

Kristine Lygre Hoff & Julie Marzano Frey

# Introducing gleaning to Norway

Redesigning relationships to reduce agricultural waste and urban needs

Master's thesis in Industrial Design Engineering

Supervisor: Ida Nilstad Pettersen

Co-supervisor: Dr. Ferne Edwards

June 2021



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Norwegian University of Science and Technology  
Faculty of Architecture and Design  
Department of Design



Norwegian University of  
Science and Technology



# Introducing gleaning to Norway

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Master's Thesis  
for Kristine Lygre Hoff & Julie Marzano Frey.  
Industrial Design Engineering, NTNU.

## Master's Thesis for Julie Marzano Frey and Kristine Lygre Hoff

**Closing the Hungry City Cycle: Redesigning relationships to reduce agricultural waste and urban need.** (Dekke byers matbehov: Knytte nye samarbeid med hensikt å redusere matavfall fra landbruk samt dekke urbane behov.)

Today, approximately one third of the food produced goes to waste for different reasons, at the same time as people do not have access to affordable and healthy food (World Food Programme, 2020). Economic inequality is increasing, the technology of harvesting is evolving rapidly and issues and limitations within legacy and logistics contribute to an increased imbalance between food waste and hunger. Gleaning is the practice to harvest leftover produce from farmers' fields. Practicing gleaning may open up a great potential for reducing food waste and take advantage of food cultivated, which can contribute to meet hunger needs in urban areas. Our studies will investigate how we can practice gleaning in Norway, linking farmers to the nearby cities, and how to redistribute this food.

### The content of the thesis:

- Insight analysis of the current state of today's market (local in Trondheim as well as national) and possible stakeholders (for example Matsentralen), the public attitudes and values of food waste, and the historical development of harvesting and gleaning.
- Evaluate and analyze the insight to map the possibilities, limitations and needs.
- Idea generation and conceptualization together with potential and relevant partners.
- Evaluate a possible concept or design based on accumulated knowledge

The project is executed in accordance with "Retningslinjer for masteroppgaver i Industriell design".

Course supervisor (from ID): Ida Nilstad Pettersen  
Co-supervisor: Ferne Edwards

Starting date: 8th January 2021  
Due date: 4th June 2021

Trondheim, NTNU, date 8th January 2021



**Ida Nilstad Pettersen**  
Course supervisor



**Ole Andreas Alsos**  
Head of department

## Acknowledgment

This master thesis presents the process and the result of the project, completed in the course «TPD4900 - Industriell design, Masteroppgave».

During this project, we have been fortunate to meet a lot of committed and knowledgeable people who have in various ways contributed to the final result of the thesis. We would like to warmly thank all those who have supported us throughout this journey. Firstly, our supervisors, Dr. Ferne Edwards and Ida Nilstad Pettersen for their suggestions, advice, and support. Additionally, we would like to give a special thanks to Marte Lønvik Bjørnsund, CEO of Matsentralen Trøndelag. She has regularly helped us with mapping opportunities and sharing knowledge.

Many thanks to all the wonderful and helpful stakeholders. They have generously given us their time, knowledge, and advice during the whole thesis. Lastly, to friends, students, volunteers, and family for supporting and helping us.

Kristine Lygre Hoff & Julie Marzano Frey, June 4th, 2021

## Abstract

The purpose of this project has been to reduce agricultural waste and urban needs through redesigning relationships. Food waste and hunger present persistent complex global issues. The contradictory problems are also present in and relevant for Norway. With the motivation to explore how design could contribute to the comprehensive problem statement of closing the Hungry City Cycle, we early on contacted Matsentralen Trøndelag, which is a Norwegian food bank. We have approached the project as a wicked problem by tailoring and optimising the working methods with core elements from the field of service design. We were early in the thesis introduced to gleaning and immediately became curious. That made us look explorative at whether and how gleaning can contribute to the process of reducing agricultural waste and benefit society.

We mapped out the prerequisites for successfully introducing gleaning in Norway through methods, such as literature studies and interviewing experts like farmers, consumers, and parties in the food industry. Gaining this comprehensive understanding helped us later in the project to make good decisions in line with stakeholder’s perspectives. Further, we have used co-design approaches through workshops, focus groups, and meetings with potential participants and stakeholders. Doing so helped us explore the desirable context of gleaning and stated aims in a design brief. The design brief turned out to be valuable in developing concepts and making decisions. To enable stakeholders and participants to understand and relate to gleaning, story- and scenario-based design have been helpful tools. By doing this, we could more realistically perceive their perspectives and needs in the relevant context. Through several iterations and testing, the chosen concept was further developing into the final result. The master thesis concludes by reflecting on the future of gleaning and discussing the project.

The result of this project is a starter kit mainly intended for potential initiators to arrange a gleaning pilot. This starter kit consists of an instructional guide, a visual and informative scenario of the gleaning day, eye-catching advertising posters, and branding elements. This collection of inspiring components are customized and aims to motivate, inform and instruct the implementation of gleaning. Throughout the process, we have experienced positivity and engagement to gleaning and our concept from stakeholders. This feedback confirms possibilities for gleaning to take place in Norway.

## Sammendrag

Formålet med dette prosjektet har vært å designe en løsning for å redusere matsvinn i jordbruket og dekke urbane behov, gjennom nye samarbeid og kanaler. Matsvinn og sult er to motstridene og komplekse problemer, som eksisterer i hele verden. Det var ønskelig å utforske hvordan design kunne være med å bidra i denne problemstillingen. Det ble naturlig å ta kontakt med Matsentralen i Trøndelag tidlig i prosessen, da de jobber mot lignende mål. Gjennom tilpassing av metodikk innenfor fagfeltet tjenstedesign har vi tilnærmet oss problemstillingen som et “wicked problem” (gjenstridig problem). Tidlig i prosjektet ble vi introdusert til gleaning og ble med det nysgjerrige på konseptet. Dette fikk oss til å utforske om og eventuelt hvordan gleaning kan bidra til å redusere matsvinn og være til nytte for samfunnet.

Vi har gjennom masteroppgaven kartlagt forutsetninger og mulighetsrommet for å lykkes med gleaning i Norge, ved å bruke utforskende metoder som litteraturstudier og intervjuer med blant annet eksperter, forbrukere og aktører i matindustrien. Gjennom dette opparbeidet vi sakte, men sikkert en omfattende forståelse som kom til stor nytte i resten av prosjektet. Dette hjalp oss til å ta gode beslutninger i tråd med innsikt og perspektiver fra interessenter. Videre i arbeidet brukte vi co-design tilnærminger i workshops, fokusgrupper og møter med blant annet potensielle deltakere av gleaning og andre interessenter. Med dette fikk vi utforsket relevante kontekster og konkretisert målsetninger og krav for prosjektet i en design brief. Dette var til stor nytte når videre veivalg og beslutninger skulle tas. I arbeidet med interessenter har vi brukt hjelpemidler som historiefortelling og visualisering for å skape forståelse og hjelpe interessentene til å relatere til gleaning. Dette bidro også til at vi kunne oppfatte ønsker, perspektiver og behov i realistiske og aktuelle sammenhenger. Videre i prosessen valgte vi vårt beste konsept, som ble gjennom flere iterasjoner og tester, videreutviklet til vårt endelige resultat. Avslutningsvis i denne masteren evalueres fremtiden for gleaning i Norge, i tillegg diskuteres prosessen og resultatet.

Resultatet av dette prosjektet er en startpakke, designet for å instruere og motivere potensielle initiativtakere til å arrange en gleaning-pilot. Startpakken består av en guide, et visuelt og informativt scenario av den tiltenkte gleaning-dagen, relevante reklameplakater, samt elementer til merkevarebygging. Denne tilpassede samlingen av inspirerende elementer har som mål å motivere, informere og instruere. Gjennom hele designprosessen har vi opplevd engasjement og fått positive tilbakemeldinger fra interessenter på konseptet og designet. Disse tilbakemeldingen har vært til stor hjelp og gjort oss tryggere på at gleaning-konseptet kan være til nytte i Norge. Samtidig har dette gitt oss troen på at det både er potensiale og vilje for å introdusere gleaning i Norge.

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# Introduction

*The introduction of the thesis aims to describe the importance of the topic. In addition, introduce the approaches, processes, pre-study, and the limitations of the study.*

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*Gleaning is the practice of collecting farm crops left in the field after the mechanically harvesting, or from fields that would not have been profitable to harvest.*

*- Brianna Farver, of Intervale Gleaning and Food Rescue (Intervale, 2021).*

# THE PEOPLE BEHIND THE WORK

## Why us?

February 2020, two carefree girls sat at a long lovely white beach in Maroubra, in the Eastern Suburbs of Sydney, Australia, talking about future dream workplaces and dream design projects. The two girls are us, Kristine Lygre Hoff and Julie Marzano Frey, studying Industrial design engineering at NTNU in Trondheim. During the day at the beach, we figured out that our interests and desires within design and work methodology were pretty much the same. A short time after this, we decided to collaborate in the project-based course in the semester previous to this thesis. In the project-based course, we agreed on approaching a wicked problem using tools and principles from the field of design, such as system thinking and co-design. Throughout that project, we learned each other's ways of structure, strengths, and weaknesses and found out we are a well-functioning and good team. We both experienced the type of project and our teamwork as successful and exciting. This experience motivated us to continue collaborating and approaching a new project and again focusing on a complex theme. Besides, it was desirable to design towards sustainability and social benefits. Additionally, this thesis most likely would require co-creation and close contact with various stakeholders due to the holistic topic of choice. Therefore, we believed we would be able to make more out of the project when working together in a team.

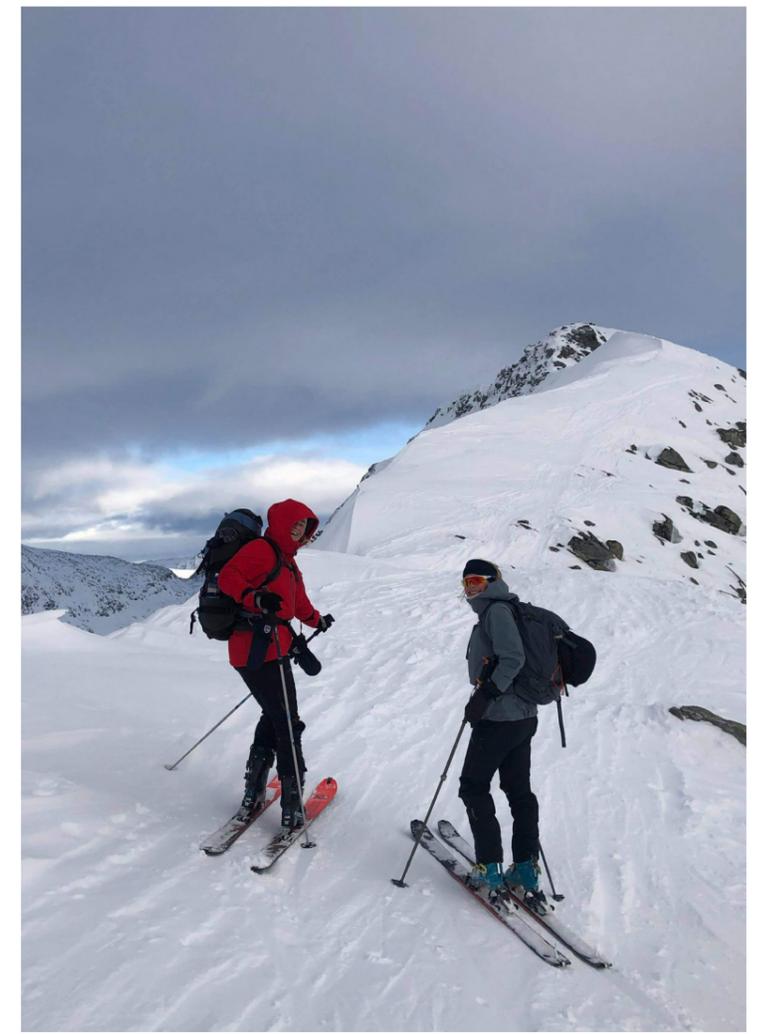
## Supervisors

Our supervisors Ida Nilstad Pettersen and Dr. Ferne Edwards have given us advice every other week throughout the semester. They have helped us with relevant knowledge and good tips, as their long experiences on relevant topics have been helpful along the way. Ida has assisted us in design-related issues, with experiences within design towards sustainability. Ferne, on the other hand, has helped out with relevant knowledge of the topic. She has international experience and commitments towards sustainable food activities.

## Collaborators

Throughout the semester, we have been in dialogue with a broad range of stakeholder who have contributed with different views and great values to this project. We appreciate all the help and kindness given to us through this project. Their advice and points of view have strengthened our project to be more diverse based on real-life experiences. Nevertheless, some have been more relevant and more frequently than others, including the people listed below.

- Small-scale farmer Jonas Hagerup based in Frosta, among other things, produces root vegetables. He has given us essential information and expertise on agriculture and helped us understand the relevant contexts from a farmer's perspective.
- Marte Lønvik Bjørnsund, CEO of Matsentralen Trøndelag. Marte has shown great engagement from the beginning and throughout the whole project. She has motivated and provided us with relevant knowledge and experiences on many aspects, such as poverty, food waste, the food system, volunteers, and organizational issues.
- Anne Marie Schrøder, communication manager in Matvett AS, has provided helpful guidance towards the end of the project. She has assisted us in various ways, like how to bring out the project into the real world and how to complete a delivery aimed at forwarding.



*Photos from Kristine Lygre Hoff and Julie Marzano Frey*

# APPROACHES

Before starting this project, we had never heard of the concept nor the term gleaning. In addition, gleaning has many aspects of relevance that we did not know much about in advance. We found out it was essential to familiarize ourselves with the preconditions for introducing gleaning in Norway, such as the climate, policy regulations, the current state of food waste, culture, consumer values, and the state of the voluntary sector. Consequently, we decided to approach the project exploratively by looking into the many topics that we believed were relevant and did so in the insight phase of the project.

Further, throughout the whole project, we have used design approaches and methods to gain a holistic understanding, challenge assumptions, understand users and redefine problems, striving to identify alternative concepts.

In the following pages, we present detailed descriptions of the approaches used in this project, design approaches, and the design process.

## Approaching the project

### Why this project?

Today, 8.9 % of the world's population is hungry, at the same time as one-third of all food produced goes to waste (UN environment program, 2015). These conflicting issues are frustrating and hard to understand. Even though Norway is a rich country, these problems are still current. When we were introduced to the theme "Closing the Hungry City Cycle: Transforming Conditions to Reduce Agricultural Waste and Urban Needs" by co-supervisor Dr. Ferne Edwards, we immediately became interested and engaged. We are interested in learning more about design related to environmental issues, and we want to use our knowledge within the fields of design to create meaningful changes. Based on these interests, we consider the project as suitable and desirable for our master thesis.

Food waste is probably the most unnecessary problem

the world faces today, and it is a highly relevant and critical issue. Valuable resources go into producing food. Hence, reducing food waste can contribute to saving the environment to a great extent. Connecting the city with the countryside, by introducing gleaning, may be beneficial for both reducing agricultural food waste and for closing the hungry city cycle.

### Goal of this project

As the task description indicates, we strive to close the Hungry City Cycle by reducing food waste, a wicked complex problem. Therefore, a preferred starting point for this project was to explore the potential and how to reduce food waste in agriculture. If there are no crops to get hold of at Norwegian fields, there is no purpose in building relationships to cover the urban food needs.

Further, we aimed to make a difference and wanted the master thesis to contribute with something meaningful. Hence, we sought to understand and explore if, how, and why gleaning should and could take place in Norway.

### Hypotheses

Ahead of the project, we believed that gleaning could be a valuable activity to introduce and implement in Norway. Gleaning organizations in other countries seem well-working and beneficial to society. Thereby we considered that there were opportunities in designing and adapting something similar of benefit in Norway. However, we knew that the climate, culture, and systems in Norway differ on many aspects and degrees that may lead to various challenges. Therefore, differences and preconditions needed to be considered and understood.

In addition, we know that food waste is an extensive challenge throughout the entire food industry, even though the main focus is at the consumer level. Another hypothesis was as follows: a lot of food is wasted in the primary sector today, and there is a need for increased attention and focus on this (Støstad et.al, 2019). Thus, we considered the lack of initiatives in agriculture as a great potential for making

improvements.

The last hypothesis we had ahead of the project was that topics related to gleaning are challenging due to many actors involved and relevant aspects appropriate to acknowledge. With this complex tangle of information, we considered approaching these wicked problems with design, more specific co-design, service design, and system thinking as suitable to understand the complexity and get closer to a solution.



## Design approaches

### Wicked problem

Närvänen et al. (2019) characterize problems related to food waste as “wicked problems”. A wicked problem can be understood as an indefinable problem that is unstructured, cross-cutting, and impossible to solve with one single solution (Rittel & Webber 1973; Weber & Khademian 2008, van Woezik et al., 2016). A wicked problem involves multiple stakeholders with different perspectives and many interconnections (Rittel & Webber, 1973). Struggles related to food waste are unstructured and indefinable because of the difficulty in defining precise causes and effects (Närvänen et al., 2020). Defining food waste is a question of definition as it may differ around the world and in the various parts of the food industry. As mentioned, food waste-related problems are cross-cutting issues due to the many stakeholders and interconnections between all the stages of the food value chain (Parftt et al., 2010). It is not possible finding one solution to solve the global food waste problem. It is, however, a need for numerous activities by engaging various actors at different levels (Närvänen et al., 2020).

### System thinking

When solving a wicked problem, it is essential to involve the relevant stakeholders and design with the users and those affected, as emphasized in co-design and service design. Nevertheless, it is just as important to look at the problem and the actors involved as a system and use system thinking.

“System thinking is the process of understanding how components of a system influence each other as well as other systems – and therefore it’s pretty much perfect for wicked problems!”  
(Wong, 2020).

From farm to fork, there are many different people and actors involved, and it will be crucial to include and understand them as a part of our design process to make something of sense. By making changes and taking action in one stage in the food value chain, interconnections can affect other parts. Looking at the whole food system as a whole, although looking at each of the stages and the interconnections, can make it easier to understand the effects of possible

changes. We can better create sustainable solutions for complex problems if we see problems, the world, and the services as interconnected ecosystems. By doing so, we can also understand our influence in the long-term and short-term practices (Tassi & Besplemnova, 2018).

### Service design

When possibly developing a new service, probably related to gleaning, service design as a methodology is appropriate to consider. The field of service design does not have a universal definition and is constantly increasing and infiltrated in many aspects of society. Service design is used as an approach in everything from re-designing, to investigate work environments and developing new services (Teixeira, et al., 2012).

DOGA (2018), defines service design as “a user-centered process where the designer focuses on creating holistic and optimal service experiences”. Furthermore, service design aims to gain an overview of the user by using qualitative research and involving the stakeholders, to develop comprehensive and effective services that optimize user experiences and their journey based on user needs. The potential service is divided into smaller parts and sequences to be able to map out touchpoints and interactions between stakeholders and the system. Combining this with visualizations will give a holistic overview of the service (Opsahl, 2018; Stickdorn & Schneider, 2014). Service design deals with complexity and is ideal for wicked problems, focusing the user in the center to design an optimal service for them.

We believe Service design as a comprehensive field of design has great principles, suitable tools, and methods for this project. This approach can help innovate a usable, desirable, useful, and efficient service for stakeholders, organizations, and users.

### Co-design

In the past 40 years, a shift in the design thinking process has occurred. The user has increasingly become an active participant in the process of designing, rather than an inactive and passive role (Langley et al., 2018). Edwards (2013) defines co-design like this:

“Co-design is the process of deliberately engaging users of a system, including both those who receive and deliver services, being led by process experts (such as designers), to actively understand, explore and ultimately change a system together”  
(Edwards, 2013).

There are numerous guidelines about important principles providing a good foundation for co-design. In general, co-design highlights the importance of collaborating. Being collaborative is enabled through good reflection and considered conversations. By doing so, multiple perspectives provide a holistic understanding of a current situation and bring people together with varied viewpoints and different backgrounds (Sutton-Long et al., 2016). Working together may enable breakthrough insights rich in diversity, as well as new innovative ideas and solutions. It requires humility, honesty, and respect for all parts in-between. Another crucial principle of co-design highlighted is the importance of being person-centered and the use of empathy (Sutton-Long et al., 2016). In other words, active seeking understanding and listening to the people involved. By doing so, you might figure out people’s needs. Being creative is also a key in Co-design, as learning and curiosity underpin creativity. In addition, inquire in a non-judgemental accepting way of behaving is significant. The last principle of Sutton-Long, et al. (2016) highlights the importance of being brave and seeking the reality, which includes permitting to question and challenge each other. Doing so might require letting go of experiences to avoid that experiences limiting the progress (Sutton-Long et al., 2016).

In this study, a co-design-centered approach aiming to bring out a deep knowledge and understanding about what is wanted and needed in a potential new system of reducing food waste. We can do so by

taking advantage of the experiences and reflection of relevant users, stakeholders, and experts. It will be appropriate to communicate with them collaboratively and iteratively in a satisfying and natural context. This can help create an open environment and ensure to get real experiences and their honest thoughts. It can be done by treating the users, stakeholders, and experts with respect and assure them that we care about their points of view and listen to their ideas.

Using Co-design principles, we can ensure proper insight and understanding into the wicked and complex problem related to the problem statement.





# ETHICAL ISSUES

## Consent forms

In connection with the master thesis, we have collected valuable information from various people. Doing so entails that we must take some ethical considerations into account. As we are part of the research of our supervisor, Dr. Ferne Edwards, we could fill in and submit a notification via her. The study has been notified to The Norwegian Centre For Research Data AS (NSD), which agrees with NTNU. In situations during the thesis, where personal data is either collected, registered, processed or stored, consent forms have been signed by the participants. The consent forms informed the participants about the involvement, the topic, the outcomes, data storage, and the rights of participating. The participants were also offered to review and make changes to the content of relevance. To recruit and involve people, we found it beneficial to use social media, such as Facebook and Instagram. This method is probably not the most traditional and professional, despite this, we have been humble, respectful, and uncompelled.

## Covid-19

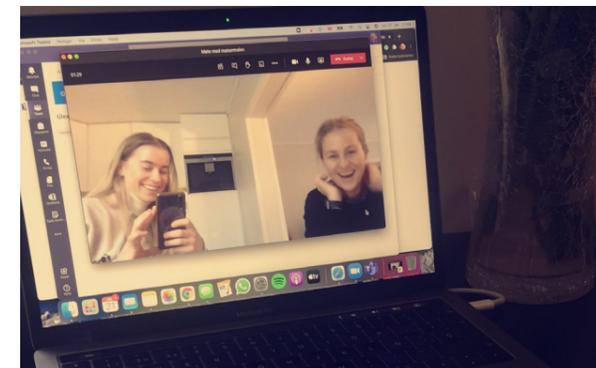
Throughout the master's thesis, the coronavirus has been a reality. It has led to unpredictability, occasionally closed institutions, restriction in professional events and universities, sometimes work from home, and to a certain extent avoiding social contact. The coronavirus has presented some challenges through the master's thesis, but we have still found alternative ways to perform the design process. Last semester, adjusting and adapting our project to the situation become a reality. We benefited greatly from the lessons learned and applied what we learned in this master's thesis. When we first started the master's project in January, we expected unpredictability and a lot of digital work. Interviews, workshops, focus groups have mostly been digital. Nevertheless, we had the opportunity to physically visit some places of interest, which we are happy about, as it gave us extra motivation and insight. We believe we have adapted well to the Covid-19 situation and are very grateful that we have worked together as a team through these challenging times.



Interview in Messenger



Collaborating in Figma



Ready for a workshop in Miro



Picture from workshop in Miro

## PRESTUDY

The food industry is large and complex, and our knowledge of the food system and food waste was limited while the topics and problems related are complex. We started the semester with a prestudy phase enabling us to scope down the areas for further research. Besides, this prestudy phase provided us with a fundamental background that was useful for further investigations.

In addition to reading about food waste, agriculture, and gleaning we watched documentaries, listened to seminars and podcasts to develop a more in-depth understanding of the complexities. The prestudy introduces the basics and the origin of gleaning, furthermore a stakeholder map reviewing the existing stakeholders and initiatives in Norway today. Finally, a delimitation of the task is done.

## Methodes in prestudy

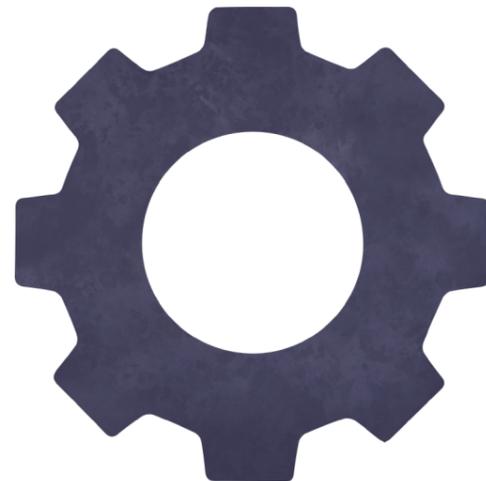
### Secondary research

In design, talking with people about their challenges, ambitions, and constraints is a significant phase, but sometimes theoretical studies are appropriate. Secondary research, whether it is done online, by watching films, by reading books, can help prepare for the rest of the design process.

### Stakeholder map

A stakeholder map identifies each role and the relationships of each stakeholder involved in a project. The map is useful when reflecting on the different positions and thereby define how to deal with each stakeholder, if necessary (Giordano et al., 2018).

We included a stakeholder map intending to map today's initiatives and stakeholders in Norway striving to reduce food waste. By mapping these in the various stages of the food value chain, it becomes clear where food waste-reducing initiatives have been in the past years.



## Introducing gleaning

Voluntary gleaners gather food in farmer's fields to make sure no leftovers from post-harvest are plowed under or left on the field to rot. Together, the gleaners create community partnerships and networks to ensure more food ends up on tables rather than left in the landfills (Intervale, 2021).

Gleaning is today organized in various places worldwide, such as the Spanish non-profit organization Espigoladors (Espigoladors, 2018). Nevertheless, yet we have not found anyone that arranging gleaning in the Nordic countries.

This concept called gleaning is by no means a new and modern phenomenon. The phenomenon of gleaning is described in the Bible (Leviticus 19:9, Bibel 2011). The Bible instructs the farmers to leave some portions of their fields, olive groves, and grain, among other things, so that poor people could gather what they needed afterward. The purpose of leaving parts of fields unharvested was to feed the poor, the orphans, the foreigners, and others in need of help.

A modern approach to gleaning can be described as follows:

***Gleaning:  
An Ancient Idea for Modern Times  
Volunteers and farmers team up to reduce  
food waste.***

*(Intervale, 2021)*



*Gleaning women in Italy in. Fazioli, Ernesto (1900/ 1955), fotografo principale*



## Stakeholders and initiatives

The stakeholder map includes various actors and initiatives where some are organizations or companies, and others are campaigns, guides, or political actions. We can not assure that all initiatives and stakeholders in Norway are covered in this map, but it is based on Hebrok and Steinnes (2019) report where they summarize actors and knowledge within food waste in Norway and Europe. Some are added based on our prior knowledge. Most of the stakeholders and the actors behind the initiatives have Norwegian origin, except for “Too good to go”, “European week for waste reduction” and “Life at the kitchen”. But they are all working against reducing food waste in the Norwegian market.

## Food producers

This category includes initiatives aiming to reduce food waste at the producer level. The actors and the measures include the producer companies, technology forums, financial funds, and sales channels.

### Initiatives to achieve better resource utilization of food

These initiatives mainly deal with raw vegetables usually sorted out of production based on defective appearance or unfulfilled quality requirements. These products would traditionally have been discarded or used in low-value products such as animal feed. Due to these initiatives, more raw materials are being used to produce high-quality products for human food.

#### Grofondet

Gartnerhallen, BAMA, and NorgesGruppen run the Grofondet. They distribute financing to proposals focusing on increasing quality and reducing waste in the production of fruits and vegetables.

#### Teknoforum

Collects and shares information about new sustainable technology used to prevent food waste in fruit and vegetable production.

#### Nortura

Nortura has implemented measures that increase stability in food production. By increasing cooperation and making the operation more predictable, more goods are now being left shorter in storage, and transportation is made more efficient.

#### REKO-ringen

REKO-Ringen is a sales channel directly connecting local food producers and customers. The producers can advertise and sell goods from their production via the shared online page, where customers can pre-order items. The goods are delivered by the producer, with an announced delivery location, date, and time.

## Remaining actors in the food industry

By “Remaining actors in the food industry” we include actors and initiatives targeting the remaining players, aside from the producer level, grocery stores, and consumer level. The actors and measures are mainly targeting the wholesaler level, hotels, and restaurants.

### Industry agreement and statutory food waste

Through the industry agreement (Bransjeavtalen), the actors commit themselves to work for halving food waste in Norway by 2030, in line with the sustainability goals set by the UN. Almost 100% of the grocery industry and more than 50% of the food and catering industry has signed (UN environment program, 2015).

### The food waste calculator

It calculates a company’s food waste in kroner and the resulting environmental impact in CO<sub>2</sub>.

### “To good to go”.

This is an application for consumers to buy leftover food from restaurants, stores, kiosks, and hotels.

### “How to reduce food waste?”

An industry guide developed for food industry companies, showing how companies can get a better overview of how much food they throw away.

### “The ForMat”

ForMat is a supplementary tool for the industry supervisors, this helps the companies in identifying their current food waste situation.

### “Safe reuse of surplus food”.

A food guide for the catering industry can increase employees’ knowledge and help them assess whether food leftovers are safe to give away or not.

### New criteria, terms, and conditions

The Directorate for Public Administration and ICT and “Miljøfyrtårnet” are in the process of developing new criteria, terms, and conditions for public procurement to take responsibility for the climate, environment, and society.

### “Employee training”.

Courses to make employees at restaurants and hotels more aware of food waste-related issues and guides to manage them.

### “Smaller portions and plates”.

Initiatives to reduce food portions and plates at restaurants and buffets to fit the customer requirements and needs better. This way the restaurants can waste less food.

### KuttMatsvinn2020 (Stop food waste 2020)

Includes several activities to raise awareness about food waste and make it easier to prevent food waste. Over 2500 restaurants joined this initiative.

## Grocery stores

Initiatives within this level aim to reduce food waste that is related to grocery stores. These initiatives are mainly about making it easier for customers to take better actions during grocery shopping. Nevertheless, there is also a focus on more organizational initiatives that can reduce food waste in stores.

### “Fresher milk”

The measure has secured milk faster on store shelves and has given consumers between 3 and 4 days longer shelf life on milk.

### “Snål” (“weird”)

Snål has brought ugly fruits and vegetables into the grocery stores and sells them for 30% less than regular prices.

### Matsentralen Norge

Matsentralen is a food bank for the redistribution of surplus food from the food industry to non-profit organizations which further distribute the food to vulnerable groups.

### Price-reduction and visibility of foods with a reduced shelf life

Price-reduced products are made extra visible in a separate shelf or cooling box.

### “Take 1 pay for 2”

A campaign to decrease purchases by consumers buying too much food.

### Encouraging consumers to choose items that are approaching date marking

Instead of buying brand new items, stores encourage customers to choose food with lower shelf life.

*Continues on the next page.*

## Consumer

Initiatives aimed for the consumers to reduce food waste, these mainly include campaigns and knowledge-seeking initiatives to raise awareness and change actions.

### **Best før, ofte god etter (best before, often good after)**

Increase knowledge about durability labeling.

### **Use-up lexicon**

A collection of over 100 recipes, where you can search for ingredients based on what you have left of food at home.

### **“Restekjærlighet”**

A cooking book intending to use leftover food.

### **Foodwaste calculator**

It calculates costs in Norwegian Kroners(NOK) and environmental impact in CO2 for consumers (households) and companies of their food waste.

### **“Livet på kjøkkenet” (“life at the kitchen”)**

In 2015, IKEA launched a catalog with food waste as the main theme.

