	I think wasting food is morally wrong
		<i>Financial</i>	Wasting food is a waste of my money
	<i>Social</i>	I try to avoid wasting food because I worry others would see me negatively	
	<i>Health & Safety</i>	I believe that the risk of becoming ill as a result of avoiding food waste is high	
Perceived value	Food is valuable for me		
Automatic motivation	Emotion	I feel bad when throwing away food	
	Reinforcement	When I avoid wasting food, I feel like I am making a difference	

Below are some examples of specific questions that could be asked if they relate to one of the actions. Depending on the desired outcome of the action, these questions may measure knowledge, actual behaviour, awareness or another outcome.

Table 2. Theoretical Domains Framework (TDF) specific survey questions

Food management practices	Question
Planning	I always make a shopping list before I buy groceries
	I always plan the meals in my household ahead and I keep to this plan
Purchasing	When I have a shopping list, I strictly keep to it
	I often buy food in packages that are too big for our household's needs
Storing	I know the difference between best before and use by labels
	I know how to store all foods I buy to ensure long shelf-life
Preparing	I can prepare a lot of meals even without a recipe
	I often prepare too much food
Consuming	Others enjoy the meals I cook
	I always finish my plate
Managing leftovers	I always use any leftover ingredients
	If I have food left over, I will save it for later

2.5.4. Intervention fidelity

Intervention fidelity is used to measure whether the action was delivered as intended. Every action has certain components which are expected to bring about behaviour change, these are behaviour change techniques. The intervention fidelity measure assesses whether these intervention components were actually delivered as intended.

Such questions can be asked for each BCT expected to be influential in the behaviour change of participants.

For example, an action with the goal of teaching creative cooking skills may include a demonstration of the desired behaviour and participants may receive feedback on their process and the outcome. The intervention may prescribe how each of these steps happen, for example which parts of the behaviour have to be demonstrated and to what extent. An intervention fidelity measure assesses whether the intervention was delivered as prescribed.

There are different ways to assess the fidelity, it is advised that an observer is present during the intervention to ensure it is delivered as intended. What the observer has to assess will be defined once the actions are known. This may include dimensions of adherence, exposure, quality of delivery, participant responsiveness and program differentiation.

2.5.5. Survey delivery

The survey used for the measurement of the effectiveness of the actions will be delivered using the ToNoWaste app (D4.3). However, if in any circumstance the app cannot be used, a link to an online Qualtrics survey will instead be shared with participants.

In both cases, to be able to trace back in an anonymous way the respondents, they will be asked to provide the last 5 digits of their mobile phone number.

2.5.5.1. ToNoWaste App survey

In the ToNoWaste app, participants will receive notifications that they have to complete a survey. They will also see in a calendar the whole week of food waste collection and when they will have to fill in the surveys. How exactly questions are shown within the app is shown in D4.3.

2.5.5.2. Online survey

An online survey will be used in any case the ToNoWaste app cannot be used for the purpose of data collection. The online survey will be made in Qualtrics and a link will be shared to participants.

3. Study design – practitioners

Practitioners along the supply chain will be contacted via our networks of partners and will be invited to download the app or contacted via phone (see section 3.2) to respond to a survey about the food waste produced and their current practices (together with opportunities and barriers).

As proposed for end consumers, the survey will work over specific questions that could be asked related to the practitioners' actions. The delivery times of the surveys will be similar to those of end-consumers, thus, within a week before the action they will be asked to answer the ex-ante survey, and within approximately a week after the action they will be invited to answer the ex-post survey.

3.1. Survey

These questions may measure the knowledge about current impacts and how to measure their FLW Prevention and Reduction (FLWPR) actions or their awareness.

Since practitioners may vary considerably depending on their position along the chain, the questions will be open-ended. Examples of questions for the practitioners are:

1. Phase of the life cycle to which the action is linked: production-distribution-trade
2. Are you currently measuring the FLW inside your organization?
3. How are you measuring currently your FLW?
4. Have you taken or are you taking FLWPR actions? If so [redirected to next set of questions below]

Metrics of interest	Statements / questions
Acceptance	I intend to include the following activities in my daily work routine: [<i>list of actions</i>]
<i>Project quality</i>	
(A1) Set up	The action was [1. well set up; 2. well organized]
(A2) Easy to understand	The [1. objectives; 2. methods; 3. results] of the action were easy to understand