### **Look, smell and taste symbol**

A symbol that can be used on packaging.

### **KUTT-gourmet**

A café serving only surplus goods, aimed at students.

### **European week for waste reduction**

Encourages all Europeans to carry out awareness-raising actions about sustainable resource and waste management.

### **Matvett.no for children**

Content customized to children and youngers so that food waste-related themes are more accessible to bring into the teaching.

### **“Spis opp maten” (“Eat up your food”)**

An action-triggering initiative that encourages consumers to reduce their food waste.

### **“Kampen om Joulene”**

A film about food waste for children, by “LOOP miljøskole”.

### **“Matsvinn forsvinn” (“Food waste disappear”)**

A project by Green Youth to make primary school students aware of the consequences of throwing food.

### **Awareness-raising initiatives**

Awareness-raising initiatives through the media and dissemination.

### **Smaller bread**

An initiative aiming to make bread smaller intending to help consumers throw away less bread.

## DELIMITATING THE TASK

As earlier introduced, food waste, hunger, and the food industry classify as cross-cutting and wicked problems. Therefore, there are many areas and topics relevant and of interest. The time frame for this thesis and our capacity means that its appropriate to limit our area of focus and refine the task before further research.

### **Geographic scope**

A question that arises early was where geographically, our area of focus should take place. We decided to narrow down the thesis locally on Trøndelag and Trondheim, to have a smaller territory to consider. Doing so would make it easier for us to get to know local initiatives, local farmers, local user groups, and conditions. Gaining a local understanding and knowledge makes it easier to truly understand what is needed and seeing possibilities among all the information available. Additionally, focusing regionally can make it easier to create collaborations, eliminate information, and designing a concept in a context that might be more accessible. Nevertheless, an understanding of the Norwegian food industry will be necessary to see potential affects gleaning may have. Simultaneously, it is appropriate to point out that gleaning is an activity not yet in Norway. Thus, we still need to find inspiration across national borders to succeed in understanding and introducing gleaning.

### **Scope down the area of focus**

Arranging or designing a concept around gleaning requires information within many aspects and themes. It turned out that this included too many actors and many possible themes and information, and we needed to limit the thematic area. Therefore, we decided to dedicate the most time to the producer level and their closest collaborators in our insight work, since farmers are the most significant actors in the food industry in terms of gleaning. Yet, we have not disregarded the rest of the food industry as everything is interconnected and influenced by the whole system. The system we have based our research on is from farmers, through the grocery stores, and finally to consumers. Rather than through other players such as the restaurants and hotels.





# Insight

*In this section of the thesis, we aim to provide an overview and build a solid foundation to enable proper decision-making. The insight is drawn mainly from literature studies, surveys, interviews with experts, companies, farmers, and consumers. We have focused on different topics to gain insight concerning gleaning:*

|                                      |     |
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| Content:                             |     |
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## METHODS

The insight phase introducing this project has been a time-consuming and extensive process, including many topics and methods used. We found it convenient to structure the chapters in line with our way of working, divided by topics. Within each of the themes, various methods are used to obtain the desired understanding, for example, a combination of literature review and interviews. The insight phase primarily started with a literature review and secondary research. The purpose of using literature review is to get a deeper understanding of the topic at large. Therefore, we had a systematic and critical analysis of the literature, where we used keywords such as "food waste", "agriculture", "gleaning", "consumers", "food industry", and "poverty". We also tried to use the keywords mentioned together with the keyword "Norway", which led us to few relevant articles. The databases most used in this literature review were Oria, Oslo Met's, and Matsvett's databases. This literature review has been an essential part of preparing for other insight methods. It has also helped to make decisions of sense. During the process, we became aware that there is a lack of information on some of the topics. Therefore, we used other methods, such as interviews, surveys, and field trips, to get a sufficient and complementary understanding and knowledge within each of the themes. As mentioned earlier, our starting point of the research was food waste-related topics to investigate whether and how gleaning was appropriate to introduce in Norway. Therefore, we will go more into details and more fully explore gleaning at the end of this chapter as we became more confident and optimistic in focusing on gleaning. The methods used in this chapter are presented below, divided into insight and analysis.

### Insight

#### Secondary research

We continued watching documentaries, reading newspapers, articles and finding information on other platforms such as social media and various home pages. This process was an essential part of the insight phase due to the lack of literature regarding relevant topics specified for Norway. Obtaining

information in this way also contributed to a more personal and experience-based understanding, most likely closer to reality.

#### Survey on Instagram

By posting a creative and short survey (see Appendix-A) on Instagram, we got an early response from the respondents about basic knowledge, attitudes, and thoughts related to food waste. Additionally, we got people to engage in our topic of interest. As this survey was published on our accounts, the participants contain our current followers on Instagram. The approximate ages of our followers are between 21 and 32 years, including both sexes. The number of participants was up to 255.

#### Questionnaires, google-sheet

To gather information from respondents on an early phase of the project, we made a questionnaire on google-sheet. This questionnaire was published on our private Facebook wall and some public Facebook groups with an environmental focus. The response brought insight into motivation, willingness, and preferences related to volunteer work and gleaning. There were 195 respondents.

#### Interviews with experts and stakeholders

Interview experts provide depth, reliability, and credibility of the current context. People pay attention when you capture and share insights from respected sources. Experts can prevent insights from being self-serving. We conducted several expert interviews in the insight phase. That helped us understand all stages of food the value chain and gain an insight into industry work, connections, and activities. When this information otherwise would be difficult to get the real sense of. We used our imagination to reach experts. For example, we found the farmers through Rekoringen's Facebook page. In total, we have been in contact with nine different experts and actors in this phase of the master thesis.

#### Field trip

We wanted to see and experience farms and Matsentralen with our own eyes and talk to people since they are the key stakeholders in our thesis. Therefore, we arranged field trips to Matsentralen and Voll farm. The first field trip was an invite from Marte, the CEO of Matsentralen Trøndelag. On a cold afternoon in January, we visited Matsentralen Trøndelag, both to see their premises at Sluppen and for helping them out with sorting vegetables this evening. The second field trip was on a sunny morning in February to Voll farm at Moholt in Trondheim city. The trip was at our request, but Eivind, who works there, welcomed us gladly and offered both time and knowledge.

## Analysis

#### System Map, the carrot travel

A system map visualizes actors and components involved in a specific service, with the intent to understand the service dynamics and detect gaps and opportunities (Morelli, N, 2007). We used this method intending to understand and visualize the food value chain in Trondheim. Plus, for creating an overview illustrating food wasted at the different stages. In this way, we could understand how the food system works in Trondheim and better understand interconnections.

#### Synthesis Wall, key findings

A synthesis wall is a wall filled with post-it notes to debrief the research sessions and cluster important insights (Servicedesigntools, 2021 - a). After each interview, weekly work, and activities, we used this helpful support to define key findings in the moment of debriefing and analyzing outcomes. By doing so, we developed a shared understanding of the research process and the takeaways. Additionally, we got inspired to further design work.

#### Mapping, harvesting calendar

We need an overview of local harvesting and sowing seasons, and therefore, we mapped out the relevant information from our research. This information was not easy to find and represents our many conversations with farmers, e-mails with Norwegian Agricultural Advisory in Trøndelag, and reading online. Further, we visualized the information in a calendar, as harvesting/sowing time and types of vegetables are essential information to forward.

#### Comparative Analysis, Gleaning in other countries

Analysis of similar corporations and comparatives assesses key factors of success in other contexts. The systematic analyzes evaluate various dynamics and complex factors, which may affect a project's success (Stafford, A, 2013). We used this method on other gleaning programs in other countries, to look at failures and success histories, and to get inspiration.



# FOOD WASTE

## A global issue

EU FUSIONS definition of food waste is:

“Food waste is any food, and inedible parts of food, removed from the food supply chain to be recovered or disposed of (including composted, crops plowed in / not harvested, anaerobic digestion, bioenergy production, co-generation, incineration, disposal to sewer, landfill, or discarded to sea)” (FUSION, 2016, n.p).

Studies show that 1/3 of the food produced in the world is not consumed (Gustavsson et al., 2011). Food waste is known as poor utilization of energy, and it causes negative impacts throughout the entire food supply chain, from producer to households (Stenmarck et al., 2016). Food waste is an important issue facing the world today, and it is directly related to the environment, the economy, and social issues (Stenmarck et al., 2016). Working to prevent food waste throughout the food supply chain contributes to solving several of the Sustainable Development Goals (SDG) related to Co2 emissions and secures food for more people by making more food available in the world.

The focus on preventing food waste has increased, and one of the UN’s sustainable goals is:

“Target 12.3: By 2030, halve per capita global food waste at retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses” (UN environment program, 2015).

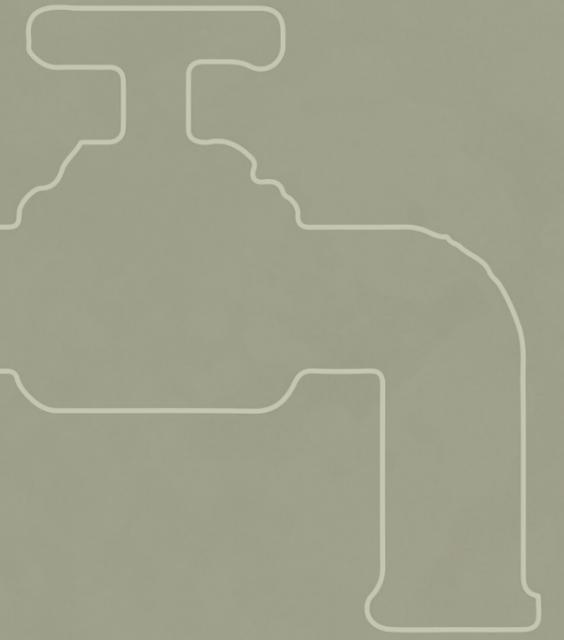
Both the EU and Norway have committed to reaching this goal.



Photo from Mostphotos.com

# WATER

25% of the world's freshwater supply is used to grow food that is never eaten (Earth, 2016).



In the developed countries, more than 40% of food waste emerges at the retail and consumption levels. In developing countries, in contrast, most of the food losses and waste occur in the post-harvest and processing stages (FAO 2017).

# FOOD WASTE



The total estimate of food losses and waste is about one-third of edible food produced, or 1.3 billion tonnes per year (FAO, 2017).



# INEQUALITIES

If 25% of the food currently being lost or wasted globally were saved, it would be enough to feed **870 million people** around the world. (Earth, 2016)

# CO<sub>2</sub>

Food losses and waste account for more than 10% of global energy consumption (FAO 2017).

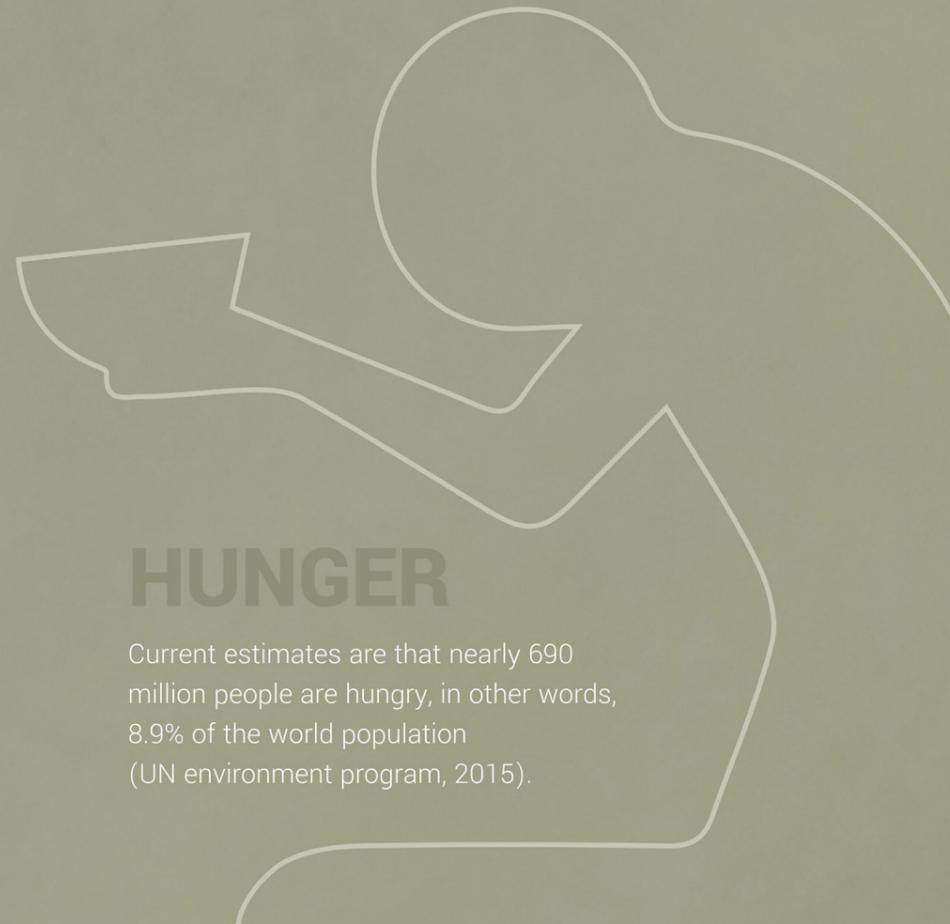


# GLOBAL EMISSIONS

25% of the global emissions are caused by the food industry. 8% of them are due to food waste. (Matsentralen, u.d)

# CROPS

Crops are sometimes left unharvested because they do not meet supermarket quality, which is often determined by appearance (Earth, 2016).



# A MORAL CHALLENGE!

Food produced for human consumption is wasted at the same time as a large part of the global population suffers from hunger and malnutrition.

# HUNGER

Current estimates are that nearly 690 million people are hungry, in other words, 8.9% of the world population (UN environment program, 2015).

The food currently wasted in Europe could feed 200 million people in Latin America and 300 million people in Africa (Earth, 2016).



## Food waste in Norway

Norway is a developed country and is widely understood to be one of the wealthiest countries in the world. In the developed countries, most of the food wasted occurs at consumption levels. Contrary to developing countries, where most food is wasted at the post-harvest and processing stages (FAO 2017). As illustrated in the figure, about half of food wasted in Norway comes from households. The report (Stensgård et al., 2018) concludes that consumers contribute to 58% of food waste in Norway. One person alone wastes 42 kg of edible food each year, including the whole food chain, each consumer wastes 68 kg per person per year (Regjeringen, 2017). Still, there is a reasonably high degree of uncertainty in the estimation because there has not yet been one unified routine in collecting data on food waste. In addition to this, the definition of food waste is not universal across borders. For a long time, the consumer level has been a priority within food waste. However, there has been a change in perspectives over the past ten years.

Food waste in Norway represents an economic loss of around 20 billion Norwegians kroner a year, and greenhouse gas emissions of about 978 000 tonnes of CO2 equivalents, according to Stensgård and Hanssen (2016). The definition used in research in Norway differs from the definition proposed by FUSIONS (Food Use for Social Innovation by Optimising Waste Prevention Strategies) (Vittuari et al., 2016). The Norwegian definition excludes food intended for humans that instead becomes animal feed and materials that consider inedible such as bones and skin. The industry agreement in Norway defines Food waste as follows:

“Food waste includes everyone’s usable parts of food produced for humans, but which are either thrown away or taken out of the food chain for purposes other than human consumption, from the time when animals and plants are slaughtered or harvested” (Regjeringen, 2017, p.2).

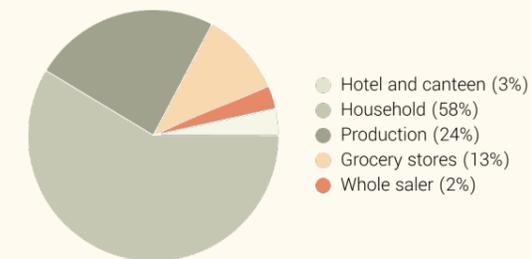
As shown in the figure, the producer contributes to 24 % of food waste in Norway. However, The Norwegian Directorate of Agriculture (2019) was working on preparing the first reporting year 2020, as they are responsible for compiling statistics from

the agricultural sector. Measuring food waste from fruit and vegetable also started from the beginning of 2020 (Landbruksdirektoratet, 2019). The fact that measuring food waste in the primary sector started after the figure (to the right) was contrived indicates that it is a reason to assume uncertainty and many unknown numbers within food waste in Norway. The new reporting system of food waste in Norway can ensure a common statistic for the entire food value chain.

The causes of food waste at the consumer level are interconnected and diffuse. Researchers agree that there are a few decisive root causes to why food waste occurs, and that is through many different practices in everyday life. These are among other things, shopping, preparation of meals, and storage. In general, consumers are usually not aware of how their everyday practices generate food waste, as their daily routines are so integrated and deeply habit-forming (Quested, et al., 2013). Studies describe those everyday activities in households and form and affect how food handling practices are socially organized. The culture, material, time squeeze, and social aspects determine whether food is treated as waste. All the factors and practices need to be seen in context and relation to another (Fiddes, 1995; Mavrakis, 2014).

Infrastructure, housing situations, access to grocery shops, transportation, options of storage, and other practices related to habits connected to food also impacts food wasted (Fiddes, 1995; Mavrakis, 2014). Hence, the root problem of food waste at the consumer level might be related to circumstances and practices happening earlier in the food value chain. Such circumstances can be how much one chooses to buy, how food is stored in the household, how meals are planned and prepared, and shopping planning. According to researchers, it is shown that most consumers are not aware of the amount of food they waste and that they see food waste as something inevitable, and because of this acceptable (Hebrok & Heidenstrøm, 2017). This does not count for all people. However, there is still a reason to believe that political and organizational changes could help people make better choices according to food waste.

Food waste in Norway



Source: Stensgård, Prestrud, Hanssen, & Callewaert, 2018.

## Circular economy

The circular economy is a central concept to policymaking and environmental thinking. The transition to a future circular economy is a fundamental goal in the process of developing a sustainable, resource-efficient, low-carbon, and competitive economy worldwide (European Commission, 2015).

The main goal in a perfect world of circular economy is to keep materials and virgin materials in the loop of infinity and achieving less waste. Waste prevention is a primary part of the circular economy and tops the hierarchy list of waste issues. On this account, the Circular Economy Action Plan of 2015 (European Commission, 2015) declared it a priority the following years. Transforming to make the food industry circular rather than linear requires collaboration and a co-plan between manufacturers and the rest of the value chain in the food industry. Creating such systemic changes requires changes in all stages of the food value chain are needed. Gleaning is an activity to reduce food waste in the primary sector and find new valuable utilizations of the food. Hence, gleaning can contribute to the total circular economy as it ensures more crops staying within the loop.

## Cooperation in the food value chain

In Norway, the length of shelf life (the length of time that a commodity may store without becoming unfit for use, consumption, or sale) has proven to be a usual cause of food waste by wholesalers, producers, and retailers (Stensgård, 2018). Short shelf life may imply as a root cause for why food does not meet the requirements of the standards in the industry regarding shelf life or past the expiry date. It is also shown that food producers often overproduce to meet the consumers needs, due to variation in sales and high-quality requirements. This affects the shelf life and food waste.

Research in the For-Mat-project (Stensgård, 2018) has shown that barely a limited number of leftovers and surplus food in the production is today donated to food banks and charities. Based on this, companies and producers point out that the operating costs determine food waste management. Furthermore, the need for more initiatives to make it easier to donate food is emphasized (Stensgård, 2018).

There is a need for better collaboration. The government, the entire food value chain, and Matsentralen Norway should reconsider, and find new solutions to make donations of food easier. Also, other food waste issues such as waste linked to the expiry date, requirements of customers, and reduced shelf life can improve by an overall enhanced communication and collaboration between actors in the food value chain. More specifically, this includes collaboration on special offers and distribution of shelf life, and forecasting between the stages. It is also appropriate to mention that initiatives in the food value chain and closer collaboration affect the entire chain. This also affects the consumers, as the industry can affect how consumers improve their knowledge and behaviors (Stensgård, 2018).

## The policy aspect

The policy aspect, laws, and requirements in the food industry are critical for how the industry operates in practice and how much food waste occurs in society. Therefore, it is appropriate to look at the interconnection of initiatives against food waste and the political aspects relevant to the food industry in Norway. Today there is no law against wasting food. Sometimes it is more expensive to donate food rather than wasting the food. One example, as mentioned in the TV-series "Matsjokket" at NRK (Moen, 2019), there was a tax imposed for sugar goods, which made it cheaper to throw away sweets, rather than donating them to for example Matsentralen (Moen, 2019). Even though this sugar tax has changed today, after getting a lot of focus in media, this example indicates the power in politics and how it affects the industry.

Norway has committed to fulfilling the UN Sustainable Development Goals. One of these goals is to halve food waste by consumers and retailers and reduce waste in production and the entire supply chain by 2030 (UN environment program, 2015). Therefore, among other reasons, the focus on food waste and new initiatives has increased in recent years. By the end of 2015

Matvett AS, the non-profit project, working on an industry agreement and regulates food waste had the ambition to reduce food waste in the value chain by 25 % within five years (Schröder, et al., 2015). Their work continued with collaboration in the business industry, the research environment, and official investment was established. (Matvett, 2017). Their work includes an important food industry agreement to reduce food waste. By 2018, 79 companies agreed on collaborating (Matvett, 2018), which includes almost all grocery shops in Norway and other companies in the food industry. The agreement is valuable for a sustainable future as it includes a commitment to achieve a 50 % reduction of food waste by the year 2030. The agreement has guidelines and requirements on how to measure, report data, and their activities to reach the goals. It is a current discussion to make the agreement statutory or not. In addition, a food waste law to regulate the food industry has been proposed. Other stricter rules and measures have been proposed by committed organizations and political parties, such as Grønn Ungdom, which indicate that involvement in society is motivated to radically change the food industry to reduce food waste (Matvett, 2018).

*Erna Solberg, the Prime Minister of Norway conveyed in a speech that she believes ensuring that food waste does not occur is the most important thing we can do to reduce emission gasses.*

*(Knežević & Solvang, 2021)*

# AGRICULTURE

## History of Agriculture

Agriculture in Norway has changed a lot since the 1950s, as farmers then had a higher position within society. More people lived in the countryside and ran farms. In 1950, 350 000 thousand were employed in agriculture, unlike 60 000 in 2005 (Ladstein & Skoglund, 2008). Today, most people live in the cities, plus there are only 38 633 farms left in Norway. There has also been a tendency that the existing farms are getting bigger and that the number of small farms decreases (Almås et al., 2020). More farmers have committed to meat and milk production when this is what gives the highest income (SSB, 2019). Today two-thirds of farmers in Norway need another job in addition to farming. Said in other words, they are dependent on another income (Almås et al., 2020).

The consumer makes more money today than in the 1950s, but prices of food have not increased proportionally. In the 1950s, 30 % of the consumption in a household, was spent on food. Compared with only 10 % today. That fact probably contributes to why we have these high standards on goods, because we can, economically. Thus, money has a lot of power and has a strong influence in many aspects.

Both the physical and the mental distance from the city to the origin of the food is getting bigger. When more people live in cities, fewer people work with producing food. In addition, is the economic issue also affecting, when we do not have to think about how the food got to the store. These two factors contribute to the consumer's lack of understanding of where the food comes from and how much work and resources goes into each potato, carrot, etc. Further, this affects our respect and point of view on Norwegian Agriculture. Our appreciation for the farmers' work is not the same as back in the middle of the 19 century.

## Technology in agriculture

The development of technology has also been a big part of the change in agriculture. By adopting new technology, agriculture has become more and more efficient. Today one farmer can produce food covering 61 people, compared to 6,5 people in the 1970s (Regjeringen, 2020). The technology in agriculture is still under development, and it is not just about large harvesting machines or milk pumps for cows. Technology also opens up so that new vegetables and species can be grown indoors with hydroponic planting and specially made grains modified to withstand the Norwegian climate. This development of technology in agriculture plays an important role in strengthening competitiveness, efficiency, and sustainability in Norwegian agriculture (Regjeringen, 2020).



## Getting to know a farmer

Jonas Hagerup, farmer at Søstrene Moksnes

Where: Video call by messenger

Type of research: Unstructured interview

Date: February 5th, 2021

### Introduction

To learn more about the producer level and agriculture, we were eager to talk to farmers. Through Reko-Ringen on Facebook, we contacted Jonas Hagerup. Jonas seemed glad to help, answered us quickly, and has a vast commitment to food waste. He is a farmer at Søstrene Moksnes farm in Frosta. They produce eggs, fruits, potatoes, and different vegetables like turnips, horseradish, and carrots. He gladly explained how it is like to run a farm in Norway today, shared his experiences, and told us about his relationship to the food industry and food waste.

### The struggle of running a small farm in Norway

Running a small farm in Norway today is challenging. Jonas believes a small farm requires double effort with half the income. He thinks the prices of food in Norway today are too low and the competition too high. Jonas's father is still managing the farm after retiring, which is crucial due to the financial aspect. Without his father helping out and working for free, he would have to do something else than farming.

*“I am invested but also frustrated. At first, I was perhaps most annoyed, during my journey of running the farm, I have found that I cannot do anything with the system way more powerful than me”*

### The food industry

Some might claim that the food industry has changed negatively in the past 30 years. Prices are decreasing

*“Unfortunately, there is a shortage of food in the world, but that is not the biggest challenge. We waste too much”*

while requirements are increasing. People want perfect-shaped vegetables at low prices. Fortunately, the focus on locally and environmentally friendly food has increased in the last couple of years, like the appreciation of farmers. Nevertheless, it is difficult for consumers to make the right choices while in grocery stores. It is challenging to determine what is produced in Norway, what is ecological and sustainable. The system, trademarking together with the wide range of options, makes it even more difficult for the small farmers to gain access to store shelves.

### Food waste

Jonas believes that the most unnecessary and primary issue to food waste today is food waste related to harvesting, also vegetables sorted out after harvesting. At Søstrene Moksnes farm, they use machines for harvesting most of their crops. One reason for food waste in the process of harvesting can be related to the type of machine. The harvesting machines can for several reasons slip vegetables or have they can unsuitable shapes and sizes for the current vegetable. Jonas estimates about 20 tons of vegetables were left behind on his fields last year. He points out that if everything was picked by hand nothing would be wasted. Unfortunately, there is not enough time or resources to do so at larger fields.

### Key findings

- Running a small farm is demanding financially and physically.

## Chatting with anonymous farmer

Anonymous female farmer

Where: By e-mail

Type of research: Interview on email

Date: February 9th, 2021

*” There are a lot of uncertainties, and I need to sow extra food to make sure to produce enough for Coop, and it is also nice to have more, in case they want more of my crops”.*

*”3 years ago, there was a lot left in the field, and then I joined the REKO-Ringen Trondheim, and it was a success to sell the carrots.”*

*“Potatoes have much more food waste because the wholesalers want them washed to ensure that they look perfect”.*

### Introduction

We got in contact with this farmer by Facebook, and she offered to answer our questions through email. We wanted to learn more about different farms surrounding Trondheim, how they operate, possible aspects relevant for gleaning, and the extent of farmers. She wrote us some valuable and complementary answers, which was very helpful.

### Key findings

- There is a big gap between what the wholesalers say the market wants, and what the market wants at REKO-Ringen.
- Some farmers do not feel like the wholesalers always listen to them, but the farmers are dependent on them.
- Some farmers need to create their market to sell all their food, to get enough benefits from their produce.

## Visit REKO-ringen

REKO-ringen,

Where: IKEA Leangen in Trondheim

Type of research: Field trip

Date: January 28th, 2021

### What is REKO-ringen

REKO-Ringen is an alternative marketplace for direct sales of produce from farms in the local area. Each area or city have their own Facebook group. The purpose is to be a contact platform between consumers and local food producers surrounding, without intermediaries. The farmers post what they produce and want to sell, including everything from unwashed fresh potatoes to homemade fish cakes. The consumers comment on what they would like to buy and get a pick-up number and time. Further, payments are done via Vipps. Consumers collect the products at the pick-up place on the next pick-up date.

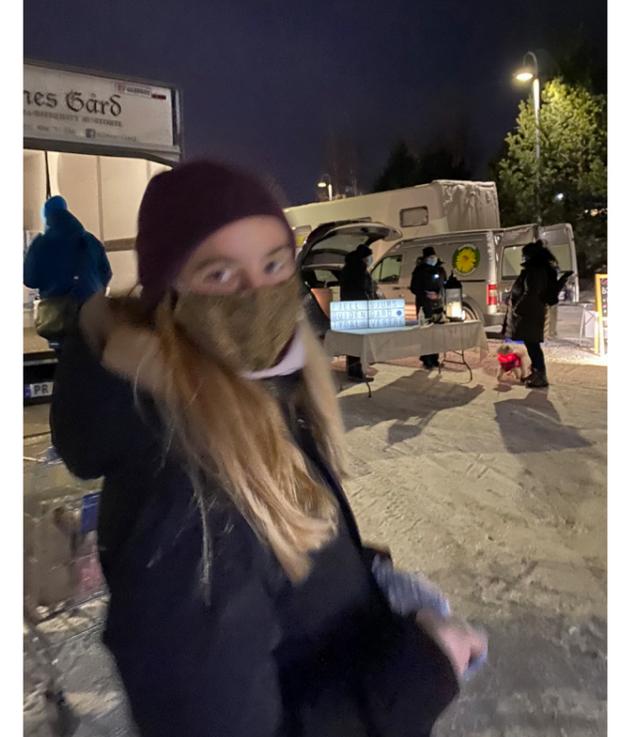
REKO-Ringen is an incredibly good initiative for both the farmers and the consumers. The farmers are getting a new marketplace to sell their products. Additionally, they can sell produce leftovers. Meanwhile, consumers get the opportunity to buy local food with small environmental footprints. The food is fresh, and some consider the products to a higher value, as it might be reassuring buying it straight from the producer.

***“Wholesalers decide the most prices and presentations of the food. Therefore REKO-Ringen is excellent, to meet customers and sell the food as I want and as the customer wants!”***

*-Anonymous farmer*

### Stig Rune about REKO-ringen

Stig Rune is a potato farmer from Kvikne. The whole interview with him is presented on the next page of this thesis. He tells us that the further you go from the city,



Private photo from visit at REKO-ringen

the bigger amount of potatoes the customers buy at Reko-Ringen. People in cities often have less room to store the food, and they want to buy food as prepared as possible. In addition, many do not consider prices, and some people have a lot of money compared with the amount we spend on food. He hopes the corona pandemic can make people more aware and have a positive effect on people. He believes customers at Reko-Ringen are mostly 30+ and adds that not only “old people” take advantage of the offer. Stig Rune has good faith in the upcoming generation, and he believes that they can contribute and help Norwegian vegetable production.

### Key findings

- At Reko-Ringen, both small and big farms spend resources on selling their products.
- Visiting the REKO-Ringen and buying directly from a farmer was a new experience. The atmosphere was friendly and memorable. We got the feeling that the purchase has higher value in comparison to grocery stores, as you got to meet the person behind the production of the goods.

## Meeting a potato farmer

Stig Rune Stai, farmer at Stai Fjellmandel

Where: Video call by messenger

Type of research: Unstructured interview

Date: February 5th, 2021



### Introduction

Running a big farm differ in many ways from running smaller ones. Due to the degree of complexity, need for resources, and use of technology. We wanted an understanding of what it is like running a larger farm in Norway, get an insight of experiences from harvesting and point of view of farmers' position in the food value chain. For that reason, we contacted the potato farmer located at Kvikne, Stig Rune. We had a friendly and engaging video conversation on Messenger where we learned about how he runs the farm, from harvesting to utilization of all raw materials.

### Harvesting

Stig Rune and his wife recently inherited the farm. His parents bought a new potato harvester, with new technology. Doing so resulted in fewer potatoes left in the field after harvesting. He claims that the potatoes left on their fields are insignificant, thanks to the new machines. He adds that the condition on his farm are advantageous, with good access to water as the farm is located close to a river. This might contribute to the good quality of the potatoes and fewer crops left on the field.

*“We sort the potatoes ourselves so that even the smaller potatoes can become human food!”*

### Utilization of the potatoes

Usually, Stig Rune delivers small potatoes to restaurants in Trondheim, but this has not been as relevant lately due to covid-19. Delivering potatoes to restaurants for the past six years has been good business for their financial state. It has given financial

relief and resources to building a new storage room for potatoes. Both the new machine and the storage room have been advantageous to better utilization of the small potatoes. Nowadays, their incomes are mainly from delivering washed potatoes to Coop, as this is what the market demands. At Coop, Stig Rune believes most of the surplus potatoes are going to the production of alcohol and animal feed. A 20 % of his potatoes sent to the packaging house goes to waste. He thinks these are crops that could be utilized for other products, such as mashed potatoes and boat potatoes to make the most of the crops. According to Coop, the market does not want unwashed potatoes. Stig Rune thinks this is sad, as a lot of potatoes get lost in the washing, and it would be much more sustainable to sell potatoes unwashed.

Stig Rune and his wife also sell potatoes at REKO-Ringen in the city of Trondheim and Heimdal, among other places. His experiences from REKO-Ringen are all over positive as it helps his farm reduce food waste. The customers are happy to buy and he thinks consumers value food differently at Reko-ringen. Even though the average market does not want unwashed potatoes, Stig Rune and his wife sell unwashed potatoes to above 100 customers every second week at Reko-Ringen. The reason people want their potatoes unwashed is that the potatoes adhere better when they have not been going through a washing process. This suggests that the consumers have different desires and value food differently at Reko-ringen. In addition to the many benefits of REKO-Ringen, there is also a good economy in selling potatoes here. At REKO-Ringen he sells potato for 13 NOK per kilo, compared to 8 NOK per kilo to Coop.

Stig Rune has a lot of ideas and motivation when it comes to utilizing all potatoes. He collaborated with a businesswoman in Røros on a project making potato

salad out of surplus potatoes. He enjoyed the project, even though the financial gain was minimal. He would like to join more projects of this kind.

### The food system and the economy

Even though Stig R. sometimes gets frustrated with the food value chain and the system surrounding him, he is dependent on Coop financially. They have to be a part of this market as it consists of 99 % of the total market. His frustration is, among other things, that imported goods are sold at a higher price than the Norwegian ones, as they may look more perfectly than the Norwegian storage potatoes. In addition, he believes that short contracts make security and strategic choices more challenging. Another reason why it is challenging to be a potato farmer is the unfortunate low prices they get for the potatoes. In the past years, prices have only increased by one and a half NOK per kilo each year. This does not correspond to the prices of expenses, such as new equipment. This bad starting point means that they must try to utilize as much potato as possible. Fortunately, his father and sometimes his wife helps him out at the farm. If not, it had been tough to make a living from being a potato farmer.

*“The requirements are so strict. The potatoes are supposed to look perfectly good!”*



*“I am surprised if we can halve food waste by 2030.”*



### Key findings

- The farmer's knowledge and motivation in utilizing their products can be crucial financially. Adequate incomes can enable access to better equipment, which again can mean less food waste and surplus food.

# THE SECONDARY INDUSTRY

## Intermediary

There are several actors between the grocery stores and the producer. Farmers often send their crops to a packaging house before the wholesaler takes over the distribution and further transports it to storage before entering the store. Produsentpakkeriet is among the most modern packaging houses, located at Frosta. They cooperate with Bama, one of two wholesalers within vegetables in Norway. The other wholesaler is Coop, which collaborates with other packaging houses. Bama accounts for over 70% of the turnover in fruit and vegetables and is the largest actor in Norway. They deliver fruits and vegetables to all the large grocery stores in Norway, except Coop. Due to Bama's central role in the Norwegian and Trøndelags food industry, we have used their model of the food value chain.

Another intermediary is Gartnerhallen. Gartnerhallen never possesses or owns the physical vegetables, but they are an important player in turns of planning and prices. They act as the middleman between the farmers and the wholesaler (Bama or Coop). Gartnerhallen is owned by 1030 fruit and vegetable producers and aims to promote the farmer's business and financial interests. They ensure profitability for the farmers and give the consumer access to Norwegian-produced quality products all year round. To do so, they have a professional environment, marketing, innovation, product development, and production planning (Gartnerhallen, n.d).

## Produsentpakkeriet

Employee at Produsentpakkeriet  
Where: Microsoft Teams,  
Type of research: Unstructured interview  
Date: January 26th, 2021

### Introduction

Produsentpakkeriet (PP) is a packaging house preparing raw materials from farmers before delivered to the wholesalers. PP aims to utilize all raw materials in the best possible way. He is the CEO at PP, a friendly and curious man willing to help us and share experiences. He answers questions about what they do, their responsibilities, and their relation to the food system and farmers. Lastly, we discussed food waste-related topics.

*“Farmers thinks that quality requirements are too strict.”*

### Farmers responsibility

Farmers have a lot of responsibility as their products need to meet the consumer's requirements. The products need to be well-functioning in all stages, sowing, growing, harvesting, and storing. The risk at the producer level is high and exists in all stages. There has not been an obligation to register food waste in the primary sector before 2021, therefore, the amount is unknown.

### Food waste at the packaging house:

The vegetables PP pack the most of and where there are most food waste is potatoes and carrots.

Regarding potatoes, the goal is to sell as much as possible raw in different packages. There are different types of potato packaging to the various qualities. Nevertheless, he says that 40-45% of the potatoes are sorted out, because of errors in shape, size, color, quality of the shell, marks, etc. The potato sorted out are usually sent to Hoff. Hoff is a producer of fries, potato salad, and several products sold in grocery

*“Vegetables with the best quality are the most popular of buyers even if the price is higher, as the consumers want good looking vegetables.”*

stores. Hoff is a corporation owned by farmers and this way the money goes back to the farmers when the potatoes are sent to Hoff, even though PP does not make money this way. In this solution, it is a question if the resources are well utilized.

He highlights that the most expensive carrots sold in boxes are the most popular on the market. Therefore, as many carrots as possible are packed in “high-quality boxes”. The carrots that are close to meeting these requirements are packed in bags and sold cheaper. PP has started to cut and vacuum package the crops used to make soup at the commercial kitchen. The rest of the carrots, around 20-25%, are sorted out and goes to food waste and sold as animal food. Recently, small amounts of crops are now donated to Matsentralen, to better utilize some of the food that today is wasted.

### Key findings

- Consumers use their eyes when shopping and want the best-looking food, which creates ripple effects and high demands throughout the food value chain.

## Gartnerhallen

Employee at Gartnerhallen  
Where: Microsoft Teams,  
Type of research: Unstructured interview  
Date: February 19th, 2021

### Introduction

We contacted Gartnerhallen with ambitions to learn more about their position in the food value chain and requirements of the quality of vegetables at the wholesaler. Gartnerhallen is the intermediary between the farmer and the wholesaler. They work to meet needs and expectations for both the farmers and wholesalers. In addition, they work continuously to make the food marked as equal and fair as possible. We met with an employee working with quality requirements. In our opinion, the perfect person for us to learn more about the food value chain and understand the complexity of communication, distribution, and collaboration. He was helpful, and he has extensive experience in the food industry. The meeting once again took place at Microsoft Teams due to the coronavirus.

*“Food waste is a question of the definition.”*

### Gartnerhallen and their role

Gartnerhallen collaborates with the major market players in the green industry in Norway - the production, distribution, grocery, and catering. About 90% of their volume is sold to BAMA. Together with BAMA, they work with production planning to calculate the market needs, then dividing the orders to the different farmers. Gartnerhallen is, as previously mentioned owned by farmers. Members pay a 3000 NOK yearly fee, in addition, Gartnerhallen gets 1,1 % of the producers sold crops.

*“There has been a change in consumers attitude in connection with food. The sale of fruit and vegetables slowed down, and later on, we found out that the underlying cause was because the consumer wasted less food!”*

### High requirements in the market

He introduces us to lists of requirements, which apply to each vegetable sold in Norwegian groceries. These lists do not change very often, and one of the lists he shows us is from 2015. The tolerance of deviation from the requirements is low. He believes the high requirements are influenced by the imported vegetables and the systems surrounding them. He tells us about an incident that appeared in the year 2000 when Gartnerhallen had to reconsider requirements on the potatoes to win the market back from the import potatoes. The food market has changed a lot the recent years, and back at the end of the 90's unwashed potatoes were sold in Norway. Technology and modernity have contributed to change this, and additionally, people have become lazier and more distant from the origin of the food.

*“I think volume sales will continue to be something that looks delicate - we act with eyes.”*

### Import from other countries

Imported vegetables often look better and outcompete Norwegian ones, which might lead back to the use of chemicals and herbal remedies. The rules in Norway are stricter when it comes to the use of chemicals, and therefore, the competition of appearance is sometimes unattainable.

*“Of course, we would like to be able to bind the agreement. The food loss would not go down, but the farmer will get money for it!”*

### The producers

Gartnerhallen works towards taking care of the farmers' needs and wishes, and one way is by including them in the negotiations with BAMA. Gartnerhallen has price-stimulating measures, by collecting a fond through the season, to assure a more balanced income to the farmers, with shared risk.

### Key findings

- The wholesalers have a lot of power, and farmers are dependent on trusting the unpredictable contract to have an income. On the other side, farmers have no risk if they are not able to produce enough crops, except for the corresponding loss of income.
- The producers of (e.g., Sørlandschips) industry goods need consistent crops to have a consistent quality on their products throughout the year. In addition, with some products, it is not possible to compete with the industrial prices (e.g., canned tomatoes).

## Grocery stores

The last player in the secondary industry that connects the food value chain to the consumer is the grocery stores. There are several chain stores in Norway. But they are all owned by three companies; Reitangruppen, Norges Gruppen, and Coop.

The grocery stores are the food systems link to the consumer, and it is where consumer behavior is measured. The consumer's high-quality demands occur in this daily meeting between the people and the products. What the stores do and how they operate play a crucial role in reducing food waste. Grocery stores can be a decisive place to make changes and act to change consumer behavior and requirements.

## Co-founder of Snål

*Tore Bjørnebo, store manager at Bunnpris and co-founder of Snål-frukt*

*Where: Microsoft Teams,*

*Type of research: Unstructured interview*

*Date: February 23th, 2021*

### Introduction

After talking to people in all the other stages in the food supply chain, we wanted to get to know a grocery store's perspective. They are the closest step to the consumer and might have the most insight into consumer behavior and values. Tore Bjørnebo manages a grocery store called Bunnpris in Trondheim. He has shown a high commitment to reducing food waste. He was very willing to talk to us and help us, and his interest in the topic of food waste was evident throughout the whole conversation. Tore works with reducing food waste every day and strives towards improvements.

*“Before I started as a manager here, we had food waste of approx. 1.7%, and last year we were at 0.86%!”*

### Consumer values

Tore has worked in the food industry for about 30 years and says that drastic changes in the attitude and behavior of consumers have occurred. We ask him if there is a pattern in what type of people buying the discounted food on the way to expire. He expresses his impression, saying that students and people above 60 years most frequently buying food on discount and that people in the age of 40-50 are acting less conscious.

*“It’s been five years since we started Snål, but maybe it would be different starting it now. There has been a major shift in focus on food.”*

### Expired crops

Technology and automatic systems help grocery stores to predict and make it possible to sell more crops at a lower price. In Tore's store, they work on the details, as they always want to be as good as possible in reducing food waste. They have both an economic and an environmental motivation to sell out products of this kind.

### Key findings

- Technology exists to predict if the stores have too many crops to sell out before the date expires. Bunnpris soon gets this technology, and hopefully, other grocery stores will have it too.
- Transport is a big challenge and was the expense forcing Snål to quit many of their products.
- The grocery stores today are well on their way to reducing food waste, and there are various activities, technologies, and initiatives to obtain this goal.

# FOOD INDUSTRY IN NORWAY

## The value of a carrot

The facts concerning carrots in Norway, listed on the next page, indicate the value of a carrot from various perspectives. Knowing the value of a carrot emphasizes the importance of reducing food waste in all stages of the food value chain. The carrot is just an example of a vegetable to illustrate this message. The high value, of course, applies to other vegetables as well.

## The carrot journey

How is the journey of a carrot, from field to fork? And how much of the carrots end up as waste during its journey, and where? The carrot is an example to illustrate food waste in general and the local food value chain in Trøndelag. Doing so can better convey the food value chain more tangible and specific. We found this useful to emphasize and illustrate important information.

Based on the interviews, surveys, and article reviews of various actors, we gathered the "carrot journey" as illustrated on the next double page. The purpose is to map out today's local system and to visualize an estimate of how many carrots never make it to the end of the journey as human food. The value chain for vegetables locally in Trøndelag follows much of the same pattern as the general value chain for all food.

It is relevant to mention that it is many communication channels and alternative roads in the food value chain, and we have not mapped all possible paths for a carrot life. The carrot journey bases on its most usual and direct pathway entering the consumer. Through both wholesalers and grocery stores. Restaurants, hotels, commercial kitchens, etc., and small initiatives for retail such as REKO-Ringen, are excluded from our scope, and therefore not included in the carrot journey. We have included Matsentralen as this is a stakeholder of interest. As illustrated, there is no direct link between farmers' fields to Matsentralen today.

The total food losses and food waste along the

journey are frightening. We see the same tendencies that throwing edible vegetables occur at all levels in the value chain.

What would have happened if food waste reduces in the primary sector by linking the fields and Matsentralen closer together? If so, what would such a direct connection between the primary sector and Matsentralen entail?



## The value of a carrot

- The carrot is an important horticultural crop in Norway. In 2014, 52,000 tonnes of carrots were produced, accounting for 84% of national consumption.
- Carrots are grown on contract for processing or consumption.
- Carrot is the main vegetable grown in Norway (excluding potatoes) and is grown on about 15,000 decares, with about 52,000 tonnes produced.
- Carrots have been cultivated in Norway since the 17th century and have a strong position in traditional Norwegian food consumption
- The average Norwegian consumption of carrots is 7.9 kg a year
- Carrots account for 10% of vegetables sold in Norway
- Prices for carrots are somewhat stable, averaging 20 NOK per kg
- Norway's natural resources do not allow carrot production on a large scale all over the country, and some regions have a higher concentration of carrot production. Production occurs in a range of soil types, such as sand and clay, within different rainfall areas.
- 195L water is required to produce one kg carrot

(Hartikainen, 2016)



# Carrot journey

Consumers buy 10 kg carrots per year.

Ca. 11,7% carrots are thrown away in the household



20-30% is sorted out when packaging

103000 carrots is wasted every day



Field

Farm

Packaging

Gartnerhallen

Wholesaler

Grocery store

4,5%-20% of carrots are left on the field



“We need more fresh vegetables”  
-Marte, Matsentralen



“There is a potential in adding the producer level”

“There is a need of doubling the amount of food for people in need” -Marte, Matsentralen

Matsentralen

## Climate challenges

The Norwegian degree of self-sufficiency on food is about 40% (Norsk Landbrukssamvirke, 2019), and we are dependent on imported goods. There are many reasons why people in Norway do not eat more Norwegian food. It can be seen as a political issue, considering the amount planned by wholesalers and consumer's habits (Risberg, 2020). Another important issue we need to notice is the Norwegian climate and the challenges regarding this. The climate in Norway is not ideal for agriculture, where long cold winters and uncertain summers make the harvesting season short. Many goods are not feasible to produce nor beneficial to grow in greenhouses in Norway, such as lime, avocado, mango, etc. (Risberg, 2020). We live in a globalized world with expensive and spoiled habits, and consumers want the availability of all crops all year long. The consumer demands on imported goods make it challenging for the wholesaler to keep Norwegian crops on the market (Risberg, 2020). The high competition makes it challenging for farmers to sell all their products on the market.

Even though the climate is a challenge, not within one's control, Norway needs to cope with the current situation. However, the degree of self-sufficiency could have been higher if we ate all the food produced in Norway and if the Norwegian food was better received.



Photo from jerseybites.com



## Unique for Trøndelag

As already mentioned, the focus on local food, reducing food waste, and sustainability, in general, have increased within the country and globally. Agriculture in Norway has its challenges, but local food has a growing share of the market (Risberg, 2020). Food production in Trøndelag plays a significant role due to the growth, as it stands for about 20% of the total food production in Norway (Boimatfatet, 2020). Frosta, about an hour outside Trondheim city center, is like "Mekka" of produced vegetables in Norway. We talked to an adviser (Aspeslåen) from Norsk Landbruksrådgiving Trøndelag SA (Norwegian Agricultural Advisory Trøndelag SA) via email. She told us that the variety of food grown in the Frosta area is very special. Additionally, she highlighted, there are hardly any places in Europe with such a wide range of vegetables (Aspeslåen, personal communication, February 2021). At Frosta, you can find all the root vegetables, salads in greenhouses, dozens of potato fields, and much more within this small area.

Besides, Trondheim is far ahead in research in technology and development, with a large university and research institute, which contributes to technological progress in Norwegian agriculture.

## MATSENTRALEN

Matsentralen is the Norwegian food bank, collecting food from the industry and make sure to redistribute it to charity organizations and people in need of more food. The first food bank was established in 2013 in Oslo, and today there are seven food banks, soon eight in total (Matsentralen, 2021a). Matsentralen is developing all the time, with getting more collaborators in both food producers and beneficiaries.

Matsentralen became interesting for us from an early stage of the project because they strive towards similar goals as we do. They save food, reduce food waste and take advantage of the food by working towards closing the hungry-city cycle (Matsentralen, 2021b).



Photo from Matsentralen Trøndelag's Facebook page



Private photo from visit at Matsentralen

## First meeting with Marte

Marte Lønvik Bjørnsund CEO Matsentralen Trøndelag

Where: Microsoft Teams,

Type: Unstructured interview

Date: January 21th, 2021

### Introduction

We were very interested in talking to Marte after watching an interview with her about Matsentralen's current situation and how COVID-19 has affected the urge and demand for food. Our goal of meeting her was to learn about how they operate, their achievements, and if she has ever heard about gleaning. Marte was interested in talking to us and kindly shared a lot of information.

*"I have not even heard about gleaning!"*

### Motivations for donating food to Matsentralen

FNs sustainability goals and the industry agreement (Bransjeavtalen) make the producers interested in collaborating and donate food. The new requirements have a good influence on the producers and ensure that more people take responsibility. The economic aspect is always a challenge, and they need extra motivation if it does not include profit. There is an increasing external expectation and pressure in society for corporations to take social responsibility, which might motivate them to act. Marte, experiences that most corporations interesting in taking part are usually more concerned with the human aspect of contribution, rather than the environmental aspect of saving food.

*"We get a lot of gifts from companies because we have the fastest-growing popularity, and organizations want to be associated with us."*

### Volunteers and beneficiaries

Volunteers are usually passionate about and motivated to contribute either because they want to help reduce food waste, help the environment or help people in need.

People that need food from Matsentralen are vulnerable and often feel worthless. Therefore, Matsentralen focuses on giving the food higher value by ensuring quality and making it attractive to save food.

### Key findings

- We have to be sensitive around the group of people in need of food.
- Ethical decisions and economic aspects are conflicting issues for corporations.
- Matsentralen have not yet figured out how to get the food from the producer level into their service.
- It is too expensive to hire people or use resources to pick out bad fruit and vegetables at the wholesaler level. Instead, they throw away the whole pallet based on probability. That is why a lot of greens and fruits get wasted.

## Visit Matsentralen

Matsentralen Trøndelag

Where: Sluppen, Trondheim

Type of research: Visit at Matsentralen, working with sorting vegetables.

Date: January 26th, 2021

### Introduction

We wanted to learn even more about Matsentralen. Marte welcomed us to visit, and we wanted to offer our help. Hence, we sorted carrots from Produsentpakkeriet. In this way, we could get to know the people working there, how they work, and talk to those who collect the food for further donation. Matsentralen got one full pallet of carrots, that we sorted into smaller boxes to be picked up by beneficiaries or sent to Oslo. It was fun to see all the weird, beautiful, and strange-looking carrots.

*“It is good to estimate a time frame for this work (with the carrots) because this makes it easier to get in volunteers who can help us. Now we could get carrots in here every week!”*

### Saving food from becoming food waste

Matsentralen ensures a lot of food does not end up in landfills. It is an efficient organization in the process of decreasing food waste on a national basis. They receive surplus food from the food industry. For instance, some grocery shops donate food close to the expiration date or with errors in the packaging, this is food that otherwise would go to waste. In addition, they have collaboration with Produsentpakkeriet, which gives them imperfect carrots. Matsentralen is interested in receiving food from more producers and work closer to the farmers. Matsentralen has also just started to send surplus food internally. In his way, Matsentralen can assure a variety of food at all the food banks.

### How do they operate?

The people working at Matsentralen are two permanent employees, Marte, the Ceo, and one Operations Manager. Additionally, two employees through the Norwegian Labour and Welfare Service. A number of people show interest in helping. But, Marte says it is hard to include volunteers at Matsentralen, due to the leak in standardized work tasks and the time pressure of daily operations. She sees potential in recruiting volunteers in the process of sorting vegetables, as we did. Matsentralen is a well-working organization and an important link in the food value chain and to charity organizations. This motivates us to collaborate closely with Matsentralen throughout the project.



Photo taken by Marte when we visited Matsentralen

### Key findings

- No one should be dependent on the Matsentralen and the food they offer. They want to help people out of poverty, by giving them a supplement of food, which can ease their financial pressure a bit. This food may help people spend their money on other essential things, such as social, educational, and cultural activities.
- We got inspired after the visit to Matsentralen, as they help cover hunger, save food from being wasted, and cares for society.

## CONSUMER IN THE FOOD INDUSTRY

As previously mentioned, we wanted to gain an extensive understanding of the food chain as a whole. Doing so includes the consumer, as they, in many ways, contribute to form requirements and needs. To better understand aspects of consumers, such as attitudes, values, practices, everyday habits, culture, and motivations, may help form an opinion on whether gleaning is suitable to introduce in Norway. By doing so, in combination with other relevant insights, we might see possibilities and the potential of gleaning.

### Complexity in why we waste

Studies of why food waste occurs have shown that it is caused by various interrelated practices within routines of everyday life, lack of awareness and knowledge (Evans, 2014). Spurling (2013) mapped the main factors for issues related to sustainability and highlights the influence of social phenomena, including culture and shared understandings, routines in everyday life. In addition, he argues that practical factors such as infrastructure, institutions, and distances need to be taken into consideration.

Therefore, it might be beneficial to look at these complex processes when designing activities or initiatives aiming to reduce food waste.

*“The distance from field to fork has not only a physical distance but a mental one too. Even though we live pretty close to the countryside in Trøndelag, people in the city have a limited relation and knowledge of food processes and agriculture”.*

– *Biomatfatet*

*“As I grew up, we never wasted any food, this was a common norm. People were conscious about the value of the food as they spent time and resources on it themselves. Today people might have too little knowledge to care about food waste”.*

– *Trond Frey, retired farmer  
(from a private telephone conversation)*

### Are we too rich?

On an average scale, food is cheap for most consumers in Norway. The current share of income spent on food is currently at 11 %, and the number is steadily decreasing (SSB, 2017). Are we too rich in Norway to bother about food waste and the value of food?

We talked to Eivind G Frøiland, Gartner at Competence Center for Urban Cultivation at Voll gård (see the interview on page 64). He believes we are too rich in Norway to care about whether food is valuable or not and to spend time and effort to resonate and take action to waste less food.

### Food value

A study shows that if food is considered to be of low value, it is more often wasted, compared to food that has a high perceived value (Mavrakis, 2014). Cheaper food such as vegetables and bread is wasted more frequently. In comparison with expensive food, such as fish and meat. This indicates that the food value matters.

Eivind G Frøiland (see the interview on page 64) believes that older people in Norway who have lived under poor conditions learned through living to appreciate food. After the war, things became easier,

the economy and the supply of food increased and there was no longer a need for valuing and saving food the same way. This resulted in lower awareness of food value and an increasing amount of food wasted. As the environment is under pressure, Eivind sees a growing interest in food awareness in the upcoming generations, but also in general in the society. When raising awareness around food, he highlights the importance of teaching and informs without insult people's way of living, as this may result in the opposite effect.

### Various consumer groups

Age has shown to be a significant variable when it comes to whether various consumer groups consider food as valuable or not. The same study has indicated that senior people waste less food than people younger (Quested et al., 2013). Gender also matters. Women throw away more food than men. In general, the size and what phase, and the life situation of a household affect the habits of handling and eating food and thereby food wasted. According to Ventour (2008), single-person households waste the most amount of food per head.

### Modernity

The organization of households has simultaneously changed over time, female participation in working life has increased, and time-efficient managing, in general, has become more important in society, including handling food (Jackson & Viehoff, 2016). People strive to minimize the workload and reduce the limitations in life (Graham-Rowe et al., 2014). Therefore, consumers have several conflicting thoughts of interests in everyday life, between convenience and the ideal in society. The ideal may include, such as, managing food risks, eat healthily, save leftovers, plan, enjoy life, have guests over, and so on. The majority of consumers in Norway do not know the amount of food they throw away and see food waste as acceptable because they look at it as inevitable (Hebrok & Heidenstrøm, 2017). Wasting food has become a part of consumers' daily lives.

*“The world is already shaped by food, so we may as well start using food to shape the world more positively”.*

– *Carolyn Steel, Hungry City: Sitopia.*

How many kilos of food does an average Norwegian waste every year?

- A 12 kg 14 pcs
- B 43 kg 132 pcs
- C 22 kg 109 pcs



How much of the food produced in the world is wasted?

- A 7 % 3 pcs
- B 18 % 26 pcs
- C 33 % 121 pcs
- D 48 % 88 pcs

Would you pick up this food to get it for free?

- YES 159 pcs
- NO 54 pcs

How are your habits related to food waste?

How many carrots never reach the store shelves

- A 18 % 129 pcs
- B 6 % 16 pcs
- C 10 % 78 pcs



## Instagram-survey

We made an Instagram questionnaire intending to find the level of knowledge, actions, and values concerning food waste among our friends and followers. In addition, the survey could help to shed light on the topic and help spread the importance of valuing food.

Is there any correlation between being knowledgeable about food waste and the actions of the users? We looked more closely at a random sample of participants to see if there was a clear correlation. In total, we had between 255 and 211 answers to the questions, most people between 21-32 years old.

### Possible sources of error

There are some possible sources of error in the surveys. For example, people might have answered the highest number because it is typical in these types of tests. Or maybe some people do not try to answer correctly because they only want to click ahead of the story, but they are too curious not to check the answers? - At least they might learn something new!

### Project value

Overall, the survey was valuable in terms of understanding how much knowledge others have and whether people are willing to act or not.

### Key findings

- It seems that many participants understood and had knowledge of the problems associated with food waste, and at the same time, admit that they throw away too much food.
- 238 friends have answered the survey. That is positive in itself, due to enlighten the topic and make people more aware.
- It seems that people are honest, as they admitted that they did not want to contribute in gleaning situations or their own opinion throw too much food.
- There is a correlation between knowledge and personal initiative and values associated with food waste.
- Overall, the participators mostly answered correctly.
- Surprisingly, many participants desire to pick up the vegetable left in the fields, which is very positive due to our project.
- Friends on Instagram found the facts interesting and the topic important. Some were curious and asked following-up questions.
- Instagram proved to be a useful tool to gain user insight by questionnaires. We found that it is easier to get people to answer compared to surveys via links.

# POVERTY

Today about 8% of the world's population lives on less than 1,9 dollars a day, which is considered extreme poverty (United Nations, 2020). This number has decreased for the last 30 years, where 36% of the world's population lived under extreme poverty (United Nations, 2020). This reduction might reflect that we are on a good path, and the work the world is doing to reduce poverty has helped so far. But there are still millions of people suffering from extreme poverty, and unfortunately, the numbers have increased the last year due to the covid-99 situation (United Nations, 2020).

## Poverty in Norway

In Norway, people considered poor is seen as prosperous in other countries where extreme poverty is widespread. Nevertheless, we say that the numbers of poor people are increasing. In Norway, 10 % of the population lives under the relative poverty line, meaning the household earns less than 60% of the median income in the current country (Matsentralen.no, 2021c). Poor people in Norway are not in a life-threatening situation, but there is a risk of falling out of society, malnutrition, and mental ailments (Matsentralen.no, 2021c). Children are a vulnerable group, and child poverty is growing faster than poverty among adults. Child poverty has increased from 84 000 in 2013 to 110 900 in 2018 (Bufdir, 2021).

It can often be invisible for us to perceive that other people are poor in Norway, as it is not mainly about physical objects but rather about the opportunity to participate socially on an equal footing with others in society (Bufdir, 2021). To have a good life, children and youth need relations with peers, and they say that the worst thing about being poor is the inability to participate in the same thing as everyone else (Bufdir, 2021). They may miss out on important identity development. Lower social understanding and participation can lead to lower well-being at school. It has been shown that children living with poorer families have a higher risk of mental health problems (Bufdir.no, 2021c). All these deficiencies one is exposed to when living in child poverty can lead to

long-term consequences, as they have a higher risk of living in poverty as adults (Bufdir.no, 2021c).

There are groups in society that are more exposed and vulnerable to becoming poor than others. These are refugees, minimum pensioners, drug addicts, people living on disability benefits, homeless, long-term unemployed, single parents' immigrants, and people undergoing rehabilitation after imprisonment (Matsentralen, 2021c).

### Challenges with poverty in Norway

A challenge with poverty in Norway is the invisible aspect, that people suffering from poverty do not stand out physically, which makes poverty more taboo in society. When we do not talk about it, poverty ends up being extremely shameful. The feeling of being poor, not unable to give your children what they want, not having the opportunity to participate in the activities you want, can build up a feeling of worthlessness and inferiority. Trying to fit in with the people around you can make people wanting to hide. The tabu and shame related to poverty in a rich country like Norway might have led to ignorance in society. Most people in Norway do not know that 10% of the population is suffering from poverty and that many people in their vicinity feel shameful, inferior, and insecure because of money.

*“People who need food from Matsentralen are vulnerable and often have a feeling of worthlessness and shame”*

*- Marte Lønvik Bjørnsund CEO Matsentralen Trøndelag*

# VOLUNTEERS

## Voluntariness in Norway

Voluntariness has a unique role in Norwegian society and democracy. In 2019, 66% of the population had worked as Volunteers (Olsen & Nyhus, 2020). This fact makes Norway the world's most voluntary country in the world (Frivillighet Norge, 2019). The volunteer sector advantages society and community building, and in 2018 the total gross product of non-profit and voluntary organizations and work were 139 billion Norwegian kroner (NOK). The voluntary and unpaid work effort is equivalent to 142 000 person-years work (Nickelsen & Von Hirsch, 2020).

Voluntary work and organizations exist in all variants, but the most common is within the local community, sports organizations, and cultural organizations (Olsen & Nyhus, 2020). We are dependent on enthusiasts in all kinds of organizations, and most of the charity work is built and maintained by these. The willingness in Norway is high, and the potential of engaging people to work for both the environment and the disadvantaged in society looks optimistic. Among the people not already working as volunteers, 51% say they would like to be volunteers if they contributed to something meaningful (Olsen & Nyhus, 2020).

### Challenges in volunteer work

We attended a seminar with the companies ComteBoreu, Halogen, and Rambøll, February 18th, 2021. The seminar was called StimuLab-project: Start and run a volunteer organization. They addressed challenges associated with voluntary work in Norway. We found this interesting to have in mind in our future work. These challenges of interest are listed below.