(A3) Interaction	I could sufficiently discuss [1. objectives; 2. my activities; 3. activities of others; 4. results] with the action-team members	
<i>Experienced activities</i>	The [actions]	
(B1) Easy to do	[1. were a cheap affair for me; 2. took little of my time]	
(B2) Accommodated	were easy accommodated by my organisation with [1. money; 2. time; 3. equipment]	
(B3) Moral supported	received the reactions from [important contact persons] I hoped for	
<i>Perceived Interests</i>	The [actions] are consistent with	
Personal		
(C1) suitable		the way I like to [1.work; 2.make decisions; 3.take up challenges]
(C2) relevant		the [1.values; 2.objectives; 3.public image] that I consider to be important
Perceived organizational		
(C3) suitable		the way my organisation likes to [1.work; 2.make decisions; 3.take up challenges]
(C4) relevant		the [1.values; 2.objectives; 3.public image] that my org. considers to be important
<i>Expected controllability of</i>	Regarding the [actions],	
(D1,2,3) Activities	I can, if needed, modify them to retain the [fit; effectiveness, support]	
(D4,5,6) Accommodation	My org. can, if needed, modify the accommodation to retain [fit; effectiveness, support]	
(D7,8,9) Improvements	I see ways to improve the [fit; effectiveness, support]	
(D10) Environment		I [1.can count; 2. have influence] (up)on the cooperation of [important contact persons]
<i>Future increase of</i>	accepting the[actions], will increase	
(E1) insights		my insight in the [1.attitude, 2.behaviour] of the targeted group
(E2) appreciation		the appreciation by [important contact persons]
(E3) convenience		my skills to [1.cheaply, 2.fast] perform them

5. Do you have a proposal of a future FLWPR action?
6. What is your FLWPR proposal about?
7. When is expected that your FLWPR action will be implemented?
8. Who will be involved in the FLWPR action?

9. Do you think it will be possible to monitor the economic, social and environmental impacts of the proposed FLWPR action?
10. Regarding expected impacts:

In which aspects do you expect to see positive effects?	In which aspects do you expect to see negative effects?
Society (affordability, healthy nutrients/diets, habits, cooperative action, inclusion)	Society (affordability, healthy nutrients/diets, habits, cooperative action, inclusion)
Technology (accessibility, multiple use, infrastructure dependency)	Technology (accessibility, multiple use, infrastructure dependency)
Economy (job creation, Value creation, resource dependency, management of natural resources, new business models)	Economy (job creation, Value creation, resource dependency, management of natural resources, new business models)
Environment (energy efficiency, efficiency of water and other resources, biodiversity as a health factor)	Environment (energy efficiency, efficiency of water and other resources, biodiversity as a health factor)
Politics (participation at local level, transparency, democracy, reflexivity – respecting needs, assuming responsibility, responsibility – market regulation)	Politics (participation at local level, transparency, democracy, reflexivity – respecting needs, assuming responsibility, responsibility – market regulation)
Law (contracts, consumer protection – privacy, data protection, liability)	Law (contracts, consumer protection – privacy, data protection, liability)
Ethics (fair from farm to mouth, protection of living organisms, climate protection, cost-benefit ratio, risk awareness)	Ethics (fair from farm to mouth, protection of living organisms, climate protection, cost-benefit ratio, risk awareness)
Demographics (equality, gender diversity, age diversity, education)	Demographics (equality, gender diversity, age diversity, education)

11. Regarding how to measure expected impacts:
- from the environmental perspective, do you know European Footprint impact categories?
 - for the social perspective, do you know SHDB impact categories?
 - In your opinion, which are the most important impacts to be measured from the economic perspective?

Regarding their background, the following are examples of relevant questions:

<i>Background</i>	
Contact persons	In my job, my important contact persons are [the target group; co-workers; other org.]
Work experience	How long have you been working [in the field of your profession; for your current organization; in your current job]?
Education	What is your highest level of education?

3.2. Survey delivery

The practitioners will be invited to download the app, but should they opt for a short interview instead, a researcher speaking the native language of the practitioners will contact them via phone or online.

4. Ethical considerations

4.1. Ethical approval

In addition to the ethical approval on project level, a general ethical approval will be obtained for different types of actions that could take place. Approval should be obtained a few months prior to the start of the first action, once contents of the actions are known.

Ethics requirements on the project level are set out in D9.1.

WUR will apply for an umbrella ethical approval with regards to the surveys.

4.2. Informed consent

Prior to every study, participants will be asked to give their informed consent. The informed consent procedure follows guidelines set out by the APA. Participants in each of the studies will be asked for informed consent. The nature, purpose and anticipated consequences of participation in the study will be explained beforehand. In all cases:

- Participation will be voluntary
- Participants have the right to decline to participate and withdraw from the research at any time, without any negative consequences, and without providing any reasons
- Participants will receive information on the time and effort involved in participation, the period of time to which the consent applies, the time and nature of data storage
- The names and details of the responsible research and contact person(s) for questions about the research and rights of research participants will be made available.

All studies will involve only participants above the age of 18, who are mentally competent.

5. References

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