- Less economic space for maneuver in the public sector.
- Climate change, climate risk, and climate issues affecting society and may change patterns of voluntariness.
- Increasing social, economic, and digital differences, which affect participation and the need for help.
- Increased polarization and emergence of Echo chambers, voluntariness is built upon democracy and neutralizing between extremes.
- The growing need for specialized professionals in working life could potentially put more people out of working life. At the same time, we are facing a time of labor shortages.
- The ageing population may result in a labor shortage, but volunteer organizations might take advantage of this? Youths may want to see results immediately rather than long-term improvements.
- Increasing need for control, such as police certificates, etc.
- Disagreements between municipality and volunteering.
- Discrepancy between work regulations and volunteering, can sick leavers work voluntarily?

*Inspired from a the seminar "The StimuLab project: Start and run a volunteer organization, with ComteBoreu, Halogen and Rambøll.*

## Visit at Voll farm

*Eivind G Frøiland,  
Competence center for Urban Planting  
Where: The foundation Voll gård  
Type of research: Unstructured interview and field trip.  
Date: February 8th, 2021*

### Introduction

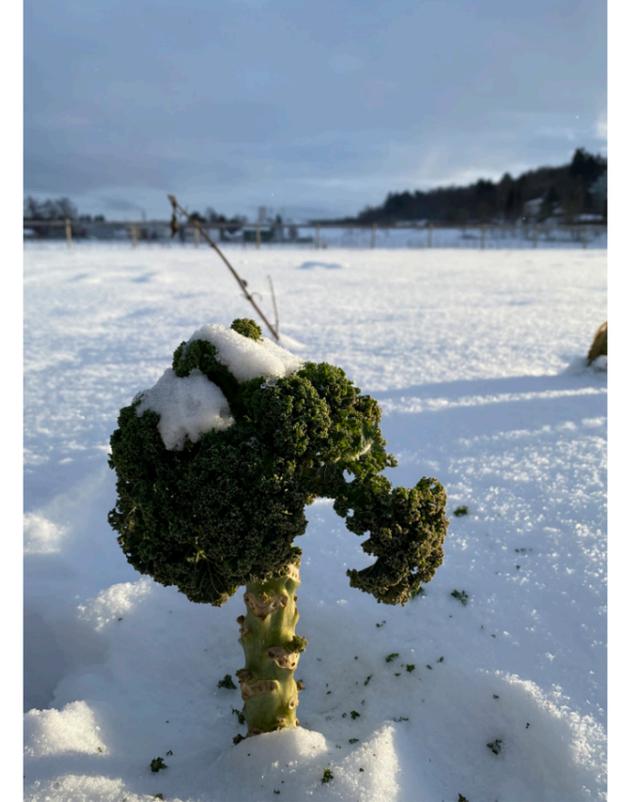
A morning in February, we visited Voll farm in Trondheim. The visit started with a pleasant conversation with Eivind about their inclusion of volunteers and their farming. In addition, Eivind told us about the different groups of people visiting their farm. These people want to learn about food production and how they respond to the learnings. Afterward, we got a tour of the farm. We got to look and taste the kale sticking out of the snow, altogether, a learning and valuable experience.

### Volunteering

At Voll farm, a lot of different people from different arrangements are coming to work as volunteers. It can be a challenge to find a balance between getting valuable help and giving proper guiding. People hoping to learn and obtaining a long-lasting relationship are appropriate for the farm. Last year Eivind got several requests concerning the possibility to help with the harvesting. The families helped on the field and got vegetables at a lower price. This help was beneficial for him, and they seemed happy. He believes their motivation was both getting a reasonable price and access to fresh food.

### Knowledge sharing

Voll farm has always been an experimental farm, where they have tried out new things. For that reason, they have a great interest in sharing their knowledge, talking to students and people engaged. They call themselves an "open farm" where people can visit. Many families come to visit, but schools and kindergartens also visit the farm (often 2-3 times a week). Their goal is to inform and raise awareness around the food industry and show people "where food comes from". Eivind has an interest in ecological



*Private photo from Voll Farm*

food production and the environmental impacts in food production.

***"Children does not understand why ugly vegetables are not qualified for sale in supermarkets?"***

### Key findings

- A lot of different people are interested in visiting Voll farm, and many are eager to learn about food production and farming.
- Voll farm work to raise awareness of where the food we eat comes from and around food production.

## Questionnaire on volunteering

We wanted to find out how people in Trondheim relate to volunteer work and the degree of willingness within people. Additionally, we wanted to find out more about desires and preferences regarding time-use, registration, and tasks according to volunteer work.

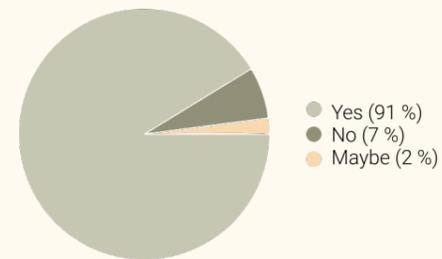
In addition to sending out the questionnaire to family and friends, we posted the questionnaire on the Facebook group "Dumpster Diving & Foodsharing Trondheim". This group consists largely of engaged people striving to save food waste and with a desire to contribute to the local community. The questionnaire got 195 answers from people in different age groups, but most from people between 21-30 years, followed by the 51- 60-year-olds. The participants were the majority of women. People seemed engaged around the theme, and many people left their e-mails for us to reach them to participate in interviews later on. We could also see that most have worked as volunteers. As many as 74% have worked voluntarily, only 26% answered that they had never done it before.

### Willingness and time-use

The questions illustrated on this page have the purpose to address both willingness and desirable time frames in voluntary work.

### Would you like to work with any kind of volunteer work?

195 answers



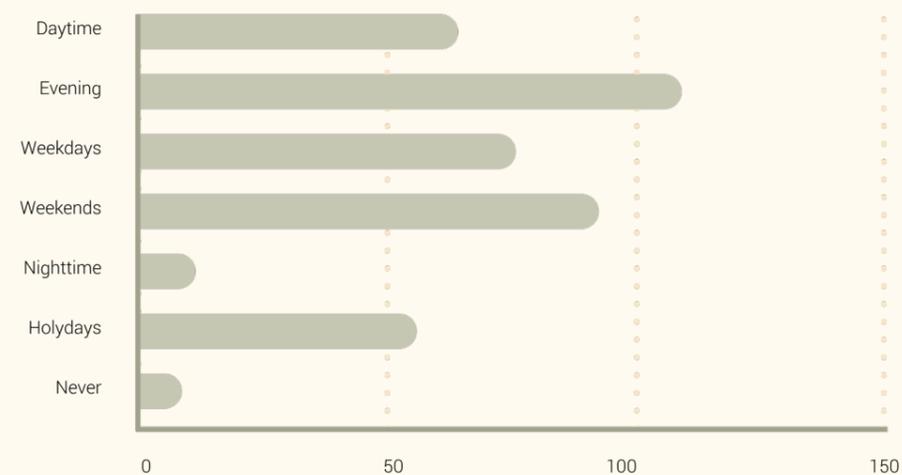
### How much time could you spend on volunteer work?

195 answers



### When would you rather work voluntarily?

194 answers



### Key findings

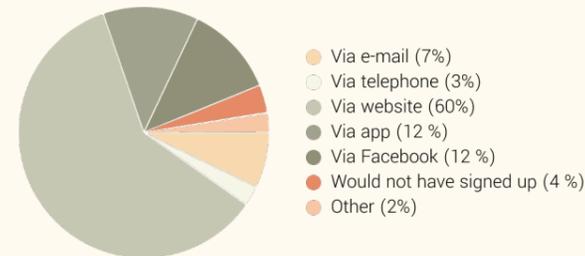
- The gap between people wanting to do volunteer work and people that have volunteered may predict a possible potential in including more volunteers.
- There are surprisingly many people willing to work frequently as volunteers, which could possibly contribute to continuity and predictability in potential gleaning activities.
- It varies how much time respondents are willing to spend on volunteer work, which indicates that there are different desires among the participants. This has to be taken into consideration when potentially designing an attractive system.
- People have various references when they would like to work. This might be beneficial when gleaning may include various tasks.

**Registration**

The following questions, as illustrated, intend to understand when and how people want to sign up for volunteer work. Plus, with who they would like to share the experience.

**How would you like to sign up for volunteer work?**

195 answers



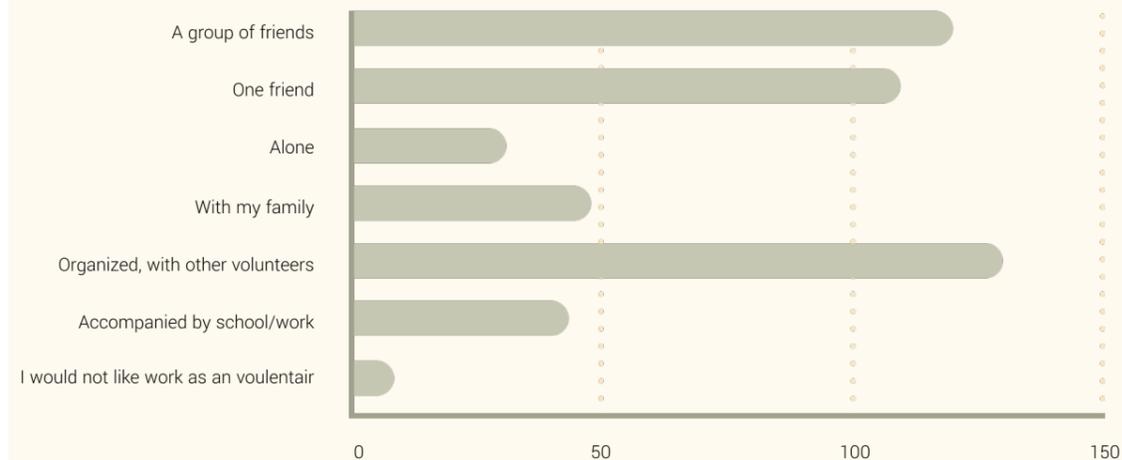
**When would you like to sign up for volunteer work?**

195 answers



**If you were to do volunteer work, who would you do it with then?**

194 answers



**Key findings**

- Based on the survey, we see that the majority had preferred registration via a web platform.
- It varies how long in advance it is desirable to sign up, to prevent people from becoming unmotivated in the process of registration, it is beneficial to make a flexible system, if possible.
- It seems like most people see volunteer work as a social activity, as most participants would like to do it with friends or others.
- Most people would prefer to sign up from one month to a couple of days ahead.
- Harvest days are unpredictable and may require spontaneity and flexibility in volunteers, which might fit the people wanting to sign up a couple of days ahead.

# GLEANNING

At this stage of the project, we have more insight into aspects and preconditions relevant for gleaning and thoughts about how gleaning could be arranged in Norway. Within all the areas researched, we have established arguments for why gleaning could be appropriate to focus on. Firstly, today there are not sufficient initiatives aiming to reduce agricultural food waste. Even though farmers we have talked to believe that most food waste happens in the fields. Therefore, it is appropriate to introduce new initiatives focused on agriculture. Further, we have discovered that farmers think the quality requirements are too strict and that they feel small in a big industry. Connecting the city and the countryside closer together by bringing the consumers out on the fields may lead to positive ripple effects. Besides, we have learned that volunteer work in Norway has a strong tradition, and we have seen a willingness to volunteer work related to environmental and societal issues. People also seem motivated to learn more about these topics. In addition, more Norwegians than most people assume are living in relative poverty, and Matsentralen needs more nutritious fresh food. That said, gleaning can both shed light on the poverty issue in Norway and support Matsentralen in helping more people.

We have reflected on the possible benefits and limitations regarding gleaning, as listed to the right. The arguments are based on our thoughts and gained understanding from the insight work so far. Gladly we realized at this stage that there were more possible benefits than limitations with introducing gleaning to Norway. Nevertheless, we had a desire and needed to further research gleaning in detail, both to be inspired and to understand local preconditions.

## Possible benefits

Gleaning has many advantages and is in many ways a win-win proposition for all involved. Here are some of the benefits:

- It improves local access to fresh, local, healthy vegetables for people on limited incomes.
- It engages individuals in their local food system, which can have ripple effects in the long run.
- It helps farms manage surplus food and leftovers.
- It helps reduce food waste.
- It possibly unite communities by strengthening connections between local farmers and the community surrounding (the gleaning volunteers), and increase the understanding of and appreciation for farming work.
- Help people connect with others and experience the sense of coming together to help each other out.
- People have become more engaged in learning about positive health and environmental impacts in the food industry, and gleaning might be a positive input to this increasing interest.
- Educate the local community regarding farming and food waste by harvesting the unwanted crops and see themselves.
- Farmers can see more of their crops saved (some countries even pass a tax credit for farmers who donate produce to their local food banks, but this is not the situation in Norway, yet).
- Include employees in corporate companies and team building.
- Reduce food waste with low effort (compared with other ways that individuals can save food).

## Potential limitations

While it might seem like gleaning is all advantageous and positive, there are challenges. Potential limitations might be as follows:

- Finding steady, reliable financial support is a common challenge.
- Keeping gleaning on people's minds when the season of gleaning ends.
- Communicating with volunteers to keep people engaged and aware.
- Fund-raising, evaluating, connecting with farmers, and planning required resources and time.
- Gleaning food might be culturally unfamiliar to the average Norwegian, which can make it challenging to prepare the volunteers.
- Estimate appropriate quantities of items to be eaten by beneficiaries.
- Organizing with the transport of voluntaries and the vegetables.
- Estimating time frame for gleaning work.
- Ensuring enough crops to glean.
- Physical distance, voluntaries, and fields in between.
- Willingness to voluntarily glean.
- Unpredictability in volunteers and the time of harvesting.



## Quotes about gleaning

We have talked to the different people we have been in contact with regarding gleaning. Firstly, asking if they have ever heard about the concept gleaning. Both the word and the concept have been unknown to almost everyone. Nevertheless, people have been exclusively positive when getting it introduced. All the experts and stakeholders we have talked to have a deeper understanding and knowledge of the food supply chain and how the industry work. We believe their opinion about gleaning is beneficial and valuable, including how it might affect the consumer and how it might affect the food industry. Additionally, if they believe it is possible to implement in Norway.



"Gleaned food is a smart utilization of resources. Additionally, it is free food". He believes Frosta is a suitable area to start a gleaning program in Norway, due to the many farms, variety in production, and the great variety of items, within a small area. He believes in the ripple effects and benefits of letting the Norwegian population out in the field.

Employee at Gartnerhallen



"I have heard the word Gleaning, but I do not know what it is".

Tore thinks introducing gleaning is a brilliant idea, and believes the key is to include the media for promoting, to create awareness and interest in society. His experiences of collaborating with different media in start-ups phases were that it worked perfectly well and led to a great deal of engagement, faster than he could have initially imagined.

Tore Bjørnebo, store manager at Bunnpris and co-founder of Snål-frukt about gleaning:



"If you want to glean/pick up leftover vegetables in fields, I believe it's no restrictions or harm to do so."

Employee at Produsentpakkeriet:

# A farmers perspective of gleaning

Jonas Hagerup, farmer at Søstrene Moksnes

Where: Video call by messenger

Type of research: Unstructured interview

Date: February 15th, 2021

## Introduction

Jonas is more than happy to share his experiences and even encourages us to get in touch at any time. He is a committed and forward-thinking person. So it felt natural to contact Jonas once again to learn more about local harvesting in Trondheim, when it is happening and how the process work. In addition to this, we wanted to discuss map factors to consider when designing a gleaning system. We see Jonas as a significant person in this project, due to his motivation for innovative initiatives in the food industry and his helpfulness.

## Local harvesting in Trøndelag

The time of sowing depends on the first and last day with frost in the field. But, the sowing in Norway starts approximately 10th April, even though it varies from year to year. Trondheim, in particular, does not differ much from the southern parts of Norway. In general, early harvesting starts in May. Examples of vegetables ready to be harvested in spring include lettuce, Chinese cabbage, and cauliflower. The harvesting continues through the summer and usually ends in November.

The exact day of harvesting depends on many different factors, such as the weather in general, rainfall, sun hours, and temperature. The sowing date for each vegetable depends upon the current weather each vegetable best can tolerate. Therefore, whether spring arrives early or late affects the harvesting dates. Other factors that affect sowing and harvesting is listed:

- What season the current crops belong.
- When the wholesalers want their products. The contracts between the farmers and the wholesaler are generally little binding, and therefore, the farmers have little predictability.
- The availability of employees and people who can

*“Most of the food waste takes place in the field!”*

help out with the harvesting.

- Some crops ripen quickly, some have a short harvest period (radishes, cauliflower), and other plants allow harvested several times each season. Other vegetables take a longer time to produce but also allow harvest for longer. These “days to ripening” affect the date and frequency of harvest.

## The use of harvesting machines

Some vegetables are harvested by hand and others by harvesting machines. If it is by hand or machine depends on the type, structure, and fragility of the current vegetable. Potato, carrot, turnip, and leek are examples of vegetables suitable for machine harvesting. The type of machine affects the thoroughness and quality of the harvest, also the person controlling the machines. Unpredictable factors such as rain, shapes, and sizes of the crops also influence. Jonas tells us that the amount of vegetables left on the field depends on many factors, and there are no clear patterns.

## Introducing gleaning

Jonas had never heard of gleaning before we introduced him to it. He sees many benefits and positive aspects of the concept with people coming to the fields to pick up what is left.

According to Jonas, it is not allowed to use the right of public access in cropland. You can compare it with a factory, where it is forbidden to go there during production. The difference is that farmers usually do not have a fence around the property. Jonas believes there is no rule against gleaning in Norway. He says that as long as people ask him before they enter

*“I know the feeling that large quantities of fine vegetables have to go to waste because agreements with the wholesaler do not go as expected.”*

the field, they are more than welcome. Jonas also mentioned his view on the difference between people from the countryside and people from cities regarding cultivating land as private property. He believes people from the countryside have a better understanding of this area of knowledge.

## The gleaning as a system

Jonas believes the biggest problem of implement gleaning in Norway would be the distance between the city and the fields, which are often far apart. Another challenge he points out is that gleaning must happen relatively quickly after harvest, as vegetables become of poor quality relatively quickly. When it comes to potatoes in this context, it is only a matter of hours. Carrots stay fresh a bit longer, as well as cabbage.

Sometimes vegetables are for different reasons not harvested at all, it may be that the wholesaler changes their mind and buys less, and in these cases, gleaning would be a perfect solution to save food. He believes gleaning may cause that more people purchase imperfect vegetables, but he emphasizes that it will only apply to those who glean themselves.

## Challenges with Gleaning

- Jonas believes diseases in the field are not an issue as long as the gleaners only stay at one field at a time, but problems may appear if gleaners go from field to field. In these cases, covers for the shoes may solve the problem.
- Jonas believes gleaning can be time-consuming, both when it comes to transport and collecting

crops, which might be challenging in recruiting people.

- Harvesting is seasonal and unpredictable, and Jonas emphasizes that this needs to be considered when arranging gleaning.

*“Until now, some friends and acquaintances have picked up leftovers after the harvest now and then.”*

## Key findings

- Frosta is the “Mekka” of agriculture in Norway, and the variety of vegetables is unique and diverse. In addition, the interest in local food and innovation is broad in the Trondheim region.

- Gleaning can be an activity from May until November.

## Local harvesting in Trøndelag

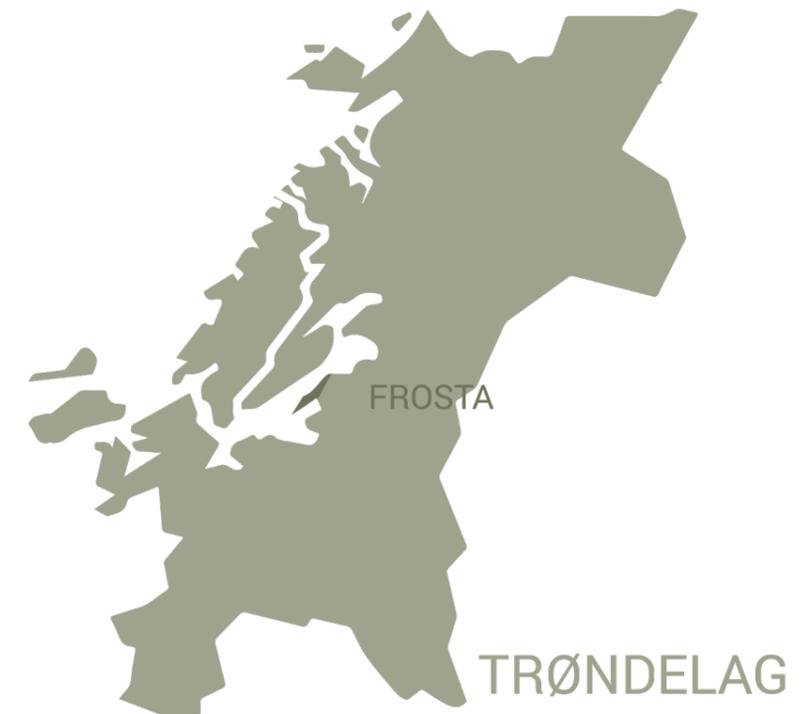
### Time for planting the vegetables

It is fundamental to sow and harvest vegetable crops at the right time of year to ensure the best taste and tenderness. Most vegetables are sown during the spring. However, some vegetables require earlier sowing. Generally, sowing time and harvesting vary from year to year, depending on the weather, temperatures, and conditions. Usually, harvesting starts in the middle of the summer, but some vegetables require earlier harvesting, such as cauliflower.

### Harvesting calendar

As we researched agriculture in Trøndelag, we were interested in understanding the seasons, and when to start sowing and harvesting the various local crops. We could not find an overview or guide mapping the sowing, growing, and harvesting for the different vegetables in Trøndelag. In general, it has been challenging to find up-to-date information about agriculture and how it works in practice, their challenges, and gaining a comprehensive overview of the theme.

We have therefore been in close dialogue with farmers to gain relevant and local knowledge. In addition, we were in contact with an Adviser from Norsk Landbruksrådgiving Trøndelag SA (Norwegian Agricultural Advisory Trøndelag SA) via email, as mentioned earlier. She gave us a lot of valuable detailed information about when the main vegetables in Trøndelag are sown and harvested. Based on surveys, interviews, and a visit to the farm, we have prepared a local sowing and harvest map, specifically for Trøndelag. We found it effective to map the information as a calendar, and The harvesting calendar is presented on the next double page. The pattern of sowing and harvesting follows much of the same principles and seasons as the southern parts of Norway. The selected vegetables included are the most common vegetables planted outside at fields in the Trondheim region.



# Harvesting calendar

Trøndelag



## Gleaning in other countries

Today, gleaning is to be found in several places worldwide. However, the structure, size, shapes, and implementation of the different gleaning activities vary, but the principles are still the same. Many of these organizations seem well-working. Therefore, we wanted to explore what they do and how they manage the work. In this way, we could find out what works or not, and what makes Norway different from the other countries. Additionally, it seemed like a proper method of understanding what gleaning is and what it can be - finding inspiration.

The gleaning companies we have explored are different from each other and are geographically dispersed around the world. Most of these are from Europe, as it might be easier to relate the relevant aspects to Norway. For example, Ireland has a more similar climate to Norway. Therefore, we found it advantageous to look at how they can manage a gleaning program.

### Structure

The structure of this exploration is structured in a way to make it easy comparing the different organizations. First, it begins with four categories; evaluation of the organizing of the current gleaning program, their business, how they manage the gleaning, and the economy. The information comes from reading and watching videos from the programs online. The last two paragraphs map assumptions on how this can be adapted to Norway, what might be the challenges and takeaways to Norway from the different gleaning programs. An overview of a gleaning report comparing four gleaning organizations in Europe is included in this section (Charlesworth et al., 2015).

The information is from the homepages of the organizations, and the links are to be found on the current pages.



## Espigoladors

Since 2014

*"We fight for a better food usage"*



Spain

### How they operate and their activities

**Gleaning;** They harvest fruits and vegetables that are not suitable for the market through gleaning activities with the help of volunteers.

**Donations;** Most of the fruits and vegetables they collect are distributed to social entities to reach people in need of food.

**Transformation;** They transform the other recovered produce in preserves while giving job opportunities to people at risk of social exclusion.

**Awareness;** They create a citizen movement through raising awareness and education, promoting a change of social consciousness towards a culture of making the most out of food.

**Economy;** They produce "imperfect foods", such as jams and sauces, to raise money for their organization.

**Transport;** The volunteers are encouraged to let us know if they can use a private car to organize carpooling. If not, they help pick up people from public transportation. The money they earn from "imperfect foods", is spent to guarantee and promote the proper functioning of the activity such as personnel, van, gasoline, tools, etc.

### Who gets the food?

10% of the crops to make the products for "imperfect foods", 90% to beneficiaries.

### Who collect the food?

Volunteers can sign up online and join the community, and they get noted if a new gleaning with available seats is coming up. There are also groups joining, like school classes, social groups, etc.

### Impact and emissions

1.222 tonnes of recovered food, 875 tonnes of CO2 avoided emissions, 790 liters of saved water, 3.869.869 portions (300 g) dinners, 109 farmers committed, 1.367 awareness actions #dontwaste.

### Challenges in Norway

The season of gleaning in Norway is very different from the gleaning season in Spain. In Spain, they can harvest vegetables and fruit all year. The climate in Norway might be challenging, compared with Spain.

### Takeaways to Norway

- Take advantage of some of the ugly fruits and vegetables to generate revenue for organizational expenses.
- Create a workspace for people in a vulnerable position (NAV: New Labour and Welfare Administration, criminal care)
- A well-working webpage where you can subscribe to the different programs.
- Connect with many possible collaborators as organizations, private people, and companies might want to donate and collaborate.

Link to web-page: <https://espigoladors.cat/en/>

## Food Cloud

Since 2013

*“Our vision is a world where no good food goes to waste!”*

### How they operate and their activities:

Food Cloud is an Irish organization, similar to Matsentralen, but additionally, to food banks, they have a digital solution for supermarkets to donate food directly to the charity.

They collaborate with another organization called FallenFruit, which is a “gleaning of fruits organization”, and create an apple juice.

<https://www.fallingfruit.ie/>

Food Cloud introduced gleaning as a new activity in 2017. They collaborate with a couple of large farms, and the farmers share important information with the volunteers before the collection starts.

### Who gets the food?

The crops are donated to the foodbanks and then to the charities, or distributed directly to charities.

### Who collect the food?

Volunteers from Food cloud, sponsors, “normal people”, etc., large teams, and teams of corporate team building collect the crops from the fields.

### Impact and emissions

Food Cloud all together has saved 50 million meals, 22.000 tons of food, 28 meals every minute 24/7, and 72.727 co2 emissions.

Link to web-page: <https://food.cloud/foodcloud-hubs-gleaning/>



Ireland

### Challenges in Norway

The farms in Norway are not as large and commercial as in Ireland. In Norway, farmers do not have a lot of extra money and recourses. In addition, the Norwegian foodbank, Matsentralen, does not have the same digital system as Food Cloud.

### Takeaways to Norway

- Take advantage of some gleaned fruits and vegetables to create an income for the organization (apple juice).
- Collaborating with large farms to get as much done in one place. Also, it may be beneficial to collaborate with farms that have a good economy.
- The gleaning runs from August-October, in Irland, and gleaning still works.
- Collaborate with and bring the food to an existing and well-working organization to reduce food waste (Matsentralen).

## Boroume

Since 2011

*“Our vision is to develop a social movement to reduce food waste and at the same time increase nutritional support to people in need based on volunteer support. “*

### How they operate and their activities:

Boroume (“We Can”) is a non-profit organization whose mission is to reduce food waste and fight malnutrition in Greece. They save food daily from many sources and offer it to charities that help people who face food insecurity. Their approach the issue of food waste holistically through the following programs and activities:

“Stop Food Waste” - increasing awareness about food waste

“Boroume at School” - educational program

“Boroume Gleaning” - reducing food waste on the field  
“Boroume at the Farmers’ Market” - reducing food waste at the farmers’ markets.

“Boroume in the Neighborhood” - informing potential food donors in a neighborhood about our food saving mechanism.

Boroume has many sponsors supporting financially, among the sponsors you find: Lidl, Barilla, Nespresso, and many more. By expressing your interest by completing a form on their webpage or calling them, they will help you find a way of helping that corresponds to your wishes.

### Who collect the food?

Based on volunteer support.

### Who gets the food?

They select the local charity which will receive the donation from the gleaning. Additionally, they offer locally nutritious food to people in need who do not regularly have access to enough food.

### Impact and emissions

Boroume saves and offers more than 24.000 portions of food every day. Thanks to the Boroume, 1€ of operational costs results in 45. portions of food. Over 1.800 volunteers have supported Boroume since they started the operation. 51. tons of fruits and vegetables have been saved and offered through their program “Boroume Gleaning”. They provide an opportunity for volunteers to re-connect with nature and enjoy giving. In addition, they strengthen the connection between producers and the local population.

### Challenges in Norway

The weather in Norway is more unpredictable and colder than in Greece. Will it be less attractive to glean with the weather in Norway? And will it be more problematic to get volunteers in Norway than in Greece? In Greece, there are more poor people visible in society. Hunger is, therefore, more visible compared with Norway. Wich can mean that fewer people in Norway are aware of food waste and hunger in society.

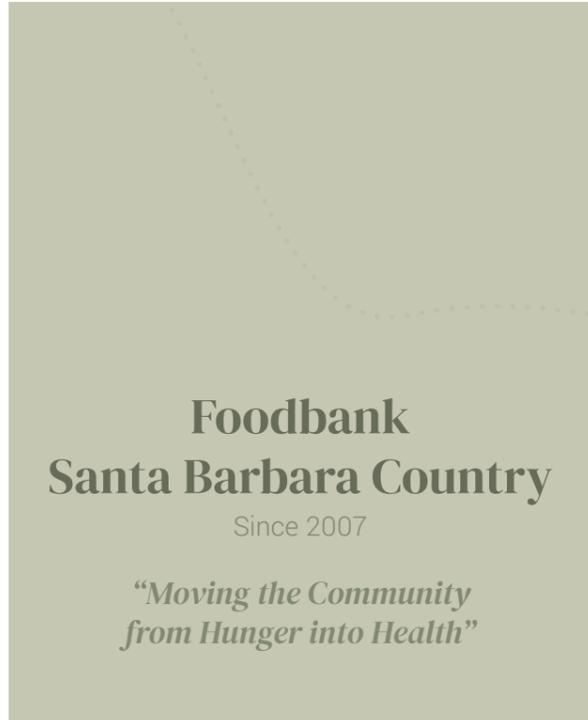
### Takeaways to Norway

- Using different programs and activities that have positive interconnections and influence on each other within one service.
- Supportive sponsorships make daily operations possible.
- Operating locally may make it more relevant and personal for people to offer their time and donations.

Link to web-page: <https://www.boroume.gr/en/>



Greece



**How they operate and their activities:**

They glean crops from backyards, gardens, farms, and orchards in the Santa Barbara area and redistribute them to those in the local community who face hunger and food insecurity. The gleaning includes oranges, lemons, limes, tangerines, figs, avocados, persimmons, and guavas otherwise wasted. Follows are some Foodbank Santa Barbra’s activities.

Donations; You can donate your fruit and bring it to one of the warehouses. If you are unable to collect fruits and need supplies or transport, they can help with that.

Coordinate a harvest; If you are unable to harvest your fruit, they can help out with harvesting.

Host a drive; You can volunteer for driving food. Volunteer: Volunteer as a gleaner.

Group volunteering; Backyard Bounty is a great way to help build workplace relationships and spend some valuable time outside.

Events; Make a powerful impact on hunger in Santa Barbara County by helping with events. The Foodbank welcomes the opportunity to educate the community through outreach events, cause-related marketing, and third-party fundraising events. Get creative and use your passion with cause-related marketing campaigns to fundraise for the Foodbank

Money donations: Donating money gives the greatest value for the organization, to be able to help others.



**Who gets the food**

Low-income seniors, families with low incomes, including seniors, college students, and veterans, get the food. In addition, they provide donations through “Picnic in the Park programs”, and through warehouses, they distribute food to partner agencies to make food distributions as local and accessible as possible.

**Who collect the food**

Families and volunteers, in groups or separately.

**Impact and emissions**

Foodbank volunteers have gleaned over 1.2 million pounds of fresh produce.

**Challenges in Norway**

In Santa Barbara, 1 out of 4 local people received food support through their 300 programs and partners annually. In Norway, 1 out of 10 needs to receive food support (Matsentralen, 2021). These differences in sizes and scopes between Norway and Santa Barbra make the circumstances and the situation different, which affects the organization of gleaning.

**Takeaways to Norway**

- The food donation system is flexible and adapts to fit different needs, for both the local people receiving food support and the farmers donating food. This flexible system makes it easier to be a part of the program and for people to provide support suitably.
- Their program and its efficiency multiply the impact drastic for every dollar contributed, therefore it is crucial to include the service of donating money.

*Link to web-page: <https://foodbanksbc.org/>*

## Report, Gleaning network EU

FUSION’s (Food Use for Social Innovation by Optimising waste prevention Strategies) report called Gleaning network EU (Charlesworth et al., 2015) compares four gleaning companies in Europe. One of them is Espigoladors from Spain, Boroume from Greece the two remaining is from France and Belgium. The measures presented in the report indicate the potential of gleaning. How much food is possible to glean, and what is the average amount of food possible to glean? These questions represent uncertainties that gleaning programs must cope with. Collecting both 149 and 1000 kg per glean is normal. Looking at the total amount of gleaned food and the total days with gleaning, the total average of gleaned food per gleaning day is 360,6 kg. This constitutes 4507,5 portions of food per gleaning day. Even though this number will vary and there are no certainties in this volume of food, the measures indicate that gleaning is beneficial for society.

The report addresses stakeholders, more specifically, how the beneficiaries, volunteers, and farmers can be less uncertain(Charlesworth et al., 2015). The recruitment of volunteers is not an obstacle, but the coordination is a challenge. It is suggested, by some of the gleaning companies, to have a web-based platform to coordinate the volunteers. Regarding the beneficiaries, there have been some issues in finding enough people to receive the gleaned food.

Sometimes crops have been left on the field to avoid using unnecessary resources collecting crops that will be wasted later anyway. In these cases, collaboration with other gleaning companies and food banks in other countries might be a solution.

Recruiting the farmers can be a challenge. Gleaning organizations have experienced that it can take time and effort to get a hold of farmers, get them on board and collaborate. It is advised to give out detailed information about gleaning, inform about the impacts of gleaning, and how gleaning works, as this can make farmers feel committed to join. The report addresses the big enthusiasm for gleaning and reducing food waste. The volunteers enjoy staying at the farms and the feeling of contributing together with like-minded people. The beneficiaries finally get access to fresh and healthy vegetables and fruits. Lastly, the farmers get relief from the frustrations around how much food they are forced to waste.

When starting a gleaning organization there are according to the report seven important steps;

1. Research farming and food production in your area.
  2. Farmers, find collaborators.
  3. Voulentairs, find people keen to glean.
  4. Beneficiaries, find potential receivers of food.
  5. Equipment
  6. Travel, coordinate transport of food and people
  7. Communicate, spread the word!
- (Charlesworth et al., 2015).

### Gleaning result

| Region       | No. Gleaning days | Total QTY Gleaned (kg) | Total No. Food portions* | Average QTY gleaned (kg) | Most Common Crop Category | Avg No. Voounteers per Glean |
|--------------|-------------------|------------------------|--------------------------|--------------------------|---------------------------|------------------------------|
| Belgium      | 12                | 6,627                  | 82,828                   | 552                      | Brassica                  | 6                            |
| France       | 36                | 5,354                  | 66,925                   | 149                      | Root Veg                  | 5                            |
| Greece       | 6                 | 6,500                  | 81,350                   | 1,083                    | Citrus Fruit              | 5                            |
| Spain        | 28                | 11,090                 | 138,625                  | 369                      | Brassica                  | 4                            |
| <b>Total</b> | <b>82</b>         | <b>29,571</b>          | <b>369,638</b>           |                          |                           |                              |

*Table inspired from report, (charlesworth et al., 2015)*

\*1 portion og food = 80 g



### Key findings

- Creating a guide for gleaning can make it easier to recruit and motivate farmers.
- Gleaning is family-friendly and a great activity to spend time outside together.
- Money donations are valuable and helpful in managing collection.
- Average amount of vegetables/fruit per gleaning is 360,6 kg. This number makes an average of 4507,5 portions of food per gleaning (80g per portion).
- There are many uncertainties (volunteers, crops left on the fields, farmers, transport, etc.). It is beneficial to have a well-organized system.
- Organizing transportation can be conducted in many ways. With either public transport, co-driving, or volunteers driving their car.
- Food collected through gleaning should be donated to an existing service, who wants to help others and reduce food waste.
- Gleaning can create a workspace for people in vulnerable positions (NAV, Krimonsorgen). This work training can consist of varied tasks.
- A flexible gleaning system adapts to fit different volunteers with different needs.
- Finding organizations and beneficiaries willing to collaborate and use the gleaned produce can be a challenge. Due to unpredictability and coordination.
- Website or other digital platforms is beneficial regarding the volunteers.

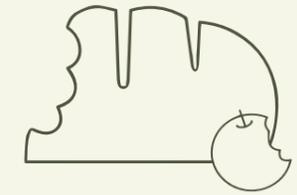
## Using technology in the context of gleaning

“FoodCloud” is using technology in the context of food distribution. Doing so can speed up the coordination process between retailers and charities (Weymes & Davies, 2018). Their technology enables retailers to post surplus food on a platform, web, or app. Further, charities receive an automatic notification and must respond to claim the food. ToGoodToGo (TooGoodToGo, 2020) also uses similar technology for restaurants, hotels, etc. to sell their leftovers. The customer responds to the posted offers in the app and purchases leftover food.

Using technology enables full traceability of the donated food. As well as, it is possible to track the flow of the food, which means that one can register fails in delivery or poor quality food. The use of technology also provides feedback on possible impacts and reliable data. Such data may be attractive for businesses to be able to develop and improve. In the FoodCloud platform, retailers can constantly get information on their contribution and impact (Weymes & Davies, 2018). For instance, the number of crates donated in total, also shown in kilos, financially and meals. These numbers would have been hard to track without using the technology. The technology may enable faster growth geographically or allowing expansion into new practices or services.

## TAKEAWAYS

The following pages map out key findings concerning the insight chapter. The most significant findings are prepared and based on our interpretations and analysis of the insight phase.



### Food waste

Food waste is a complex and global issue, as it contributes both to global emissions and hunger.

The world and Norway have realized and began to take food waste seriously, and there is an increasing interest to make changes. Even though solving the food waste problem seems impossible and resource-intensive.

Consumers are often being seen as the main issue in the context of food waste. Still, measuring food waste in other parts of the food value chain has not been continuous and complete.

These differences in measurement indicate that there might be erroneous measurements and assumptions. However, the primary sector in the Norwegian food industry just started to register their food waste (in 2021).

There is a big gap in how much food people waste, both when it comes to groups of people locally in Norway and between developed and developing countries.

Food waste in farmers' fields varies due to, among other things, variation in vegetables, techniques of harvesting, climate, and access to new technology. As assumed, food waste in the field is a current challenge in Norway.



## Agriculture

Agriculture has a long tradition in Norway. Still, the mental and physical distance between the city and the countryside has increased since the post-war period alongside urbanization.

Norwegian farmers struggle with low incomes compared to workload.

There are not enough recourses or money to avoid food waste.

Gleaning will not solve the economical problem for farmers. Yet, gleaning has several places proved to be a positive initiative for the farmers, as many reviews their crops to a high value and have a desire to reduce food waste.

Frosta provides a great variety of food in a small area. Many farmers are located here. Those we have been in contact with so far are helpful and interested.

To make gleaning more attractive to farmers it is appropriate to present relevant information in a good way.



## Consumer

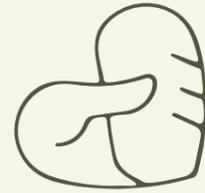
It is assumable whether we are too rich in Norway to care about food waste.

Various interrelated practices such as routines of everyday life and lack of awareness and knowledge are causes of food waste.

Gleaning might be more efficient than attitude campaigns as it is a practical activity where people can both see with their own eyes and help out.

Culture and upbringing influence the attitudes related to food and food waste. Older and younger adults throw away less food than the adult population.

The degree of attachment and proximity to farmer's fields and agriculture seems to influence attitudes related to food.



## Matsentralen

Matsentralen is a significant partner due to gleaning. They have similarities in the desirable achievements that we have in this project. Both strive to save food from the primary link of the food system to help people out of poverty.

Gleaning may include many activities other than collecting crops, such as sorting and transport. Matsentralen already organizes many of these activities.

Matsentralen is a large and well-functioning organization, which is constantly growing and evolving. Their capacity to receive food seems large enough if it turns out that gleaning will escalate in Norway.

Matsentralen is a key player in food waste and hunger in Norway, and their position can be a way to build closer cooperation.



## Volunteers

There are many indications that there is great potential and willingness to volunteering in Norway.

Volunteers want to be flexible, but at the same time, they want to plan. Therefore, a structured system around the organization of gleaning is needed.

Motivations for participating in gleaning are many and vary from person to person. It seems like values and attitudes within people and their will to change are changing for the better.

The motivation most common among the volunteers seems to be their inner desire to contribute to a better, more sustainable world and help others.

It will be essential to consider morality and ethics when working with volunteers.



## Gleaning

The concept of gleaning is a valuable activity practiced in other countries.

Gleaning possibly changes attitudes and relations to food over time.

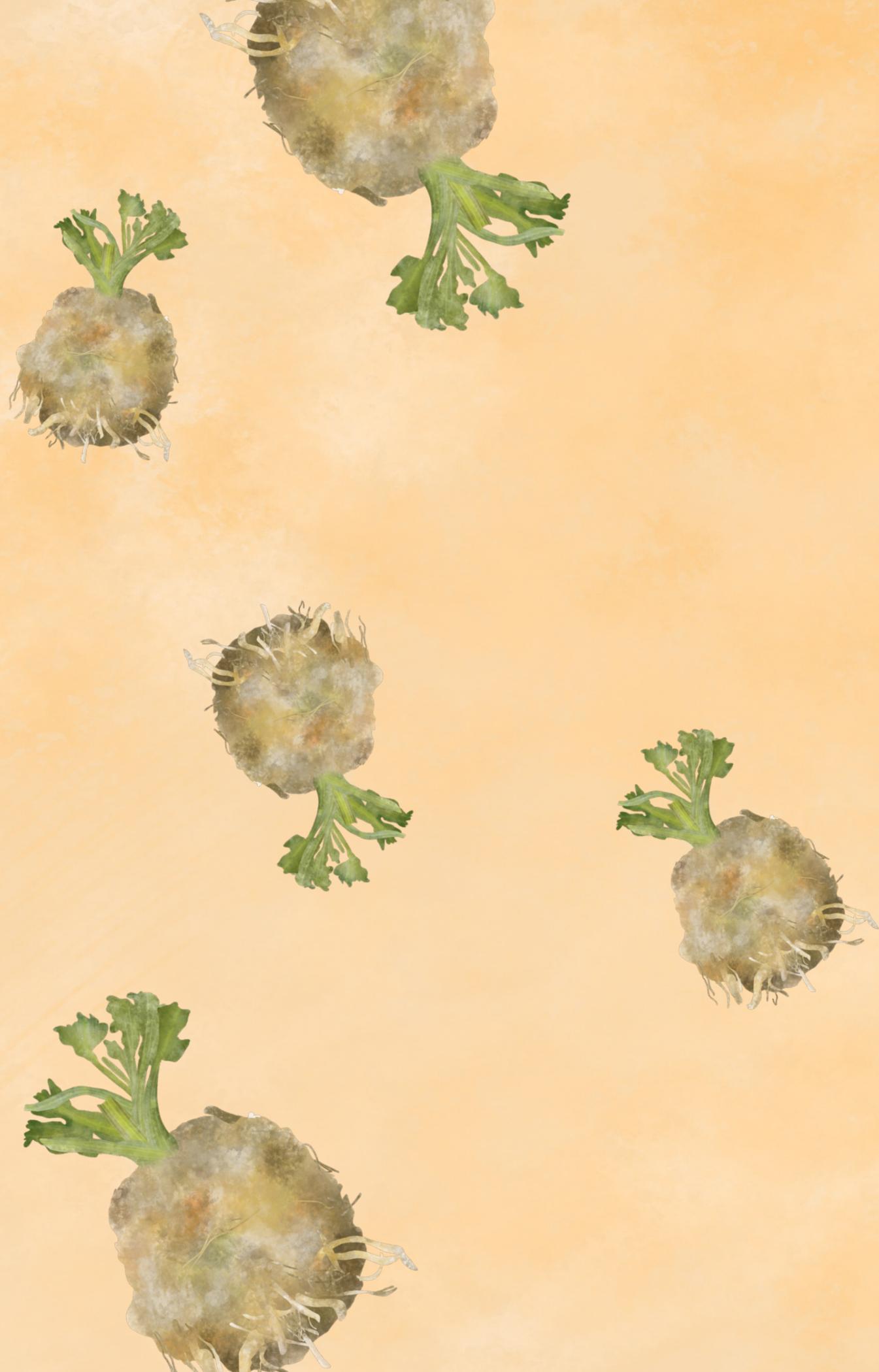
Gleaning is a meaningful way of rescuing food, which otherwise would not be utilized.

Gleaning contributes positively to climate emissions and hunger.

Gleaning may be more relevant in the years ahead as there are measures and goals required or desirable to be achieved related to the climate, nationally and internationally.

There are numerous ways of organizing gleaning.





## Contextualize

*The main goal of this chapter is to map and analyze contexts relevant to gleaning and its surroundings. Opportunities, such as the user groups and transportation, are evaluated. Throughout the chapter are the best options defined. The contexts are discussed, together with stakeholders and collaborators. In addition, are the user groups included to map their needs. Finally, a design brief concludes with chosen contexts and aims.*

|   |      |
|---|------|
| Content:                                  |      |
| Exploring user groups                     | 99.  |
| Exploration of transport and coordination | 107. |
| Challenge the context                     | 111. |
| Design Brief                              | 113. |

# METHODS

## Comparative matrix

We used a method called comparative matrix, with the purpose of comparing characteristics of the hypothetical user groups in a side-by-side table. Doing so enabled us to systematize and set scores in the different categories in the matrix for later use in evaluation (crayon, 2021).

## Analyzing scores

Analyzing scores in a table gave us a better overview and understanding of the value of hypothetical including the different user groups into gleaning. The table worked as an indicator and base for further discussion and evaluation.

## Positioning map

A positioning map is used to visualize the most relevant scores and factors of the different hypothetical user groups intending to include in gleaning. Using a positioning map makes it easier to compare the different user groups with each other and see their strengths and weaknesses..

## Contextual talks

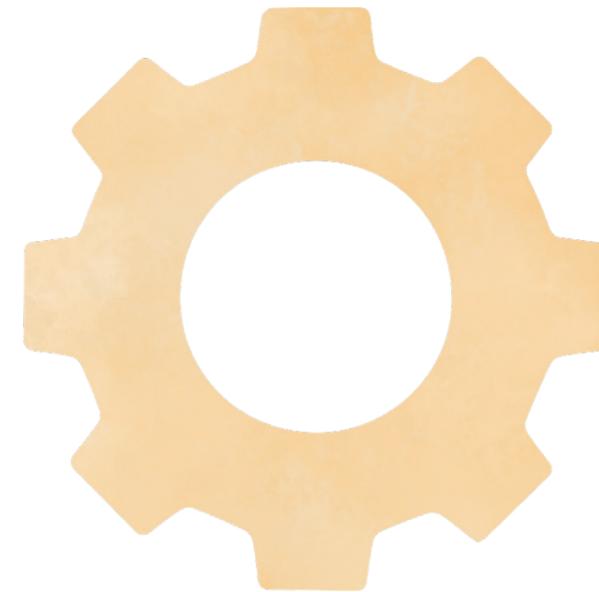
We have had targeted and focused conversations with experts to concretize the project and define and map key choices (Segmentationstudyguide, 2021).

## Focus group

A focus group was conducted with five participants from Matsentralen and Matvett, in addition to us. The aim was to collect their opinions on how we can contribute the most in the implementation of gleaning (Interaction-design-foundation, 2020). As well, get their views on our approach to gleaning. This co-creation gathering led to information and insights that enabled further decision-making.

## Design brief

At this stage, we needed to make choices and define our goals. Therefore we wanted to make a design brief to make sure that we create a concept that meets desirable needs and achievements. A design brief is beneficial for concretizing ideas and designs in further work (Opendesignkit, u.d).



# EXPLORING USER GROUPS

The user groups or fictional characters listed below describes potential user groups that we may include in a gleaning program. They represent a group of people with common interests, behavior patterns, as well as demographic similarities. The description of the user groups is hypothetical, inspired from insight work and general assumptions, intending to create a starting point for choosing the appropriate user group for this project.

In addition, we have mapped out characteristics important for participating in a gleaning program. These characteristics are based on our gained understanding, reviewing gleaning in other countries, and insight from various stakeholders. The goal of creating the fictional user groups and mapping characteristics is to enable comparing each of the user groups within each of the characteristics. By doing so, we can gain an understanding of what the different user groups require, wants, their needs, and behaviors, based on their life situation.

By preparing these, we could more easily make choices about which of the groups it is appropriate to further focus on. The analysis is presented on the following pages by using a comparison matrix and positioning map. The further plans after the comparisons are to focus more closely on some of the groups and learn even more about them, their needs, desires, opportunities, and motivations through workshops and interviews.

Some characteristics apply to all user groups, but these are not included in the table, as we rather want to highlight how one user group differs from the others.

## Arcetypes

### Pupils

Pupils are children in primary school, between 6-16 years. Individually, the pupils vary in a high degree in how motivated and effective they would be to

gleaning, and the same will be the personal benefits. Nevertheless, we will look at pupils as a group and expect variations within each group.

### Engaged

Engaged people can include people of all ages and life situations, but it is people with special interest and high motivation to save food or help others. They have often done similar activities and are not difficult to get involved in activities such as gleaning. Engaged people are characterized by being good at spreading the word and motivating others to join as they are committed to their interests.

### Retired

It is challenging to define a retiree as they vary physically and mentally. As well, in interests, commitments, and ages. Therefore, in this user group, we assume retired people that could be interested in and are physically able to glean. Some retirees may be lonely and may have had the pleasure of joining gleaning, to meet others and get outside. While others might want to join this activity to help others together with friends.

### Families

A family can also vary a lot, are there children? In that case, how many children? The differences in income, resources, and flexibility vary. Families can be seen as independent and can participate in gleaning with a small degree of organizing. This independence certainly does not apply to all families in Norway. Some families have fewer resources and possibilities to organize, for example, transport themselves. However, these families may have the most benefits of participating in a gleaning activity.

### Students

Students are usually young adults, often between 18 and 28 years old, with not too many obligations in everyday life. Nevertheless, students often have

little financial freedom. Many students are often characterized as social, and some are constantly searching for new activities and affiliations. The variety within students is wide, and therefore their willingness to contribute may also vary.

### Workers

This user group is intended to be adults, in stable work, and with financial independence. However, it is suggested that this generation is a group of people who waste the most food and at least aware of the climate challenges. Therefore, this user group is appropriate to include in gleaning due to learning outcomes and the possibly positive ripple effects.

### Unemployed

Unemployed are people who live on social security financed by the state. This user group is of great variety within the group, as there are many reasons why one may need social security. These reasons can be anything from being in-between two jobs to having an illness that makes you unable to work. The unemployed could glean through a work training program or just as a digression from everyday life. We assume that the unemployed includes people physically and mentally able to participate in a gleaning activity. Many unemployed probably have a lot of time to spare, but possibly not so much flexibility and independency.

## Characteristics of the user groups

### Societal benefits

Positive impacts on people, communities, or society in general, might be generated through gleaning. Reducing food waste and helping others in need are examples of societal benefits which we believe apply to all user groups. Therefore, they are not included in the table, as we want to see how one user group

differs from the others.

### Personal benefits

The utility value and the positive effects at the individual level, possibly created through gleaning.

### Effectivity

Describes how effective it is to include the user group in gleaning. This includes how much and how fast the user group can glean crops, compared to other user groups.

### Flexibility

Describes how flexible the lifestyle of each of the user groups is. Flexibility includes available time, spontaneity, and resources.

### Transport

Is there usually a need for organizing transport? Or does the user group usually have its means of transportation?

### How?

Can the user group glean alone? Or is it most appropriate that it happens in groups? How much organization is necessary, within each of the user groups?

### Motivation

What characterizes the user group's motivation to join gleaning?



## Analyze scores

After mapping the user groups and giving scores within each of the characteristics in the comparison matrix, we explored how to summarize and use the scores. Thereby we made some calculations to estimate the value and the complexity of involving the various user groups. These calculations are listed below, and the following sums are presented in the table. Through the insight work, we have learned that being dependent on volunteers can be unpredictable and complex. Therefore, it is appropriate to analyze and assess the complexity of involving the different user groups. Correspondingly we have seen that gleaning can generate a great value in various areas, as described in the matrix at the previous page. It is appropriate to consider the total values of including the various user groups, to ensure a valuable outcome of an intended gleaning program. In this way, evaluation and making further analysis were made easier.

### Current calculations are as follows:

- **Value to society:** Societal benefit + Personal benefits
- **Complexity:** Flexibility + Transport + How?
- **Total value:** Societal benefit + Personal benefits + Efficiency
- **Total score:** All characteristics summed up. The highest possible total score is 35.

|            | Summing scores   | Totale score |
|------------|--|--------------|
| Pupils     | Value to society: 6/10<br>Comlexity: 3/15<br>Total value: 9/15   | 14           |
| Engaged    | Value to society: 6/10<br>Comlexity: 13/15<br>Total value: 11/15 | 29           |
| Retired    | Value to society: 9/10<br>Comlexity: 11/15<br>Total value: 13/15 | 27           |
| Families   | Value to society: 8/10<br>Comlexity: 10/15<br>Total value: 11/15 | 24           |
| Students   | Value to society: 8/10<br>Comlexity: 8/15<br>Total value: 12/15  | 24           |
| Workers    | Value to society: 6/10<br>Comlexity: 11/15<br>Total value: 10/15 | 23           |
| Unemployed | Value to society: 8/10<br>Comlexity: 9/15<br>Total value: 11/15  | 23           |

## Positioning map

The positioning map compares the different user groups regarding the total value (social benefits, personal benefits, and efficiency in gleaning) versus the complexity of including the current user group. The user groups that come out best in this chart are located at the top right, as it is advantageous to have a position low in complexity and high in total value. Consequently, we have a basis for further deciding who to include in future gleaning and this thesis. The user groups scoring the best in the positioning map also have the highest total score (where motivation, is included). This estimate indicates that character motivation has a clear link to the other factors evaluated.

We will later conduct focus groups and interviews, as it's desirable to talk to experts and some selected user groups. The purpose of doing so is to find out challenges and opportunities within the organization and implementation, plus mapping user needs and requirements corresponding to reality.

It is important to emphasize that what we have done so far within the user groups is not a conclusion, but an explorative method for us to have a context and basis for evaluation.

### High total value



## Contextualizing user groups

We wanted to discuss the user groups with Marte. Her background as the CEO of Matsentralen and eagerness to help makes her opinion regarding the user groups valuable and relevant. As a CEO, she has comprehensive insight and everyday contact with volunteers and people in a work training program.

We introduced her to our chosen user groups and the corresponding analyses. She had many reflections and feedback. In general, she agreed to the positioning map where engaged and retired people are most appropriate according to the two axes: Low complexity and high total value.

Marte was very positive to include the engaged people as they have eager to contribute. She emphasized that engaged people have different flexibility and life situations as everyone else, but in the end, it depends on the willingness to prioritize. Engaged people are often more motivated.

Nevertheless, she highlighted that the groups volunteering the most are retired and students, as they have the most time to offer. Additionally, unemployed's in need of work training is appropriate to include, if possible. They have time and can be engaged, but the work training program might require predictability and possibly much organizing.

When it comes to including families in gleaning, Marte believed it is beneficial. Due to offering them a new and free activity to bring the families together and socialize with others. Apart from the high value, she emphasized that this might contain low flexibility and high effort required by involving families with children.

*“I have noticed, many of the students who sign up are exchange students or new in Norway, and it can be very nice to include and possibly socialize this group.”*

*“We have two retired in the board. I consider them valuable resources, among other things, because they have time and commitment!! It must be the best solution -they do not have a job and often have grown-up children!”*

### Further work

Based on our position map comparing the user groups, general insight works, and input from Marte, we decided to further work with retirees, students, and engaged people in the project. The three user groups will therefore be in focus in further user insight and idea generation.



**Engaged**



**Retired**



**Students**

# EXPLORING TRANSPORT AND COORDINATION

## Mapping opportunities within the transportation

When organizing a gleaning activity in Trøndelag, there is a need for transportation. The distance from Frosta to the city takes at least 1 hour and 15 minutes by vehicle, which requires organizing and planning. Coordinating transport applies to both the volunteers and volumes of vegetables. Means of transport today are often adapted to transport either to people or goods. Tour-busses and passenger cars are usually not adapted to carry such large quantities of vegetables plus passengers. We find it necessary to look at the transport of people and vegetables as two separate tasks.

## Transporting the vegetables

The challenge with transporting vegetables is the possible large volume of crops and the fact that transport is expensive. Referring to our talk with the CO-founder of "Snål frukt", he highlighted that "Snål frukt" had financial challenges due to transportation costs. A gleaning activity itself will not be profitable, and it is necessary to find smart solutions for transporting the vegetables.

### Possibilities

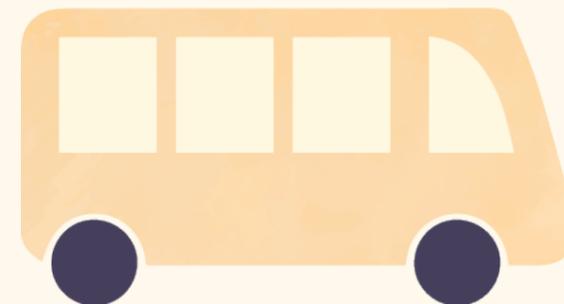
- Is it possible to get volunteers to transport vegetables?
- Can a transport company do it as a pro-bono project?
- Include drivers from work training programs?
- Use existing transportation systems from farm to city?
- Invest in own cars for transportation?

## Transporting the gleaners

The user groups (committed, students, and pensioners) chosen for this concept may have a certain degree of independence when it comes to getting to the farm. As, many may have a car, resources, and the ability to transport themselves. Of course, this does not apply to everyone, and therefore, there is a need to explore the different possibilities existing in Trøndelag. In addition, it is important to find out more about wants and needs within the user groups.

### Possibilities

- Adapt to public transport?
- Organizing co-driving, the volunteers in-between?
- A tour bus organized by the gleaning program?
- Encourage to use alternative measures of transport?
- Include drivers from work training programs?
- Involve volunteers to be drivers?



## Discussion with Marte from Matsentralen

### Existing initiatives at Matsentralen

This spring we have noticed several updates on Matsentralens' web page (Matsentralen, 2021a). They have many new actions and projects going on nationally that are very relevant to our work. We wanted to talk to Marte about these projects and if gleaning can adapt to these initiatives. The relevant initiatives are described and evaluated below and based on research online and the discussion with Marte.

### Collaboration with UNIKUM

The pandemic has been a trigger for starting "Matsentralen Kjøkken" (Matsentralen Kitchen), as many actors in the food industry got leftovers with large household items that they did not get rid of (Matsentralen, 2021a). The suitable kitchen receives surplus goods and large household items and turns them into tasty ready-made meals. A pilot concept started in Oslo, today it operates in close collaboration between Matsentralen Oslo, NorgesGruppen, and UniKum (a work inclusion cooperation). Drivers that are on work training at Matsentralen pick up the surplus goods and deliver them to the kitchen, where the kitchen staff from UniKum prepare the meals. The ready meals are then transported back to Matsentralen before distributed to those in need of food (Matsentralen, 2021a).

These collaborations have many positive impacts on society, among other things, it creates jobs, saves food from ending up at the landfills, and gives healthy, good dishes to vulnerable groups. They have a desire to expand to other parts of the country. If Matsentralen kitchen expands to Trondheim, more opportunities might open up for future transport and systems connected to gleaning programs. Further, Marte points out that their financial sponsor, Sparebanken, is positive in supporting concepts similar to the kitchen.

### Internal transport

A solution for the distribution of surplus goods internally between the different Matsentralen institutions started in 2020. The initiative makes it possible for the local food banks to receive almost unlimited volumes of goods. In addition, the variation in the selection of goods increases as goods is internally distributed (Matsentralen, 2021a).

Marte mentioned that although the kitchen is not located locally in Trondheim, Matsentralen Trøndelag delivers goods for utilization at the kitchen. Matsentralen Oslo is capable of receiving large quantities of vegetables. She also highlighted that the need for fresh vegetables is big. Further, she emphasized that gleaned vegetables are incredibly beneficial to receive, as it is fresh from the field and therefore has long durability.

### Matsentralen Primary

The concept "Matsentralen Primary" is a new initiative that aims to save surplus goods from the primary sector, which otherwise would not be sold, through ordinary channels (Matsentralen, 2021a). On average, today, only 20% of the food delivered to Matsentralen is fruit and vegetables. If you compared this to the recommended plate, 50% of the plate should consist of fruits and vegetables. Consequently, is Matsentralen currently working on mapping potentials and find ways to effectively receive more goods from the producers (Matsentralen, 2021a). Also, the UN gives "ugly Fruit and vegetables" extra attention. Marte brings attention to Olaug Bollestad (the Minister of Agriculture and Food in Norway) and said that she was the initiator of Matsentralen's work towards the primary sector. This emphasizes the relevance of this topic in Norway today. Marte is looking at the possibility of connecting our project to the concept "Matsentralen Primary". She also wants to explore opportunities related to the local primary sector of food production herself and find our work exciting to follow.

### Transport in Trondheim

In the daily operations of Matsentralen Trondheim, the charities that receive the surplus food distribute and transport the food themselves. In addition, the food donors transport their goods to their point of sale, and on their way, they deliver surplus food to Matsentralen. For example, Skarsbakk Transport has transported carrots from the packaging house (Produsentpakkeriet) to Matsentralen.

Marte points out that transport is a common challenge associated with volunteer work because transport will always include an expense. It is desirable to cover transport costs for volunteers in such situations through financial schemes. She emphasizes that this is not always easy to achieve in practice.

Solutions similar to UniKum (drivers on work transport surplus goods) might be relevant for a gleaning program. Marte mentioned "Dagsverket" as a hypothetical actor, interesting for us to look into. Dagsverket is a low-threshold job program that offers work where the employment is valid for one day at a time. The individual decides which day and how much they want to work and get paid depending on this. Marte says that they have benefited from using "Dagsverket" in previous situations and that the only cost is expenses related to fuel.

### Economy in Matsentralen

Matsentralen is an established and well-functioning organization with a lot of initiatives and ongoing projects. Therefore, we wanted to ask Marte how they finance operating expenses and the development of their organization.

Today people can donate money to Matsentralen easily through Vipps, and they get donations both from private donors and businesses. Additionally they have collaborations and get support from companies

who want to be associated with Matsentralen. Marthe told us that if Matsentralen was about to take our gleaning concept further, it is possible to get it financed through their system. She emphasized that as long as the volume of food increases, it is possible to apply for monetary support to realize the project. Marte adds that Matsentralen Trøndelag has an ongoing collaboration with a sponsor company that wants to support initiatives supporting the primary sector.

# CHALLENGE THE CONTEXT

## Focus group with experts

*People involved:*

*Christiano Aubert, Director of Matsentralen Norge and Manager of Matsentralen Oslo*

*Anne Marie Schrøder, Communication manager in Matvett and board member in Matsentralen Norge*  
*Emma Gerritsen, Project assistant, Matsentralen Norge, and the primary group with a background in agronomy*

*Paula Capodistrias, Project manager, Matsentralen Norge, with a background in Agroecology*

*Where: Video call by Zoom*

*Type of research: Focus group/ co-creation meeting*

*Date: March 26th, 2021*

### Introduction

Wednesday, 26 of March, we started the day in Zoom, as we got a meeting invite through Marte from Matsentralen Trøndelag. Among the invited were different experts from Matsentralen and Matvett. The focus group was valuable for us to exchange ideas and discuss the project's direction. We went through main findings and contexts from the insight phase, mapped out thoughts and ideas appropriate further in the project, and together we discussed the context and created new valuable paths for further work. Which we have previously touched on, we have worked closely with Matsentralen Trøndelag throughout the project. During this interaction, we have been uncertain of the extent and their role in the project. This meeting helped us clarify Matsentralen's motivation, and whether they would like to be a partner, collaborator, or a customer, and to what extent. Outcomes from this focus group are presented as challenges and benefits associated with introducing gleaning in Norway and Trøndelag.

## Key findings from focus group

### Challenges with gleaning

#### • High-hanging fruits

Matsentralen is constantly striving towards obtaining "the low-hanging fruit", which means the food that can most easily be obtained, due to tasks, measures, goals, resources, etc. The experts are concerned that gleaning will be categorized as a "high-hanging fruit", as the distance from the city to the farm is long, the work in the field requires effort and on account of difficulties in recruiting volunteers.

#### • Two challenges in organizing gleaning on a long-term perspective

How might we create a sustainable gleaning activity? This problem statement was discussed in the focus group, and the experts concluded that gleaning must pay off in the long run. The total emissions saved have to be higher than the resources and emissions required. Another topic discussed was the economic perspective. How can gleaning gain enough income to operate? They liked the idea of creating a brand, product, or in any way create an economically independent organization in the long term.

### Benefits with gleaning

#### • Need more vegetables!

Matsentralen is working on increasing the volume of vegetables. Today only 22% of the food they receive is vegetables and fruits. This number does not comply with the recommendation that 30-50% of the diet should contain fruits and vegetables.

#### • Proud farmers

The farmer's work is not appreciated and acknowledged enough in society. By storytelling, gleaning might promote and recreate the farmer's crucial position in society and their valuable work of producing food. Increased attention and focus on the farmer may contribute to a more appreciated and respected position in society.

#### • Willingness to support the topic

Sparebanken and DNB have set aside resources and money for projects which promote sustainability and societal initiatives. They are aiming to make the project visible for others to get inspired and act socially responsible.

#### • Connect gleaning to other activities

Other activities aiming at similar goals can be a part of a gleaning program. This way, promotion can be more efficient, and conveying the messages can be done in various contexts. For example, collected crops from the gleaning can be used in different situations. Which can create awareness and increase the recruitment of volunteers.

#### • Pilot

Creating a campaign or pilot can create a starting point for gleaning and the opportunity to test the concept in practice, look at the potential, the need for resources, interest in society, and opportunities.

# DESIGN BRIEF

The design brief aims to specify requirements and goals related to the result of this project. It bases on insight work and feedback from stakeholders and users.

## Vision

Reduce food waste and give more people access to nutritious food in a long-term perspective, by introducing gleaning in Norway.

Besides, people's attitudes and values related to food and farmers' work can be improved, which can have positive ripple effects to make even bigger changes in today's food industry. In addition, individual outcomes in participating may contribute positively at a societal level.

## Goal

Make an inspiring and attractive proposal for how and why initiators should introduce a gleaning pilot in Norway. The proposal needs to be easy and motivating for students, retirees, and engaged to participate.

The gleaning pilot aims to create awareness and make the participants learn, feel useful, and be socialized.

## Target audience

- Receivers of the result: Non-profit organizations aiming for a more sustainable food system such as Norsk BygdeUngdomslag, Norges Bondelag, Matsentralen, Matvett, etc.
- The intended user group, also known as the volunteers of the future gleaning program, is retirees, engaged, and students.
- Active collaborators or other stakeholders of the future gleaning program such as farmers, transportation companies, media support for promoting, etc.

## Time perspective

Make it possible for the initiators to implement the gleaning proposal during the autumn of 2021. In addition to seeing a solution for the current time, we want to describe how gleaning can take shape in Norway in 5-10 years.

## Limitations

Limitations regarding the intended result are listed below. They describe uncertainties and assumptions we have to take into consideration, that can limit our final result.

- Unfortunately, we will not have the opportunity to test our gleaning program in practice, as the harvesting season runs primarily in the autumn.
- We are not sure that a gleaning activity will happen, as we are dependent on other people's initiative after we finish our work.
- The involvement of volunteers makes the arrangement complex when there always will be uncertainties in recruiting volunteers.
- Even if individuals and organizations have shown interest in helping to bring gleaning to life, it does not mean that they will join when it happens.
- By basing a pilot program on sponsors and other support schemes, financial self-sufficiency is limited, which might create economic challenges in the long term.
- The Norwegian climate is particularly unpredictable and challenging in the production of vegetables.
- The distance from the city to the farms is long, one hour and fifteen minutes by car.
- The harvesting time is unpredictable, and the time gap between harvesting and gleaning should not be too long.

## MUST, SHOULD, COULD

The following point listed includes what the pilot must, should, and could contain.

### Must

- Motivate a potential initiator to start the gleaning pilot.
- Let people see and understand the possible ripple effects on the individual and system level.
- Give understanding of the importance of gleaning, from a long and short-term perspective.
- Give understanding of how gleaning should be implemented.
- Provide satisfying information and appear credible.
- Include students, engaged and retirees as primary participants.
- Be adapted to Trondheim and Frosta.
- Guide towards a pilot program.
- Include guidance for how to arrange a user-friendly gleaning.
- Answer practical questions considering the gleaning day and other information needed to start the pilot.

### Should

- Be visual and fun to perceive the information.
- Contain specific information about transportation and other practical considerations.
- Contain a complementary user journey specified to user groups.
- Contain tips to collaborators at the various aspects: beneficiaries, sponsors, farmers, volunteers.
- Inform about how the gleaning day can be financed.
- Present user insight of the various participants.
- Possible to adapt the program to different sizes, shapes, places, and people.
- Include specific proposals on initiatives related to the gleaning.
- Argue why choices are made.
- Describe for what the gleaned crops should be utilized.
- Provide guidelines on how to promote the gleaning, also in media.
- Provide guidelines on how to communicate with the volunteers, farmers and Matsentralen.

### Could

- Include alternative or parallel additional activities included at the gleaning day.
- Include other participants than students, retired, and engaged.
- Include a future scenario of how gleaning might look like in the future.
- Describe why there is a future potential for gleaning in Norway.
- Be part of a bigger promotion program, focusing on spreading the word and the concept of gleaning in Norway.

## Actors and the financial aspect

### Short-term

Matsentralen and Matvett have many collaborators, and they see the benefits of applying for financial support through different sponsors. They highlighted that Sparebanken 1, (which Matsentralen Trøndelag already collaborates with), has 200 million NOK to dispose to projects that support responsible consumption. They favor initiatives that ensure the distribution of food that otherwise would have been wasted, campaigns and knowledge raising, or other initiatives that contribute to the reduce food waste.

### Long-term

From a long-term perspective running a gleaning program will require other financial income to be financially sustainable.



# Concept

*In the conceptualizing phase, the goal is to explore various solutions and make choices, to decide on a concept for this project. It was important to define the target group and fragment the goal into several problem statements. Through ideation processes, discussions, and workshops with user groups, we have turned the design brief into three more detailed concepts for further analysis and evaluations, to decide our final concept.*

|                               |      |
|-------------------------------|------|
| Content:                      |      |
| Workshop with the user groups | 119. |
| Potential initiators          | 135. |
| HMW-workshop                  | 137. |
| Concept development           | 147. |
| Choose of concept             | 151. |

## METHODS

### Co-creation workshop

We arranged a co-creation workshop with the three user groups, students, engaged, and retirees, to develop the concept together with the end-users at the gleaning day. The workshops helped us understand the needs, pain points, and motivations in different steps of a future gleaning concept (Designkit, n.d). Each of the three workshops had between one and four participants and took about one and a half-hour. The workshops took place in the online collaborative whiteboard platform, Miro.

### How Might We

To facilitate a discovery process, we used the toolkit HMW ("How Might We" workshop) to develop ideas to possibly include in the process or exploring more details later on (Designkit, n.d). This method helped us thinking about our problem space in new innovative ways.

### Crazy 8

To answer HMW-questions, we used the fast sketching exercise called Crazy 8 to challenge ourselves to sketch many distinct ideas. This method made us push beyond "top of mind" ideas, and generate and challenge solutions in an effective way. Crazy 8 is an effective way to force outside-the-box thinking and generate a wide range of ideas.

### Randomization

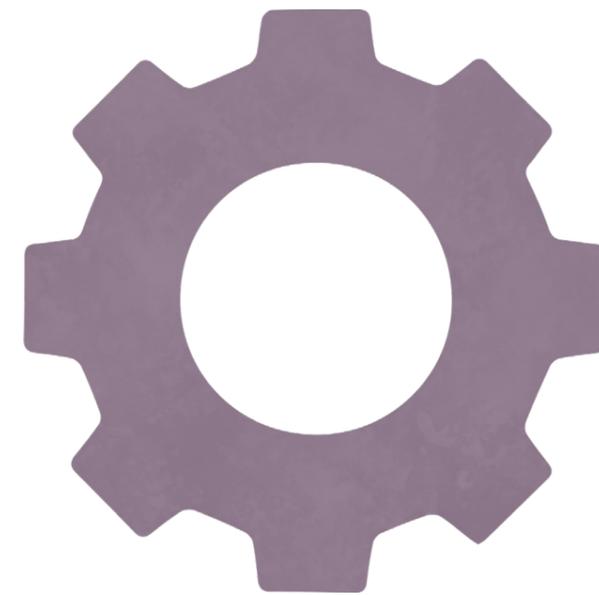
We used randomization in the ideation process of concepts to be able to think even wider, as randomization is a great tool for putting issues in new, random contexts to come up with new ways of thinking. We wrote down ten words about gleaning and ten words about "big city" and randomly generated one from each category. Then, we idea generated a solution out of the two words.

### Stakeholder map

We developed a stakeholder map to map out the relevant audience of our final result (Service design tools, n.d - b). We grouped the audiences hierarchically by their possible interest in gleaning. We included both stakeholders already a part of our process, but also stakeholders similar to them.

### Mindmap

At different stages in the conceptualizing process, we used the brainstorming tool mindmap. This helped to get down our ideas visually and organize and present our thoughts and ideas, but we also gained a common understanding.



# WORKSHOP WITH THE USER GROUPS

*Participants:*

*Four students*

*Two volunteers*

*One retired*

*Where: Miro and Microsoft teams*

*Type of research: Co-creation workshop*

## Introduction

Arranging a workshop with the three user groups at this stage of the process felt important, as they are the future participants of the gleaning program. We conducted one workshop for each of the user groups, intending to learn more about them. We needed a better understanding of their desires, needs, thoughts, ideas, feelings, and motivations to gleaning. As there are many steps of a gleaning day, we developed a future scenario of how a gleaning pilot might look alike. We took the participants through a hypothetical gleaning scenario. This way, participants could relate to relevant contexts, and we were able to understand and evaluate the various challenges and opportunities in all of the stages.

## Structure

The workshops were structured the same way. However, the implementation was adapted, depending on the participants. The workshops started by introducing the user groups to the concept of gleaning and sharing expectations. It continued with more detailed discussions around the content of gleaning through scenarios. Among the topics of focus was: transport, registration, information, and motivation. We wanted the workshop to be fun and motivating to attend, as we believe making the participants feel comfortable opens up for more discussions and reflections. In addition to making a great variety of tasks in the workshop, we used storytelling to engage the participants and help them understand the different scenarios.

## Presentation of results

We wanted to give an impression of the collected information from the workshops. Consequently, results and materials are presented and illustrated on the following pages. The presentation of the materials is structured as follows, starting with introducing the current task, then the materials from each of the user groups. Finally, a discussion and takeaways of the result conclude at the current task.



**Students**



**Retiers**



**Engaged**

# Introducing gleaning

First, we needed to introduce and explain what gleaning is, as this is an unknown concept for most people in Norway. Once everyone understood the concept, participants evaluated thoughts on the possible pros and cons, regarding gleaning, on post-it notes.

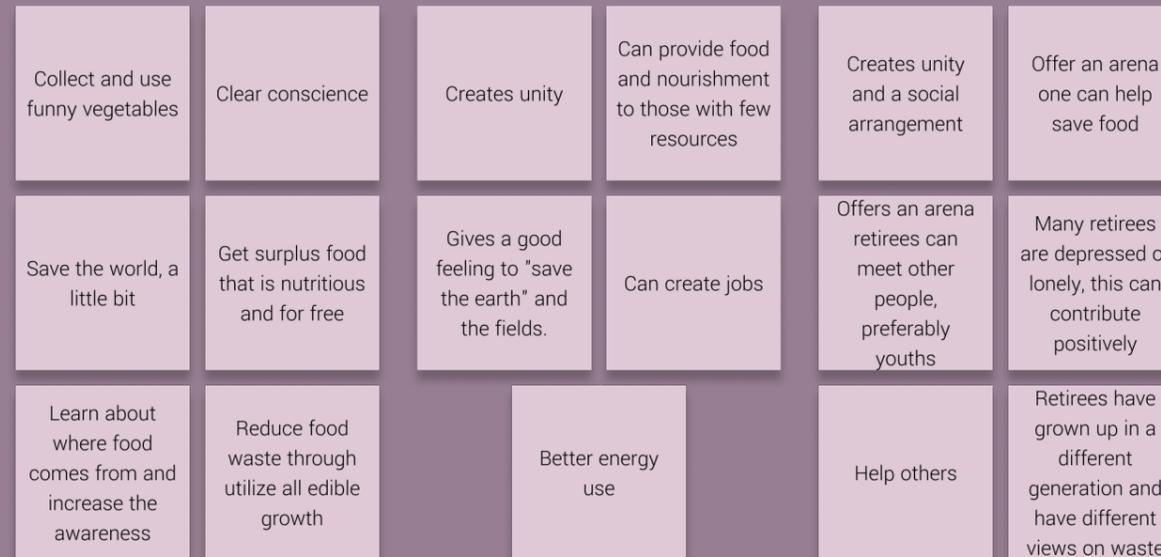
## Results

### Benefits

#### Students

#### Volunteers

#### Retirees



#### Students

#### Volunteers

#### Retirees



### Key findings

This exercise was effective and all over beneficial, as we got to know the user groups and understand their values and attitudes towards gleaning. In addition, it gave us an insight into the participant's motivation and skepticism about gleaning and gave us a sense of what people's first impressions might be. Volunteers and retirees had more focus on the social aspects and helping others as impacts of participating compared to the students. Students seemed more concerned about getting something out of the gleaning themselves, such as free and funny-looking vegetables. The user groups had different views on what the possible challenges with gleaning would be. Probably due to their different assumptions. This information is useful when designing gleaning in a user-friendly and attractive way.

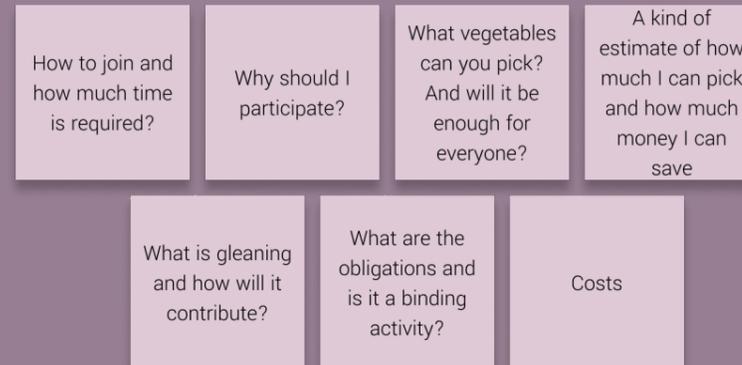
## Registration and recruitment

We used storytelling with illustrating a fictive information page, so the participants could consider their beliefs of what kind of information the intended next page would contain. They used their imagination to write down their thoughts of what an enrolment page would look like, at post-it notes. Further, they were asked to consider what kind of information is necessary for them to sign up for a gleaning program. Finally, all participants voted on the most important arguments which opened up for further discussions.

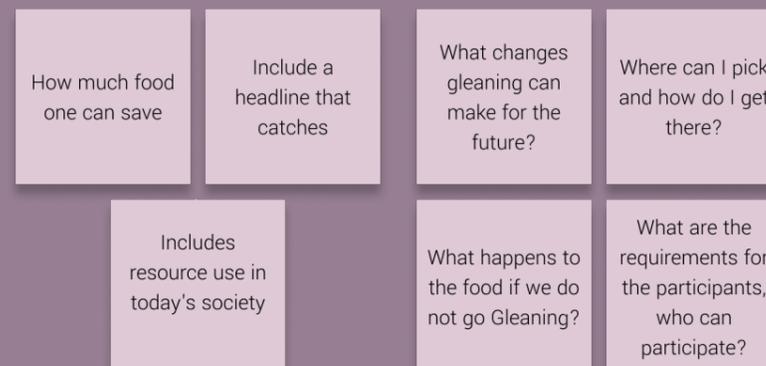
### Results

What kind of information do you think the next page contains?

#### Students



#### Volunteers



#### Retirees

**GLEANNING**  
 Redd rester på åkeren, slik at matsvinn reduserer og flere kan gå mette!

Finnt ut mer om gleaning og påmelding HER

*“I would rather not miss classes at school!”*

-Student girl, 24

*“If gleaning were a weekend activity, I would probably spend more time on it, compared with an afternoon after school”.*

-Student girl, 25

**“I believe up to 50% of retirees would join such an activity!”**

-Retired man, 80

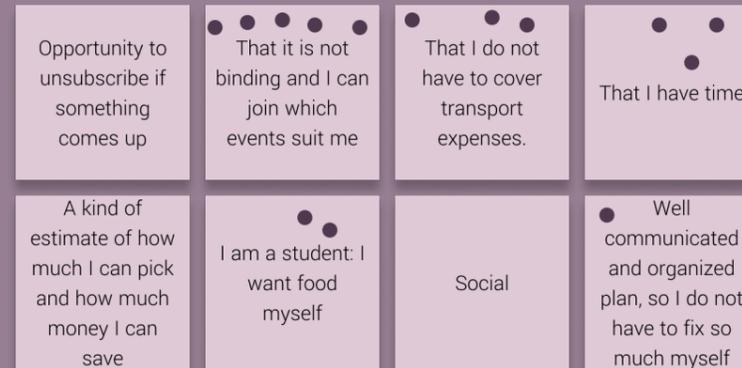
**“It is important with a headline that catches you!”**

-Retired man, 80

## Results

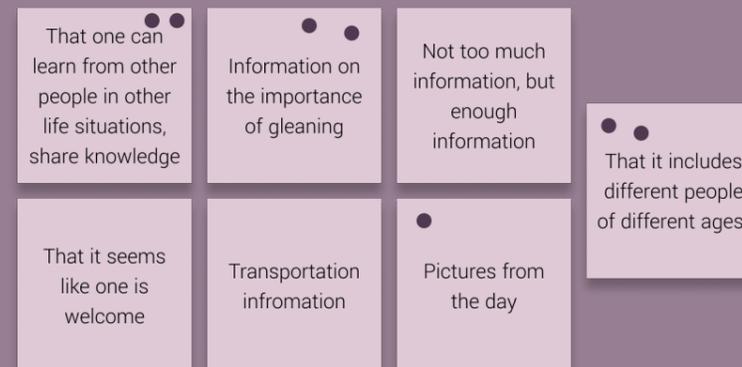
What would it take for you to sign up?

### Students



● One dot represents one vote

### Volunteers



### Retirees



## Key findings

This task gave us valuable information about what the participants need and require to sign up for gleaning. Generally, we see that satisfying information about what gleaning is, its impacts, and the content are key factors for making participants interested in participating.

The students are more focused on having a flexible and non-binding program that fits their daily routines and lives. In addition, the students seem to prefer that participation does not take too much time and effort. Nevertheless, if the activity is an excursion or during a weekend, rather than after school, the students would be willing to spend more time.

The volunteers want the program to be well-organized and trustworthy. For them, the impacts of gleaning and the feeling of contributing are more important than getting free vegetables. They also wanted the program to be social and inviting, where you can meet new people and learn from each other. The retirees also wanted the program to be a social and inviting activity, where they can meet new people and learn from each other.

## Range sliders about transport

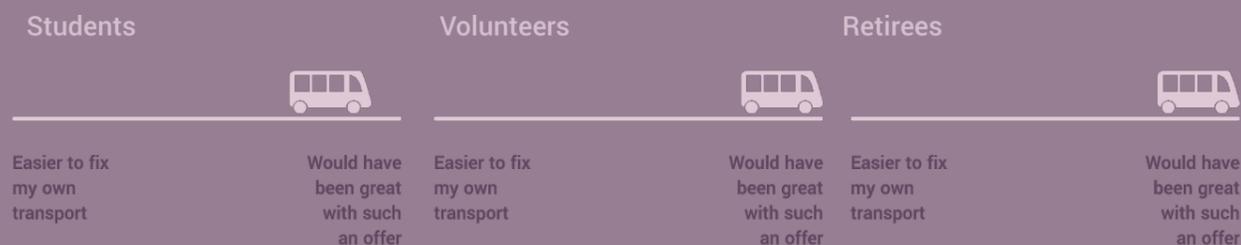
The alternatives of transportation are as follows: public bus, organized shuttle bus, participants driving their cars, and organized co-driving participants in-between. Participant of the various workshops placed the vehicle icons at the desired position on the slider, as illustrated below. The arguments to the very left indicate "unattractive alternatives", and arguments on the opposite side indicate "attractive and desired alternatives". The results below show the average of the various user groups.

### Results

#### Public bus (2 hours, one stop)



#### Organized shuttle bus, together with other participants (1 hour and 15 min +)



#### Drive my own car (1 hour and 15 min)



#### Co-drive with other participants (1 hour and 15 min +)



*"I want the transport to be easy and organized so that it requires as little as possible of me."*

- Student girl, 24

### Key findings

All the user groups agreed on time and effort related to each of the alternatives as decisive when considering transportation. All the user groups wanted the transport to be effortless for them, to feel that participating is worthy. All participants within the same user groups had fairly similar answers.

Nevertheless, students were more concerned about the time perspective of transportation than retirees and engaged. However, they expressed that they were more open-minded to alternative transportations methods, as long as the personal effort of organizing is kept low. Retirees communicated that socialization and organization are attractive factors for them to participate at the gleaning day. Therefore, common bus or organized co-driving is tempting alternatives. The engaged participants were willing to spend more time, resources, and effort on transportation than the remaining user groups.

## Range sliders about effort and desires

In the same way as the previous task, the students were asked to place the carrot icons to the desired position on the slider range. We wanted to open up for discussion about desirable efforts in the fields. As well, how much vegetables desirable to collect for their use, versus for beneficiaries. The results illustrated below is an average of the participants within each workshop.

***“If the collection of crops were a competition, it would be different!!”***

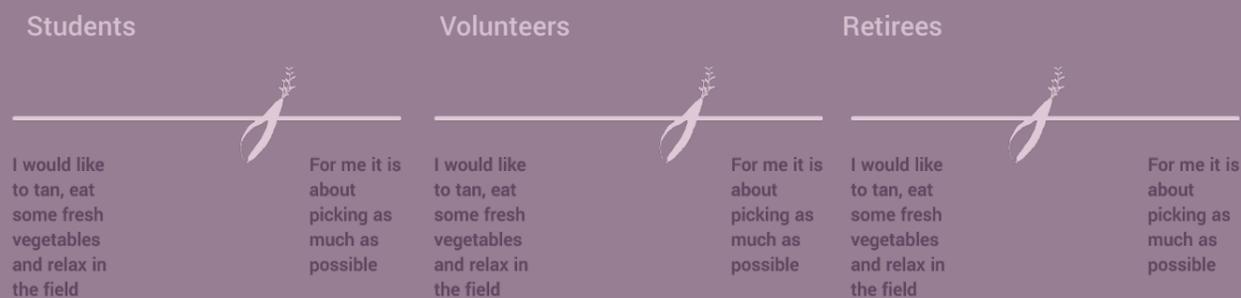
*-Student girl, 24*

***“Perhaps the breaks should consist of brainstorming and knowledge sharing?”***

*-Retired man, 80*

### Results

#### Desirable effort in the field



#### How much of the vegetables you have picked, would you like to take home?



***“Maybe one can have different tasks on the farm? For example, cook some food of the vegetables”***

*- Retired man, 80*

### Key findings

Almost all the participants indicated that they are most concerned about collecting crops to save food and help others, rather than picking crops to bring back home for their usage. Additionally, they all had a desire for a total experience of the gleaning day and wanted it to be more than just working hard in the fields. Students and retirees were especially concerned about having idyllic moments and experiences of being at a farm and getting out of the town meeting others. The engaged participants emphasized saving food to a greater extent than the other user groups.

Nevertheless, the students would love to have the opportunity to bring with them home a self-selected amount of collected vegetables. Even though they wanted no limit, their demands were not too high. They seemed to be happy to bring back home one bag or less filled with crops.

## Expectations and desires regarding the gleaning day

In the last task of the workshops, we wanted to get an insight into how they expect and want the gleaning day to look. We asked them questions about the intended gleaning day and what possibly happens afterward. The participants answered using descriptive emojis. The emoji helped participants come up with and communicate their thoughts and ideas. In addition, emojis contributed to engagement and fun.

*“I believe that I will have good memories and pictures from the day.”*

-Student girl, 25

*“For me, it is important both on the social aspect and the environmental perspective!”*

- Volunteer girl, 25

### Results

What do you meet when you enter the farm?

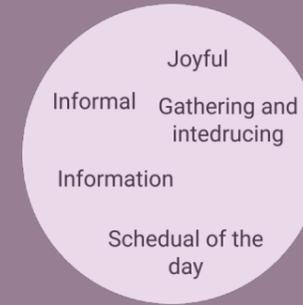
Students



Volunteers



Retirees



What do you expect while working in the field?

Students



Volunteers



Retirees



*“It is essential to not feel insecure throughout the process and that it is clear what is about to happen! Everything is unknown, so the more organized, the easier it becomes!”*

- Student girl, 24



# POTENTIAL INITIATORS

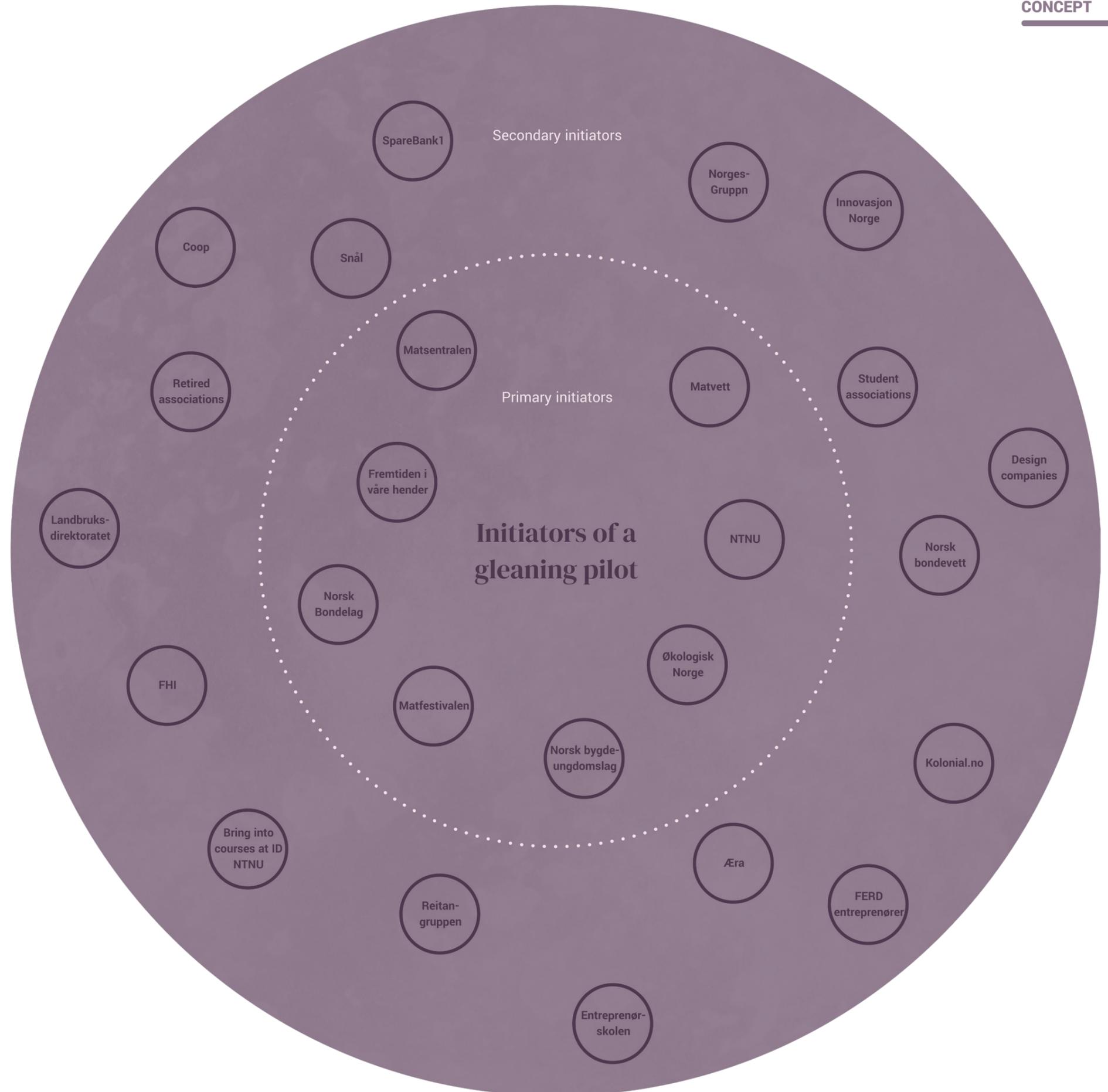
To develop a proposal for a gleaning pilot with an aim to make gleaning happen in Norway, it is crucial to define the audience of our final delivery. The result will probably have more credibility and be more attractive if we adapt the concept to the right initiators and audience before continuing the developing process. A targeted result can increase the chances of someone realizing gleaning in Norway and help reach our goals. Additionally, defining an audience will contribute to developing a holistic and good concept, as it may help us make better decisions during the process. In general, we are motivated to convey our knowledge and understanding aimed to benefit someone and something in society, finding a suitable audience may increase this chance. During the process of research and insight work, we have experienced that many stakeholders have an interest in the concept of gleaning. Nevertheless, some stakeholders seem to be more capable and suitable for further development than others. The stakeholder map illustrates the primary and secondary initiators and stakeholders of the gleaning pilot.

## Primary initiators

Primary initiators mapped closest to the center represent the main or primary potential initiators of this project. They are either stakeholders we have been in contact with that have shown an interest in receiving a proposal or similarly interested stakeholders, due to their current work and goals. All these possible initiators are in some way or another aiming to reduce food waste and work towards a more sustainable food system, including agriculture and the environment.

## Secondary initiators

Secondary initiators mapped in the outer circle include possible stakeholders that in some way or another could have an interest in the project, either by sponsoring, or through collaborating. They might not be the head of the project, but rather interested to partake in the project. Some of the secondary initiators are companies that often start small businesses, not necessarily with the goal of "saving the environment".



# HMW WORKSHOP

The goal of this project earlier presented in the design brief is both complex and comprehensive. It involves many significant aspects and people. Therefore, both the recipients of the delivery and all people involved in the gleaning program must be satisfied. Said in other words, even though the recipients are potential initiators, the gleaning proposal needs to be customized, attractive and user-friendly for future participants and others involved in the gleaning pilot.

To ensure that all aspects of the goal are considered, we have separated our goal into two parts. The two different parts are explored and assessed separately, and afterward, united to create a holistic concept. By dividing our goal this way, we could focus on one issue at a time and create a gleaning proposal worth selling to initiators.

Further, we have completed two different HMW ("How Might We") workshops to answer the two parts expressing the goal. Then, the two HMW-questions were further fragmented into several HMW-questions. By doing so, we could think about the problems with an intentionally expansive mentality. Finally, we answered the questions with various ideation techniques to force an expansive way of thinking.

## Our goal

Make an inspiring and attractive proposal for how and why initiators should introduce a gleaning pilot in Norway. The proposal needs to be easy and motivating for students, retirees, and engaged to participate.

The gleaning pilot aims to create awareness and make the participants learn, feel useful, and be socialized.

=

HMW get the user groups to participate?

+

HMW motivate initiators and create awareness around gleaning?

# HMW-workshop part one

This HMW question involves the entire gleaning day from arousing the participant's interest to making them want to participate again. To map and structure the gleaning day, we further developed the user journey that was made for the workshops with the user groups.

The gleaning day is divided into four basic steps; recruitment, transportation, gleaning, and feedback. The journey of the gleaning day is complex and involves many issues and challenges along the way, therefore we created HWM questions within each of the basic steps. This was to divide the journey into smaller and more detailed steps and again to force

an expansive way of thinking which made us evaluate significant details in an organized way.

Furthermore, we went through a set of time-limiting brainstorming sessions to answer all the questions. The answers to each HMW question contain both ideas, guidelines, tips, and alternatives as we wanted to think outside the box and get all our ideas and thoughts out, without any limitations.

The journey illustrated on this page is an overview of the HMW questions in the correct order, while the answers are prepared on the two following pages.



Private photo

HMW get the user groups to participate?

## RECRUITMENT

HMW reach out to the users?

HMW motivate the user group to sign up?

HMW ensure that the participants shows up?

## TRANSPORTATION

HMW transport the gleaners?

HMW transport the vegetables?

## GLEANING

HMW welcome the participants?

HMW make the day memorable?

HMW end the day?

HMW make the gleaners enjoy the work and at the same time be efficient?

## FEEDBACK

HMW communicate feedback to participants

HMW get the user groups to participate?

HMW we ensure that the participants sign up?

- Make sure to inform the users, so they understand the content of the gleaning day.
- Make it visual and easy to understand.
- Include important practical information such as timeframe and transport.
- Gain trust and seem credible by having specific information about the impact and collaborators.
- Using various methods to motivate the different user groups. Example: free vegetables, helping others, reduce food waste, socialize, get out of town, etc.
- Including experiences from others.
- Make the process of signing up easy and user-friendly.

HMW we ensure that the participants show up?

- By using personal communication language.
- Binding sign-ups, in a friendly and non-frightening way.
- Gradually be introduced to the gleaning activity - possible to sign up for more information before actually signing up.
- Making a "ticket", exclusive and personal, for participants to feeling connected and motivated to show up.
- Provide regular and relevant information in advance of the gleaning day as a reminder and motivation.
- Encourage the participant to report in if one cannot show up anyway.
- Encourage to ask questions and give access to additional information.

HMW transport the vegetables?

- Collaboration with trucks already driving the same distance (farmers already transport vegetables to the packing house and the packing house already transport to Matsentralen).
- Volunteers from Matsentralen or the volunteers from the gleaning program can choose to transport the crops as alternative tasks.
- Matsentralen already has volunteers from charities driving, and they have two trucks possible to use.
- The crops collected for own use can be of the responsibility of each participant.

RECRUITMENT

TRANSPORT

HMW reach out to the users?

- Using digital channels such as Facebook, E-mails, Instagram, an online newspaper, frivillig.no, etc.
- Adressa, the local newspaper, to reach retirees.
- Using existing volunteer groups or channels through Matsentralen.
- Using targeted existing organizations, student associations, or retirees associations.
- Use pictures and catching text.
- Target the communication to the various user groups through using different channels.

HMW we transport the participants?

- Free direct bus arranged by the gleaning program.
- Co-driving, the participants in between.
- Organized transport through student and pensioner associations.
- ATB-flexible, a flexible local bus offer.
- Using the bus ride to inform and encourage.

HMW get the user groups to participate?

HMW make the day memorable?

- Include media to promote the event
- Taking pictures to subsequently publish on various channels available for the participant.
- Competition between the participants, for example, taking the best picture of the day, within categories as follows: "ugly", "cool", or "funny" crops. The winner can receive a prize, e.g., merch.
- The participant can collect crops to bring home.
- Sell merch, for example, a button, a cap, a t-shirt, or a bag to store vegetables.
- Ensure a balance between work effort and rest, breaks, and socialization.

HMW end the day?

- Gather people together and share thoughts and ideas, answering questions such as: How did they like the day? What are they making? How do they feel?
- Show gratitude for their participation.
- Show gratitude through giving out refreshments/snacks/food made of vegetables at the farm.
- Make sure the participants being shocked by emphasizing the volume of crops that otherwise would have gone to waste.
- Competition, for example, give a prize to the "coolest" vegetable or guess how many crops have been collected.

GLEANNING

FEEDBACK

HMW welcome the participants?

- The farmer may welcome everyone to the farm and introduce the day and farm.
- Give information to create a safe and secure activity and environment.
- Include volunteers from Matsentralen and maybe give them more responsibility.
- Offer refreshments.
- Ask about desires and expectations of the day from volunteers.
- Tour on the farm.
- Gathering to get to know each other.
- Give the participants an overview of the day and what it contains.

- Learning outcomes to remember in retrospect.
- Deliberately set up the day to create an idyllic atmosphere: getting out of town, attachment to the natural, get green fingers, listening to silence, national romance experience, pick your vegetables, etc.
- Facilitate so relationships and friendships can be created through the gleaning day.
- Offer participants to perform alternative activities such as cooking or sorting the vegetables.
- Provide food made from the gleaned crops or food connected to the current farm.
- The possibility to purchase other types of food directly from the farmer.
- Possibly give the participants an awakening by seeing the farmer's work, the amount of unwanted food, or other new unknown information.

HMW communicate with the participants afterward?

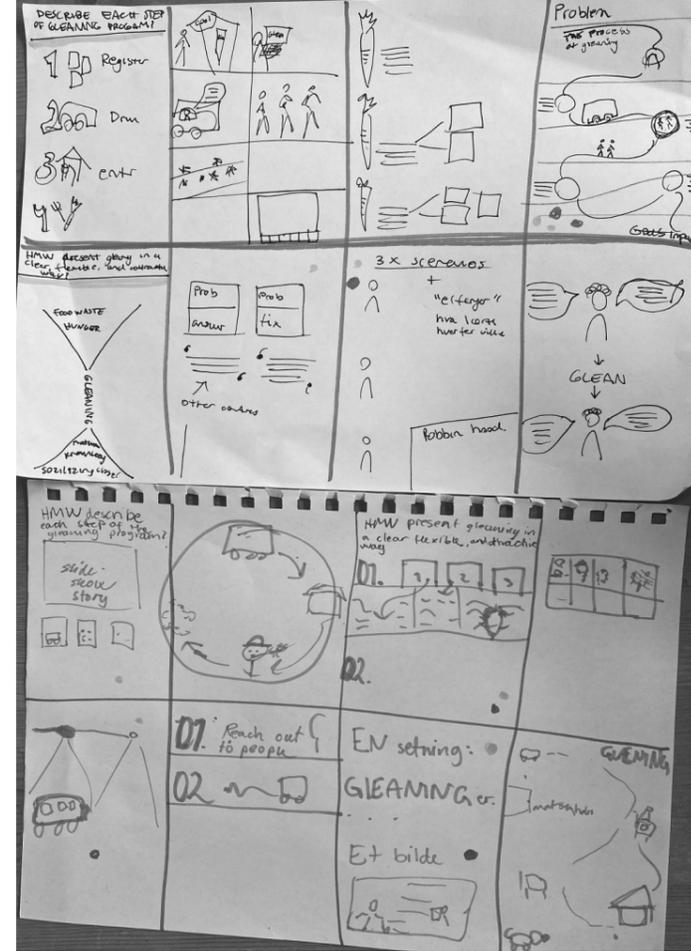
- The possibility to give feedback via a digital channel such as Facebook, Instagram, E-mail, etc.
- Include information about the impacts and results from the day.
- Make sure the participants feel appreciated.
- Questionnaire about their experience and if they would like to go gleaning again.
- Make the pictures from the day available on a digital platform.
- Allow volunteers to share pictures from the day. Try to reshare their pictures.

## HMW-workshop part two

In this section, we aim to answer the second HMW-question:

HMW create awareness around gleaning and motivate initiators?

This process also started by dividing the main question into more detailed sequences with new HMW-questions. By creating five HMW-questions, illustrated at the post-it notes, we were able to include all the important aspects of this sub-goal. We answered each question through various idea-generating methods, such as Crazy 8, randomization, and mind mapping. Doing so resulted in creative approaches and ideas. The benefit of dividing and run idea-generating processes on each separate part forced wide thinking and made it easier to see solutions. This wide thinking and division gave us an overview of possibilities and a better understanding to create a holistic solution.



Private photos

HMW motivate initiators and create awareness around gleaning?

HMW communicate both long and short-term ideas?

HMW convey how and why gleaning should take place in Norway, by connecting them in an balanced way?

HMW presents gleaning in a clear, flexible, and attractive way?

HMW describe each step of the gleaning program?

HMW ensure a feasible gleaning proposal attractive for initiatives to implement?



Private photo

# CONCEPT DEVELOPMENT

The HMW idea-generation processes were a starting point in developing more detailed concepts of our delivery. Further, we generated a wide range of proposals through mind mapping. This process led us to three basic concepts, which we further explored and developed. The intended content of each concept is presented on the following pages. Additionally, we have evaluated the benefits and challenges related to each of the concepts.

## The three concepts

Concept 1 - Brandbook

Concept 2 - Web page

Concept 3 - Starter kit

## Concept 1 Brandbook

The purpose of making a brand book is that this is a great way to include elements to be used when promoting and running a future gleaning concept. The brand book is intended for initiators who may have an interest in implementing gleaning. Elements in the brand book can indirectly contribute to a holistic understanding of why and how gleaning should be arranged. That by using figures, examples, items, storytelling, and illustrations rather than text.

### Content

- Style guide: logo, typography, colors.
- Examples of web pages, the sign-up page.
- Branding in social media, Facebook, and Instagram.
- Proposals to different events.
- Additional products.
- Business plan.
- History of gleaning.
- Vision, mission, and background.
- Explaining the concept of gleaning.
- Work/portfolio: pilot, posters, etc.
- Potential initiators: Who are we?

### Benefits

- It is possible to tell a story through the brand.
- Easy to get a holistic overview of how a concept might look.
- It can be visual.
- Can be easily be adapted.
- Can work well for a pilot with a desire for media coverage.
- Can be a proper way to communicate "The Norwegian way of gleaning".
- Can promote gleaning indirectly through the brand and storytelling.
- Can make it easier for us to make choices.
- The concept allows to include several elements.
- Might be possible to convey our insight and knowledge.

- Possible to communicate gleaning as a long-term concept.
- It is natural to present values, goals, and motives.

### Challenges

- Can the pilot itself can get too little attention?
- Might be challenging to show different ideas.
- Can end up being very long.
- Can it be a challenge to convey what is most essential?
- Might be challenging to sell the concept of gleaning in the best way.
- Are we able to show why gleaning is important?
- Challenging to give guidelines and tips on how to implement gleaning.
- Is the concept too specific?
- Design only the most important illustrations.

## Concept 2

### Web page

This concept involves creating a webpage aiming to be used by possible future gleaning initiators. The webpage is primarily a prototype made in Wix.com or other online tools for creating websites. The platform may contain information needed to arrange gleaning, a specific example of how users sign up for gleaning, and information to make it clear what gleaning entails. Nevertheless, we are dependent on easily visualizing gleaning to make the users and the initiators understand the concept without reading a long text. The webpage is primarily to be used by volunteers. However, it also makes initiators and stakeholders understand the concept of gleaning, which is our first intended goal.

#### Content

- Graphical elements such as logo, typography, colors, etc.
- Landing page - to show what gleaning is.
- Commercial elements.
- Sign-up page.
- Additional products.
- Indirectly convey a business plan.
- Recipes.
- Guidelines on how to start a gleaning pilot and organization.
- About us.
- Process of gleaning.
- Animations or gifs.
- Drawings.

#### Benefits

- Can be flexible and easy to scale up and down.
- Can work as a beginning of a future webpage for the potential initiator to use.
- May contain many different ideas, and it will be up to us to decide what we want to create.
- People are usually familiar with the phenomenon website, and it can lower the threshold for creating attention.

- Might be an efficient way of including storytelling and visual elements.
- Can be perceived professionally.
- Easy to spread the webpage to many stakeholders and potential sponsors.
- Can use Wix- an online tool to create a website.
- Can contain specific examples.
- Highlights how the initiator can promote gleaning, indirectly.
- All information at one platform, appropriate way to collect the delivery.

#### Challenges

- The main idea of developing a pilot may disappear, as a web page can lead to more irrelevant functions and information.
- Maybe too demanding and require too much time.
- Can a website get too narrow? And thus, require that we add extra information to reach our goal?
- Is a webpage too specific and complicated?
- Does the focus area disappear by using a web page? Compared to telling a story about gleaning.
- Might risk low quality on some parts, due to resources need to make the web page.
- Does it encourage to start gleaning?
- Conveying possible impacts and ripple effects of gleaning might be challenging.
- Can we risk including unnecessary information only? Due to completing a web page.

## Concept 3

### Starter kit

A starter kit provides detailed guidelines and elements of how a potential initiator can implement gleaning in Trondheim. The starter kit needs to visualize gleaning and the importance of implementing gleaning to motivate the receivers. Nevertheless, the concept focuses on giving the receiver as detailed information as possible, including actual files, ideas, and tips for them to use towards stakeholders and volunteers.

#### Content

- Step by step guidelines on how to arrange a gleaning pilot.
- A user journey and visualization of a gleaning day.
- Present the impacts achieved through gleaning.
- Explain why the initiators should arrange a gleaning pilot.
- Present the user groups included in gleaning.
- A business proposal.
- Elements and items intended for usage when arranging the gleaning.
- Contact information to relevant stakeholders.
- Tips.
- Teasers.
- Commercials.
- Events.
- Sign-up page.
- Social media.
- Style guide.

#### Benefits

- The gleaning pilot gets the main focus.
- Can include the most crucial. First things first!
- The starter kit can adapt to how much time we have left.
- Handy.
- Can make it in various ways, specified for the initiator.
- Can motivate the initiators.
- Personal and customized.
- Adaptable.

- Informative.
- Visual.
- Easy to convey why gleaning should be arranged and the history behind it.
- Can include humor.
- Can include a file system of relevant files.
- Can be either specified or general designed.

#### Challenges

- It may be hard to pass forward.
- How many people will reach it?
- Can feel less as a whole?
- Will the long-term focus disappear?
- Can it be boring and messy?

# CHOICE OF CONCEPT

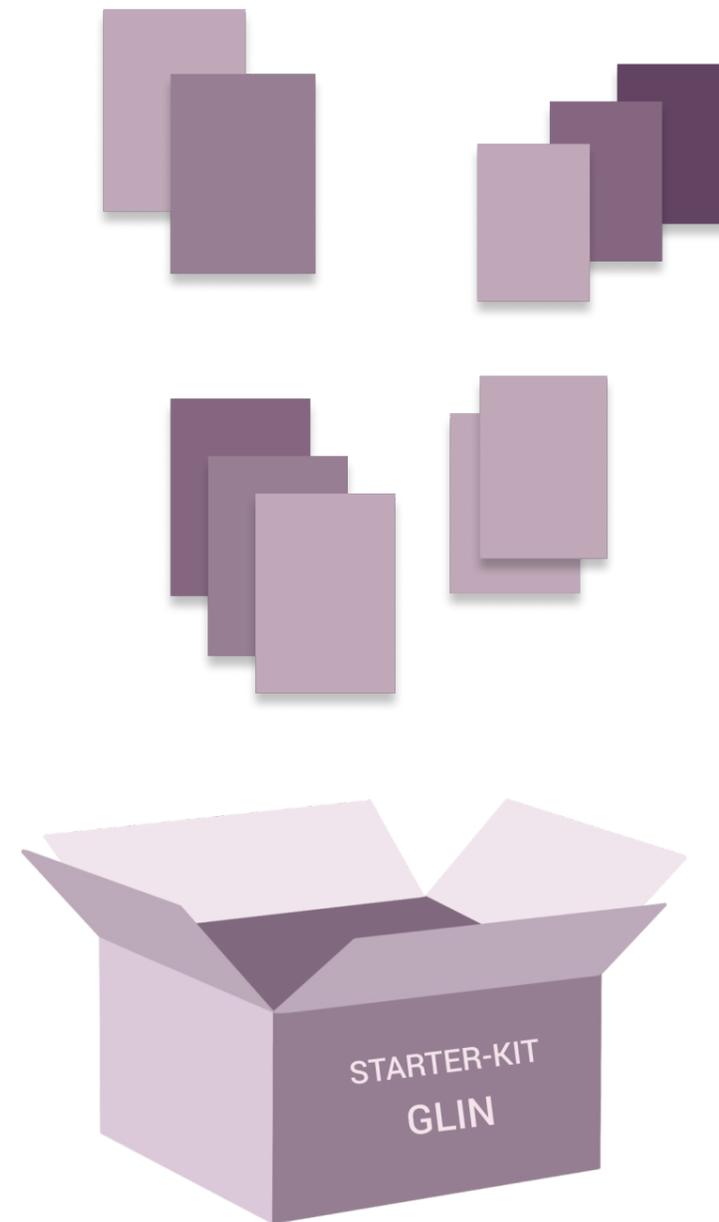
To determine a concept, we reviewed our goal and subgoals. This way, we could ensure that all aspects of our goal were taken into considerations.

can be beneficial for multiple recipients and contexts, which was a desire from the possible initiators that we have been in contact with. The starter kit can, for instance, describe gleaning to potential initiators and promote gleaning to potential volunteers.

We considered the starter kit as scalable, which enable us to continuously add new content and designs that could be useful for recipients. Therefore, we prepared a priority list to ensure that the most crucial parts are prioritized.

- A guide for "How to start a gleaning pilot?".
- A user journey of the gleaning pilot.
- The problems and impacts related to gleaning.
- A short explanation of what gleaning is.
- Visual profile.
- A prepared advertising campaign.
- Merch items.

By choosing the starter kit as our concept, we can better ensure that we use our skills as designers. That applies to using system thinking to create a holistic solution suitable for all stakeholders and using visualization and storytelling to convey our message and ideas.



## Our goal

Make an inspiring and attractive proposal for how and why initiators should introduce a gleaning pilot in Norway. The proposal needs to be easy and motivating for students, retirees, and engaged to participate.

The gleaning pilot aims to create awareness and make the participants learn, feel useful, and be socialized.

The concept we have chosen is, due to our belief, the one bringing out the most value for the audience, considering our skills as designers and the time left. For these reasons, we have chosen to further develop concept number three, the starter kit.

There are many reasons why we believe this is the proper concept. Firstly, this concept allows customization and flexible content to fit the initiator and what they need to organize a gleaning pilot. In addition, this concept has fewer limitations considering format, which allows us to focus more on making well-done content. By designing a starter kit, we can convey insight from users, farmers, possible initiators, and collaborators visually and diversely. The starter kit possibly enables us to communicate our suggestions. The different parts of the starter kit



## *Detailing*

*The goal of this chapter is to refine details in the chosen concept. We have worked iteratively to ensure that relevant specifics correspond with the prepared design brief and other insights. By using design methods and visualization tools, we have developed our desired result.*

|                   |      |
|-------------------|------|
| Content:          |      |
| Detailing process | 156. |
| Concept testing   | 164. |

## METHODS

### Ideation

#### Lightning demos

Lightning demos is a method used in Google Design Sprint (Sessionlab, 2019). We used Lightning demos to idea-generate widely to decide the visual profile of our deliveries. We explored ideas and found inspiration online within each of the elements needed, such as typography, illustrations, colors, etc.

#### Mind mapping

As earlier mentioned, our delivery consists of many separate parts or elements. The majority of the different elements can be categorized as complex and interconnected. Mind mapping has been a handy tool for us to get an overview of our knowledge and learnings. In addition, mind mapping has helped us understand and make sure that the different information is placed in the most suitable parts.

#### Personas

Two fictional characters were designed to concretize the concept. The personas represent two of the user groups that might take part in the gleaning program. Designing personas helped us to specify the user's needs, experiences, behaviors, and goals (Servicedesigntools, n.d - c).

#### Storyboard

To make a visual representation of the gleaning day, we used storyboarding. This approach has helped us draw sequences and break down the gleaning day into individual actions. In addition, the method enabled us to communicate our ideas and user insight. This storyboard was thereby developed and transformed into the final scenario, which describes the proposal of a gleaning pilot.

### Testing

#### Concept testing with stakeholders

Testing our concept has consisted of meetings where we present our idea and various designs to discuss these with stakeholders most possible contributors to the pilot. Testing and feedback helped us understand the value of our result, from a stakeholder perspective, in addition to what could be improved and added.

#### Testing the usability of designs

In addition to testing our concept towards stakeholders, we wanted to get more feedback on the design and layout of our results. Therefore, the various designs are tested on people without bias, which enabled us to find out if our designs and messages are understandable and likable. Based on the feedback, we could further make improvements.



## DETAILING PROCESS

After choosing the starter kit concept, we started the detailing process by creating the content of each part. We worked iteratively and in-depth with details of the content in the most complex parts of the starter kit to ensure that the information we share is relevant and proper. After many frustrating processes, including workshops, mind-mapping, and discussions, we finally had a basis for our content and could start designing. The design process began with developing a visual profile to unify the many different aspects of the concept through consistent visuals. Throughout the process of detailing the starter kit, we had worked parallelly with all the parts. We have designed the various parts iteratively, started with hand sketches and ideation workshops before designing digitally. This approach ensured us to have a maturation process throughout developing these complex and comprehensive designs.

The overview to the right presents the parts of the starter kit. At this point, we focused on the content rather than the formats. Nevertheless, the development resulted in thoughts and ideas regarding possible formats. Among other things, we believed posters could be beneficial to convey these messages. Creating posters could possibly give us the most time to focus on the content, and posters are flexible in usage as they can be both digitally and physically. Still, we will further explore the final formats, which will be presented in the result chapter.

In the following pages, the processes of designing and detailing each part in the starter kit are visualized and described in detail.

### Content of the Starter kit

#### Visual profile

A guide for “How to arrange a gleaning pilot?”

User journey to the gleaning pilot

The problems and impacts of what gleaning is

A prepared advertising campaign

Merch items



# Guide, “How to make a gleaning pilot?”

We had a desire to further convey our learnings and perspectives, we felt able to propose a gleaning pilot aimed at Trøndelag. That resulted in a step-by-step guide for how the initiators can arrange a gleaning pilot attractive for all parties involved, such as volunteers, farmers, Matsentralen, and sponsors.

To make a guide that is both engaging and informative for the initiator, we strived to make it precise and finally ended with the steps presented below.

Through several iterations, we developed some repetitive categories within the eight steps. These categories include; a short intro, a recommendation for actions the initiators should do, guidelines for how they should do it, and alternatives. By making categories, the content became more appealing to read and use, which hopefully motivate initiators to arrange a gleaning pilot.

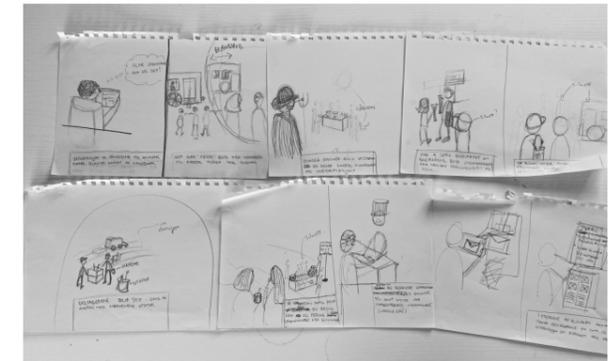
In the further development of the guide, we aimed to design a credible and genuine layout in line with the context and content, keeping in mind the intended audience of the guide.

## The step of the guide is

1. Get to know the basics
2. Create cooperations
3. Contact farmers
4. Recruiting volunteers
5. Transport
6. Beneficiaries
7. Promoting
8. Create an Experience

# User journey

Similar to the guide, developing the user journey has been a maturation process. It started before the conceptualization phase of this thesis, and we proposed a simple user journey in the HMW workshop. Based on the proposal, the user journey was transformed and improved. From unfinished chaos of thoughts, ideas, and loose threads, into developing a visual storyboard addressing a scenario of the intended gleaning day. Throughout the process, we have worked towards finding the most significant steps that are relevant to emphasize in a pilot. Further, the process of visualizing the user journey started by drawing the most fundamental situations of each step on post-it notes. Then the drawings became gradually more detailed and focused, to eventually be developed digitally.



Private photos

# GLINE DAGEN

Hvem er med på gline-dagen?



**Verdiene ved å inkludere**  
 Joar og andre pensjonister er høy for både samfunnet og på et personlig nivå. Gjennom aktivisering og sosialisering av denne ellers lite inkluderte gruppen vil man kunne utnytte verdifull arbeidskraft, samtidig kan pensjonistene selv føle at de bidrar.

**Motivasjon**

- Være sosial med nye mennesker
- Dele erfaringer
- Bli inspirert og kjent med "ungdommen"
- Bruke kroppen til nyttig arbeid
- Få et avbrekk i hverdagen

**Verdiene ved å inkludere**  
 Ida og andre studenter kan er at holdningene til mat og jordbruk i samfunnet kan endres til det bedre. Studentene kan bidra i høy grad, samtidig som at gratis mat blir satt stor pris på.

**Motivasjon**

- Få gratis mat
- Redde mat
- Lære om jordbruk
- Hjelp folk som trenger det
- Komme seg ut av studentbolla

**Frída 23 år**  
 Ida er engasjert student i Trondheim, opprinnelig fra Oslo. I kollektivet til Ida er de opptatt av å redde mat som de gjør gjennom dumster diving. Ida og venninen hørte om gleaning på skolen og ble med ett interessert i å delta. Hun ser frem til å komme seg ut av byen da dette ellers kan være vanskelig uten bil.

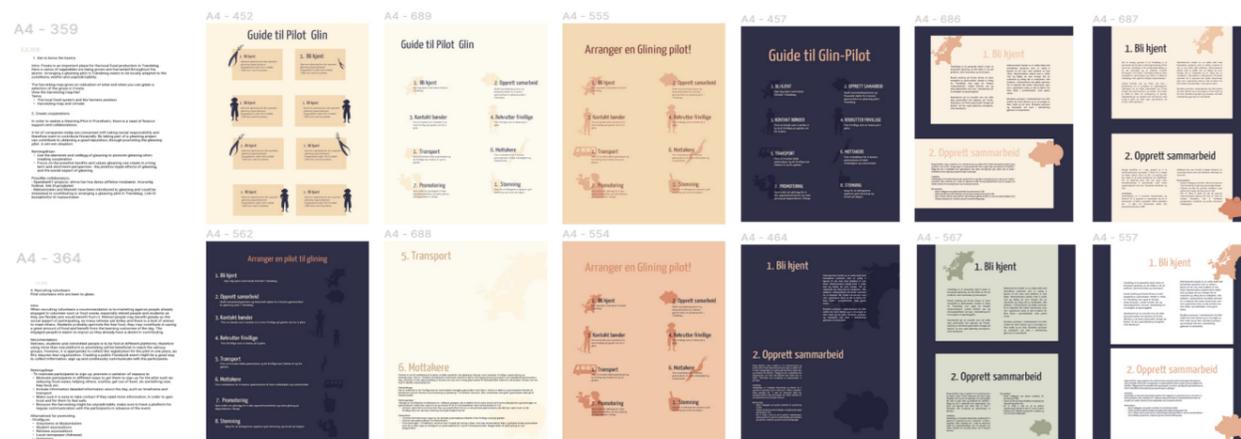


Scenario fra gline pilot



Informasjon og påmelding til gleaning finnes blandt annet på facebook

Det går felles buss fra Trondheim til gården på Frosta, turen tar 1 time og 15 min

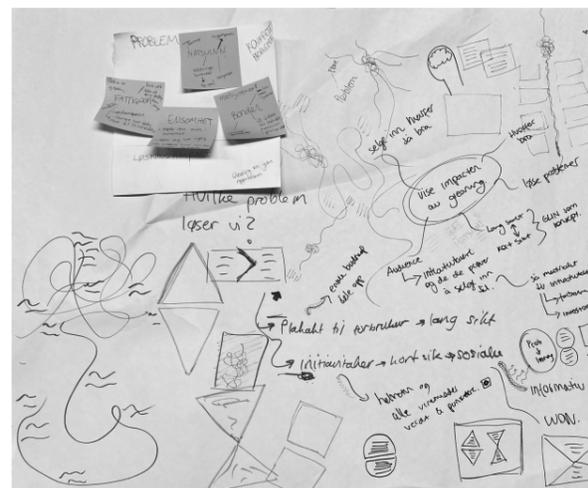


## Challenges and benefits

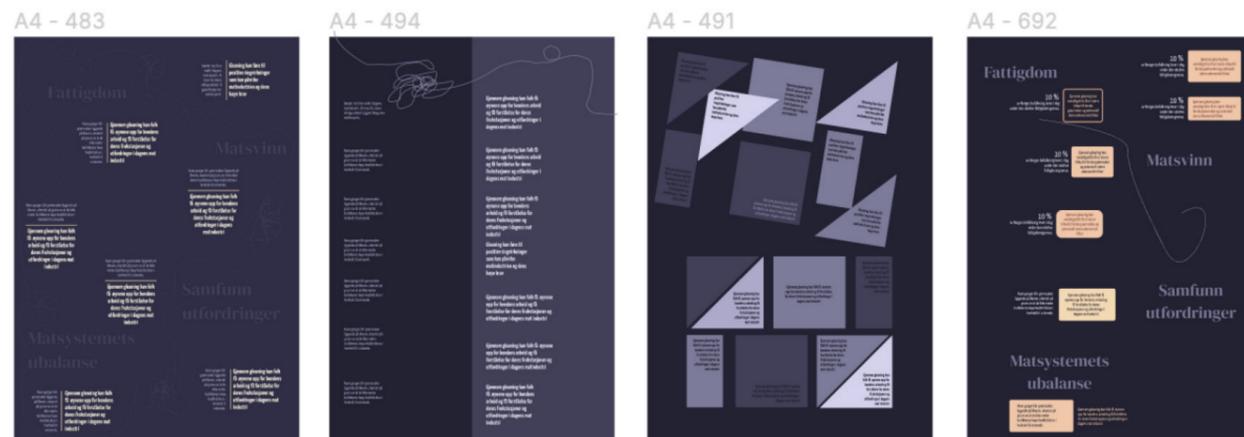
Why would anyone arrange a gleaning in Norway? To convince someone regarding this question, we saw the importance of communicating the possible impacts of gleaning. Additionally, it can be appropriate to convey current challenges in society that gleaning can improve. Both communicating impacts and the challenges to the intended initiators can be an essential part of achieving our ambitions of making gleaning attractive to arrange.

Throughout a broad research phase, investigating wicked problems within themes such as the food industry, the farmer's perspective, food waste, poverty, agriculture, and social challenges, we have seen that gleaning can be beneficial to different extents within all of the above. Getting acquainted with these topics was relevant when conveying the impacts and challenges regarding gleaning.

It became challenging to determine what to highlight within each topic, as there was a wide specter of important arguments desirable to draw attention to. For that reason, we had several iterations and idea workshops to scope down and determine the most significant arguments and at the same time ensure to cover a wide specter of impacts. The chosen format for doing so became a poster. We wanted the poster to be exciting and credible, but as the audience of this poster is the intended initiators, we allowed it to contain more text. However, these conflicting elements made the poster challenging to design.



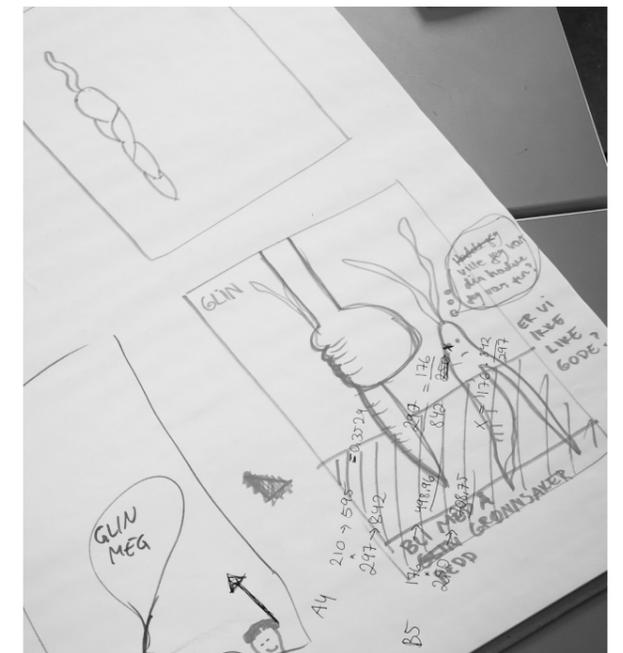
Private photos



## Advertising posters

We believed the starter kit could help marketing the concept "Glin", as it involves items like these advertising posters intending for usage when arranging a gleaning.

The posters can generate awareness and contribute to putting gleaning on the agenda in Norway. We strived to make remarkable messages appropriate for both future participants of gleaning and stakeholders. As we are designers enjoying creative work and poetry, the process of developing these posters was fun. We wanted to make something worthwhile and easy to remember. To do so, we started the developing process using our creativity, co-creation, discussion, and mind mapping throughout several iterations, intending to improve the messages and designs. We used emotions as a tool and challenged everyday life assumptions to make a memorable design proposal that creates awareness and attention. Below is a selection of elements from the design process.



## Describing gleaning

As gleaning is a new concept and a new term for nearly everyone in Norway, an easy, eye-catching, and exciting explanation is convenient to include in the starter kit. This explanation of gleaning is divided into two parts, a definition, and a visual four-step explanation.

Throughout the project, we have explored and experienced what is most appropriate to communicate to create interest and make people understand and acknowledge gleaning. Our desire to convey what gleaning is has resulted in a poster highlighting; voluntary work, donations, utilization of vegetables, the spread of gleaning in society, food waste, the farmer's valuable work, high-quality requirements, and ideal organizations.

We worked iteratively in a period of time to scope down to the most valuable topics and at the same time ensure a short, easy-to-understand explanation. We wanted the poster to be exciting and understandable to a wide range of audiences, like volunteers, people in the street, stakeholders and farmers.

## CONCEPT TESTING

As earlier mentioned, gleaning as a practice is almost impossible to test at this time of the year, as harvesting occurs after delivering this thesis. However, we can still test the value, the ease of use, and the design of the starter kit. The concept was tested by talking to intended initiators and stakeholders to ensure that we make the most value possible out of our delivery. In other words, make the delivery adapted to the recipient's needs and thoughts about what is desirable and appropriate for them to receive. Additionally, we have received feedback on the layout and understandings of the design from various people. The following pages sum up these testings.



## Testing with a potential initiator

Henrik Nordtum Gjertsen, deputy leader of Norges Bygdeungdomslag (NBU, Norway's rural youth group)  
 Where: Video call by Micosoft Teams  
 Type of research: Testing the concept with a possible initiator  
 Date: April 27th, 2021

### Introduction

We got inspired and recommended by Matsentralen and Matvett to contact various organizations working with projects of the same kind, NBU (Norwegian Rural Youth) was one of them. Matsentralen looked at NBU as a possible initiator for arranging a gleaning pilot due to their previous work towards protecting and promoting the interests of the countryside and young people. Besides, NBU has an environmentally friendly focus and wants projects to enlighten good values (NBU, n.d). Henrik Nordtum Gjertsen answered our request positively, and we agreed to have a meeting later. Our goal with this meeting was to find out if NBU was interested in and capable of being the primary initiators of a gleaning pilot. In addition, Henrik is an experienced man within the theme and with project work. Therefore, we wanted to get feedback on our work and learn more about what information is needed to start such a project.

*“We could gladly implement and collaborate with, for example, Bondelaget and Matsentralen in a project like this.”*

### Relevant work

Henrik relates to why Matsentralen and Matvett recommended getting in touch with NBU. NBU has a reputation for being good at starting projects and at organizational work. He emphasizes this by being positive and engaged about the project and the possibility of introducing gleaning in Norway. These days NBU and Norges Bondelag (Norwegian

*“Gleaning sounds very relevant, and people are concerned about reducing food waste, but they often feel that there is not much else to do but eat up their food.”*

Farmer's Association) are very busy working on a political issue aiming to increase farmer's incomes. However, he pointed out that they will have more time available closer to the summer. Henrik believes the topics related to our project are highly relevant, and he sees the positive impacts and benefits of introducing gleaning in Norway. The high-quality requirements for vegetables in Norway have been on the agenda and a recurring theme, and it is an important issue they want to make people aware of and change.

*“We can easily get the media to join a day like this, where we can focus on the farmer, due to their hard work, low income, and the high-quality demands from the stores”.*

### Key findings

- NBU is both interested in and capable of arranging a gleaning pilot.
- It is significant to remember and focus on the farmer and what they get out of taking part in a gleaning program. NBU has close contact with several farmers and Norsk Bondelag and would like to recruit them if taking this project further.

## Testing with Marte from Matsentralen

Marte Lønvik Bjørnsund, Leader of Matsentralen Trøndelag  
 Where: Video call by Micosoft Teams  
 Type of research: Testing the concept with stakeholder  
 Date: May 10th, 2021

### Introduction

The goal for this meeting was to get her opinion on our results and the course of events we have planned at the gleaning pilot day. Marte is very passionate about words and conveying a message through words.

### Highlighting the farmer

Marthe believed in promoting the gleaned surplus crops as a promoting event in Trondheim city center. However, she emphasized that the farmer's work should be of focus in doing so. Otherwise, the farmer would have little gain in taking part in the gleaning program. On the other side, she pointed out that gleaning might benefit the farmer from a long-term perspective.

Marthe liked the idea of promoting the relevant messages regarding gleaning on the streets. She believes more advertisement elements sound beneficial to convey the impacts and messages considering gleaning.

*“Maybe switch from surplus vegetables to “Snåle” vegetables in the first figure.”*

*“I like that the posters use emotions as a tool to shed light on the message. I also like that they are short and concise.”*

### Key findings

- Enlightening people on the street is probably effective in shedding light on gleaning, issues regarding food waste, and emphasizing the farmer's work.

# Testing with Anne Marie from Matvett

Anne Marie Schrøder, communications manager  
Matvett

Where: Video call by Microsoft Teams

Type of research: Testing the concept with stakeholder

Date: May 4th, 2021

## Introduction

Anne Marie is the representative who participated from Matvett in the Focus group with Matsentralen Norge and Matvett. She showed engagement in the topic and told us to contact her again for more guidance if we needed so. At this point of the project, it was desirable getting feedback on our work so far, both to assess whether the starter kit has value for recipients and receive feedback on the content and designs. The meeting started with a brief introduction to our concept, then took her through our designs. Anne Marie gave us constructive feedback on the content, design, colors, choice of words, the message, and the overall concept.

## Challenges and impact poster

Anne Marie was positive about the challenge -and impact poster and believed it would give great value. She emphasized the importance of communicating why gleaning should be arranged in Norway. Further, she commented that the colors should be more in line with the rest of the design if it were to be shown to others than investors. Together we realized that we should prepare a similar poster for more general use. The message in this second poster should be of fewer words and be more visual, additionally emphasize that gleaning can make society better. She suggested that it might be useful to include circular economy as a concept to get people interested and related.

## A future in gleaning

Anne Marie continued the conversation with commitment and a good response. She challenged the conceptualization to be more detailed to make the concept even more sustainable and independent in the future. Follows are selections of ideas expressed by Anne Marie:

- Creating a gleaning certification or symbol awarded to those who support the gleaning. This symbol or stamp can be utilized as verification to show involvement and contribution, which companies often seek.
- Expanding the concept by introducing own products or additional activities.
- Expand the posters to fit several platforms.
- Make the concept even more focused on the journey of the gleaned crops and suggest ways of utilizing the crops.
- Making innovative, natural, and sustainable products from the gleaned crops to highlight the work of farmers and help them gain more out of their crops.

*“NRK would, without doubt, be there filming.”*

## Matvett as a stakeholder

Matvett, as an organization is too small to take full responsibility to organize the pilot. Additionally, they do not operate in the primary sector of the food value chain. For these reasons, Matvett is not the suitable initiator for arranging the pilot. Nevertheless, they have a desire to contribute.

*“I like the colors on the guide, it is suitable for a guide!”*

*“The design is fresh!”*

## Key findings

- By making a strong and adaptable concept around the “Glin” can be beneficial due to motivating possible initiators to make gleaning long-lasting.
- Matvett shows an interest and motivation to take part in a future gleaning pilot.

*“Glin as a word, I like it! I have no association with the word but, I think at first that it is a company.”*

*-Design Student, 23*

*“The posters are nice and have a political message.”*

*- Henrik Nordtum Gjertsen, NBU*

*“So nice colors, I think the guide looks very good.”*

*- Design student, 24*

*“The poster presenting challenges and benefits was nice! Wow. Nice typography too.”*

*- Marte Lønvik Bjørnsund*

*“It is important to show the benefits of gleaning.”*

*- Design student, 24*

*“I really like the definition of the poster that introduces gleaning as a concept. It is understandable and concise.”*

*-Design Student, 26*

*“That maybe a little vague to write on the impact-poster that gleaning can make society better”*

*-Design Student, 23*

## Testing the designs

*Four students and three stakeholders*

*Where: Trondheim*

*Type of research: testing the designs.*

### Intro

To ensure that the advertising posters and other elements in the starter kit convey the intended message and provide usefulness, we have asked four fellow students for their feedback on the designs. In addition, we asked the three stakeholders we tested the concept on, to give us feedback on the design as well. Some of the feedback we received is presented to the left. Furthermore, the feedback has been considered and led to changes of, among other things, colors and text usage.



## *Result*

*The result chapter presents the starter kit its content, with a detailed description of each part. Finally, we explain who the recipients of the starter kit are, and how they will receive it.*

Content:  
The starter kit

173.

# THE STARTER KIT

The final result of this thesis is a starter kit consisting of the elements illustrated to the right. A consistent structure aims to explain the various parts clearly and complementary. Consequentially, each of the parts is reviewed one by one and addresses the following points:

- What:  
What is the current element?
- Background:  
Why is this result relevant and advantageous?
- Audience and recipients:  
For who does the current element strive to target?
- Purpose:  
What is the reason for creating this element?
- How to use:  
How to present, read and communicate the current element?

We believe these points, combined with the result, will provide complementary information and manifest the final results. As specified above, the description gives details of the audience and receivers of the various elements. Nevertheless, it is relevant to define what we mean by audience and recipients.

The audience represents the people who would be interested in seeing the various parts. These people can be potential gleaners, consumers, farmers, collaborators, sponsors, or other stakeholders. Recipients, on the other hand, represent the people who receive the starter kit. These are mainly the potential initiators of the gleaning pilot, but can also be some of the most relevant stakeholders, such as Matsentralen and Matvett.

There are two styles of content in the starter kit. The dark elements are primarily intended for the recipients and are more informative with guides and specifications. The lighter parts, on the other hand, are designed to use externally for several audiences.

The size of the elements is customized to fit this thesis and does not represent the intended format. The planned size is in the descriptions, and the actual result will be attached to this master thesis.

As mention, the result is presented throughout this chapter. However, it is recommended to read the elements of the starter kit in full scale. The files are accessible via the link below or as attachments to this master thesis. The result is in Norwegian, as it appeals to the audience and recipients. However, you can find an English translation in Appendix or via the link above.

Link to starter kit: [https://drive.google.com/drive/folders/1Pp\\_fQORE59fThs2ySpWvaeHrpYXIGP1v?usp=sharing](https://drive.google.com/drive/folders/1Pp_fQORE59fThs2ySpWvaeHrpYXIGP1v?usp=sharing)

## Content of starter kit

Through gleaning can...



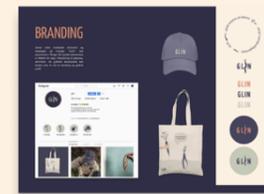
User scenario



Describing glaning



Branding



Advertising posters



Guide to a gleaning pilot



Societal benefits



# Recipients

## Who will receive the starter kit?

Throughout the project, we have experienced interest from stakeholders and experts in relevant positions and jobs. They express a need for innovation in the food industry and especially in the primary sector. Among these stakeholders and experts, there are potential receivers for this starter kit. They have shown great interest in participating, taking various roles, and be involved in different ways to realize gleaning. As described above the main recipient of the starter kit is the potential initiator. Nevertheless, other stakeholders have shown interest in receiving the starter kit as they want to contribute and further communicate the project to others. NBU currently seems to be most suitable and with the greatest motivation to take the role of initiator to carry out the gleaning pilot. The following list consists of the most central recipients of the starter kit and their contributions.

- NBU, Norges Bygde Ungdomslag Potential initiators.
- Matvett, Anne Marie Schrøder  
Wants to contribute to the project by providing guidance and dissemination of the project. Additionally, she desires to be included in activities relevant to Matvett, as well as helping out with media coverage.
- Matsentralen, Marte Lønvik Bjørnsund  
Marte has shown great interest, and we share common goals. They are gladly receiving the gleaned crops and possibly help out with volunteers. However, taking a bigger role and responsibility in organizing requires that gleaning leads to a sufficient amount of vegetables.

Additionally, others we have been in contact with have a desire in receiving the result and our thesis. Among others, the farmers, the CO- founder of "Snål" fruit, and others in Matsentralen Norge. Thus, they will receive the same documents and e-mails as the stakeholders listed above.

## How will they receive the starter kit?

The starter kit contains several documents. Thus, we need to make sure the recipients understand and get an overview of how to read and use the various elements. The format and the way of delivery must therefore be convenient and well organized.

The starter kit overview illustrated on the previous page will show up in a mail, together with a short description of the content and guidelines of usage. This e-mail will also include a link taking them to a Google Drive folder containing all the documents in the starter kit. By doing it this way, the documents can be easily accessible and downloaded whenever. The master thesis will be made available for the recipients, which can be helpful if more information is needed or desirable.

We have included our names in each of the elements in the starter kit. If someone wants to start a project and use our concept "Glin", we hope they contact us to receive the raw files, such as logos and graphic elements. We will point out this in the email we send out. Like this, we can make the posters and our final results available for more people, to spread the word to a larger extent. However, we ensure that "the concept Glin" can be secured to a possible initiator for starting a long-term gleaning organization.

*I the result has become very  
good - clear and stylish,  
inspiring and informative.  
Good work!*

*- Anne Marie Schrøder, Matvett*

# Advertising posters

## What?

Advertising posters aim to promote food waste, the high requirements in the food industry, and introducing "GLIN". There are three versions with differences in the texts and vegetables. The posters have an A3 portrait format but allow scaling to the desired size.

## Background

Throughout this project, we have discovered how the food system in Norway and the high requirements forces weird-looking vegetables to end up as waste. After sorting weird-looking carrots at Matsentralen, we felt emotionally attached to these different but funny carrots. We, therefore, had a desire to use these vegetables to communicate the problem in the food industry and convey a message to more people. Using our design skills to make something which probably can be used directly felt proper. Using our design skills to create something that actually can be used felt advantageous. Additionally, the receivers of this starter kit are most likely not designers, and these posters would for that reason, probably be appreciated.

## Audience and recipients

This poster is for the receiver to use towards the different audience, to catch their attention and trigger emotions. Because of the eye-catching and minimalistic designs, we imagine this to be the first poster to promote gleaning towards consumers and potential gleaners. It may be beneficial to use emotions to create awareness around food waste and gleaning to make stakeholders and potential sponsors inspired to contribute.

## Purpose

The purpose of these posters is to bring attention to the word "GLIN" and create awareness around gleaning. The posters are playful and strive to evoke empathy and emotions for the poor vegetables. In this way, we believe we manage to communicate a strong message and awake interest and curiosity towards gleaning.

## How to use?

The posters can be used both digitally and physically. For physical usage, it will be beneficial to put it up at places where the intended user groups are to be found, such as universities or day centers for the elderly. F Nevertheless, the posters could fit anywhere, because it conveys an important message.



## Describing gleaning

### What?

The poster introduces and explains the concept of gleaning. The word "Glin" is defined, and the main steps of gleaning, are described through illustrations and concise text. The format of this poster is A3 landscape.

### Background

Gleaning was new to us and to most of the people we have talked to throughout this semester. Therefore, we wanted to communicate the new word "Glining", make a Norwegian definition, and illustrate the activity with the four basic steps. This poster would have been beneficial to us in our communications with the user groups, farmers, and other stakeholders. Due to this, the poster will hopefully be helpful for the recipients too. Gleaning is presented in the way we believe gleaning should be introduced in Norway.

### Audience and recipients

This brief and visual explanation of gleaning can be a handy tool for the potential initiator to use towards volunteers, sponsors, collaborators, farmers, or others interested in gleaning.

### Purpose

We wanted to present gleaning as intuitive and easily understandable as possible. This way, it can still be eye-catching, create interest towards gleaning and bring out a desire to participate. The poster may help the initiators to recruit and inform the different audiences.

### How to use?

This poster can also be used both digitally and physically as a poster. It would work well in connection with the advertising posters to extinguish the curiosity people can get from them. The different elements which constitute the poster, such as the definition and the visual steps, can also be used separately on a desirable digital platform.

# GLIN

GLINING er å plukke opp og utnytte overskuddsgrønnsaker, som ellers ville blitt liggende igjen på åkeren etter høsting.



Frivillige gliner små grønnsaker på åkeren



Grønnsakene doneres til ideelle organisasjoner, men du kan ta med noe hjem



Grønnsakene blir utnyttet og gis til folk som trenger mat



Økt fokus på matsvinn, dagens kvalitetskrav og bondens viktige arbeid

## Societal benefits

### What?

This poster explains why gleaning can be beneficial to society. The format intended for this poster is A3, portrait.

### Background

During this project, we have found numerous reasons why gleaning can be beneficial to implement and arrange in Norway. Gleaning can generate both long-term and short-term impacts on society. It was desirable to convey and communicate the relevant arguments stated in the poster. The layout and concept of this poster are inspired by the triangle of sustainable development, which touches on three topics; economy, the social aspect, and the environment. The design has the purpose of conveying impacts in a way that makes people interested at first sight. Additionally, it ensures that potential benefits and outcomes of gleaning are immediately understood.

### Audience and recipients

The poster is intended for the possible initiators to use towards audiences, such as participants of gleaning, collaborators, sponsors, farmers, and other stakeholders. This poster can be a tool to argue why gleaning is advantageous and specify the benefits it can have on society. Hopefully, this can inspire and create engagement.

### Purpose

The primary purpose of this poster is to inform and emphasize the benefits and impacts gleaning can have on society. It may be motivating and can give people reasons for participating or contributing. By focusing on a wide range of why gleaning is important can strengthen the concept.

### How to use?

The poster can be used as a physical poster or digitally. It can be used as a poster, or the arguments or elements can be adapted to be used in other situations and for other purposes. It is intentional to present this poster afterward or in combination with the previous posters. Thus, people should have heard the word gleaning before being introduced to this poster.



# User scenario

## What?

The user scenario of the gleaning pilot consists of the main situations on a gleaning pilot day. It describes our ideas, the intended course of events, and the intended volunteers. The size of this poster is A4 portrait in width, while the length is customized to the story.

## Background

During this project, we have gained an overall understanding of how gleaning should and can be introduced in Norway. From talking to a wide range of people such as possible participants, farmers, and other stakeholders we have learned their views and perspectives. This learning has helped us design a scenario of a gleaning pilot, using storyboarding as a tool. By including the two personas (intended volunteers), we can ensure that the recipients understand the value of including the intended user groups. Making the gleaning a memorable experience has proven to be important to the user groups. Therefore, it was desirable to visualize the atmosphere throughout the day.

## Audience and recipients

The scenario poster is our way of expressing to potential initiators how a gleaning pilot should be implemented. By helping them imagine the day, we can ensure that user's needs are perceived correctly. In addition, this scenario can be beneficial for the initiators to use towards the farmers, volunteers, sponsors, and other stakeholders to help them understand gleaning and how the day looks.

## Purpose

The purpose of designing this poster is to visually explain the content of the gleaning pilot. This journey enables us to illustrate important insight we have gained during this project and include crucial elements of the day.

## How to use?

This user scenario should be used as a poster. The abnormal shape may create attention and make people curious. Alternatively, elements of the journey could be used, for instance, on a webpage.

# Hvem er med på glining-dagen?

**JOAR, 75 år**

Joar borde sine første 8 år på en gård like utenfor Trondheim. I dag er Joar pensjonert, bor alene men liker godt å være i selskap med andre. Han har med seg på glining på bilen og setter pris på den lille busen, da han ikke er så glad i å bruke bilen til lange distanser. Joar gløder seg til å komme på en gård og se etter bondens arbeid like til satt selv pris på i dagens samfunn.

**Verdier ved å inkludere**

Gjennom aktivisering og sosialisering av denne alders- og utdanningsgruppen vil man kunne utnytte verdifulle arbeidskraft, samtidig kan pensjonistene selv føle at de bidrar. Noen kan være høy tid for samfunnet men også på et individnivå.

**Motivasjon**

- Være sosial med nye mennesker
- Føle et fellesskap
- bli involvert og kjent med "ungdommen"
- Bruke knoppen til nyttig arbeid
- Til et aktivt liv

**IDA, 23 år**

Ida er engasjert student i Trondheim, opprinnelig fra Oslo. I kollektivet til Ida er det vanlig å å handle mat som de gjør gjennom dumpster diving. Ida og vennene har gått på glining på Juleen og ble mest interessert i å delta. Hun ser frem til å komme seg ut av byen da dette ikke har vært vanlig utvalgt.

**Verdier ved å inkludere**

Ida og andre studenter kan er at holdningen til mat og jordbruk i samfunnet kan endre til det bedre. Studenter kan bidra i høy grad, samtidig som at gratis mat blir satt stor pris på.

**Motivasjon**

- bli gratis mat
- Redde mat
- Lære om jordbruk
- Nyttige folk som trenger det
- komme seg ut av studentboba

# Scenario fra glining-pilot

Joar og Ida tar del i glining-piloten som er vist gjennom øyeblikk fra et scenario av den pilot-dagen.

Informasjon og påmelding til glining-piloten finnes blant annet på Facebook.

Det går felles gratisbuss fra Trondheim til gården på Frostås, turen tar 1 time og 25 min.

Bonden ønsker alle velkommen og deler nyttig kunnskap og informasjon.

Deftakerne blir satt i gang på åkeren, med nødvendig utstyr.

Dokumentering av glining-dagen er en viktig del av prosjektet.

Før busen vender tilbake til byen samles alle for oppsummering og deler erfaringer fra dagen.

I etterkant av gliningen mottar deltakerne en tabell, samt informasjon om bistand fra dagen og videre opplegg.

På Frostås tas det opp et viktig tema, samt for å gi deltakerne et viktig budskap. Dette er en del av prosjektets budskap for å få frem viktig budskap.

De resterende reddede grønnsakene kommer til god nytte hos kommunens matbaker.

## Through gleaning can...

### What?

The poster explains more in detail a selection of challenges and benefits of introducing gleaning in Norway. The format of this poster is A3 landscape.

### Background

Gleaning affects many aspects of society, such as poverty, food waste, social issues, and the imbalance of the food system. This semester we have discovered a lot of important information we believe more people should learn. Therefore, we found these seven benefits appropriate to convey so that the possible initiators can see how they can contribute to society. The seven steps bases on our insight, and we have tried to select facts within all the aspects mentioned above.

### Audience and recipients

This poster is made mainly for the receivers of the starter kit, to motivate and inspire them to arrange a gleaning pilot. Nevertheless, this poster or parts of the content can be a tool for getting sponsors or collaborations with other stakeholders.

### Purpose

By conveying challenges in today's society and the benefits of introducing gleaning in Norway, we believe the recipients can get a better understanding and see the importance of implementing gleaning in Norway. Both as a pilot and to towards achieving gleaning on long terms.

### How to use?

The poster will probably work best digitally due to a lot of text. Du to a lot of text, it might not work that well physically, targeting consumers.



# Guide to a gleaning pilot

## What?

This guide aims to explain how to arrange a gleaning pilot in Trøndelag. The format of this guide is A4, and it consists of a front-page introducing the guide, following by a page illustrating all of the eight steps in the guide. The following eight pages explain each step in detail, and finally, a future scenario concludes the guide.

## Background

As earlier mention, we can not arrange a gleaning ourselves during the thesis, as harvesting occurs later on. Therefore, we needed to find an alternative way to create value and make it easier for someone else to arrange a gleaning pilot. A guide enables present our ideas, recommendations, and guidelines for the pilot.

## Audience and recipients

The receiver of this guide will be the potential initiators. Now, it may look like this will be NBU and a project group they put together. In addition, stakeholders who have shown extra interest in the project, such as Matvett and Matsentralen, will also like to receive the guide.



# GUIDE TIL GLINING-PILOT

## Glining på dagsorden

Denne piloten har som mål å sette Glining og relaterte temaer på dagsorden i Norge. Det å dra på åkeren for å redde og utnytte uønskede grønnsaker til gode formål, kan gi mange positive ringvirkninger, både på lang og kort sikt. Blant annet kan glining føre til økt kunnskap og fokus på små grønnsaker, matsvinn og sette fokus på bondens viktige arbeid som ligger bak maten vi spiser. For at glining skal bli en velkjent og jevnlig aktivitet i Norge må man starte et sted og det kan derfor være hensiktsmessig å teste gjennom en glining-pilot. Gjennom å arrangere denne piloten kan konseptet nå ut til folket og få oppmerksomhet.

Anbefalinger og retningslinjer i denne guiden er et resultat av blant annet brukerinnsett (gjennom workshops, spørreundersøkelser og intervjuer) fra engasjerte, pensjonister og studenter. I tillegg ligger det innsiktsarbeid på relevante temaer og inspirasjon fra gleaning-programmer i andre land til grunn for denne guiden. Den tar for seg åtte steg til hvordan å gjennomføre en glining-pilot i Trøndelag. Videre avsluttes guiden med forslag til hvordan glining kan fungere på lang sikt. Hvordan ser fremtiden til glining ut etter endt pilot?

# Hvordan arrangere glining?

## 1. Bli Kjent

Gjør deg kjent med lokale forhold i Trøndelag.

## 2. Opprett Samarbeid

Opprett samarbeidspartnere og skaff finansiell støtte for å kunne gjennomføre en glining-pilot i Trøndelag.

## 3. Kontakt Bønder

Finn en bonde som ønsker å ta imot frivillige på gården sin og bidra i glining-piloten.

## 4. Rekrutter Frivillige

Rekrutter i frivillige med et ønske om å bidra gjennom glining.

## 5. Transport

Finn ut hvordan både grønnsakene og de frivillige kan fraktes til og fra gården.

## 6. Mottakere

Kontakt lokale mottakere som veldedighetsorganisasjoner og Matsentralen for å donere grønnsakene.

## 7. Promotering

Spre ordet og promoter glining for å øke oppmerksomheten og sette glining på dagsordenen i Norge.

## 8. Stemning

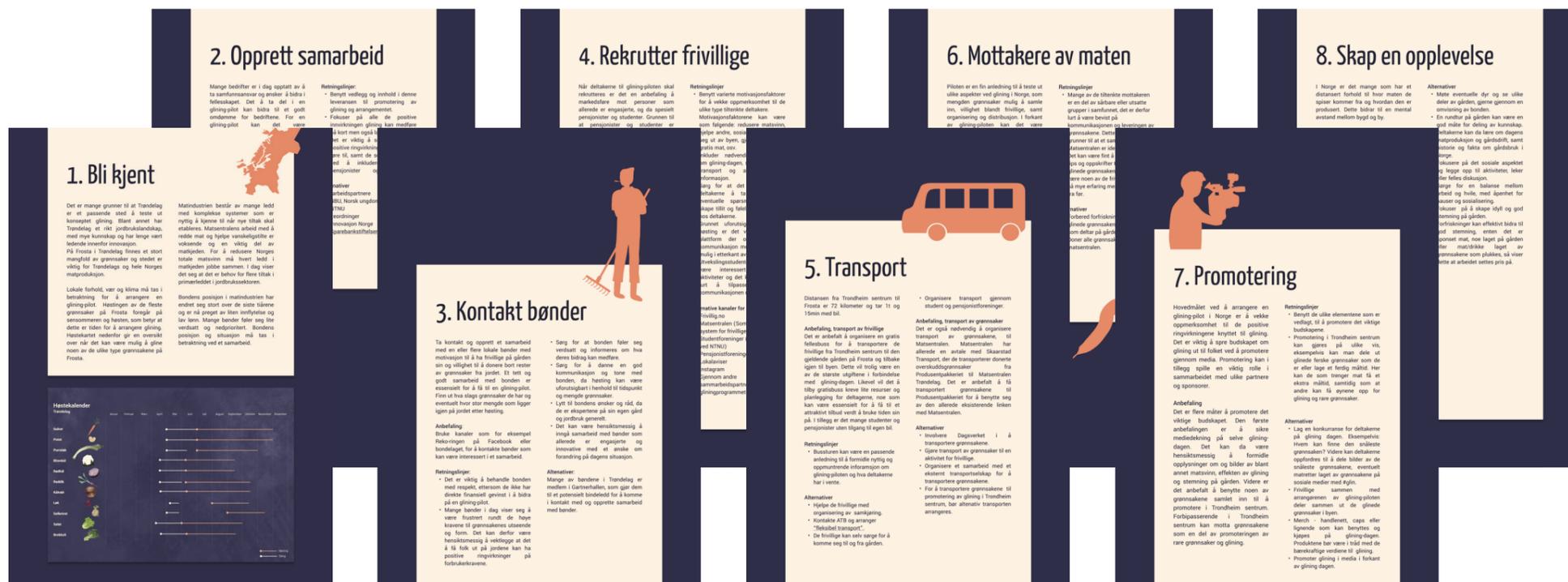
Sørg for at deltakerne opplever god stemning og trivsel på glining-dagen.

## Purpose

The purpose of this guide is to share insight, knowledge, and ideas we have gained regarding arranging and implementing gleaning. At the same time, we want to make it as easy as possible for a potential initiator to take action by sharing our thoughts and ideas.

## How to use?

We will digitally send the guide to potential initiators, but it can either be used digitally or printed as a physical booklet.



# Branding

## What?

This section of the result consists of items and elements of how gleaning can be promoted, established, and branded. There are merch items and graphical elements possible to use for making a brand around "Glin".

## Background

With a desire to design a holistic concept for the gleaning pilot, we have used design to create examples of how "Glin" can be promoted and branded. Additionally, this can make it easier for potential initiators to accomplish the pilot. The branding has also been inspired through the project when we have gotten ideas for how to make gleaning a financially independent organization.

## Audience and recipients

The branding content is mainly intended for receivers of the starter kit to strengthen the concept through branding. Nevertheless, the content applies for further usage of various audiences, for instance, volunteers.

## Purpose

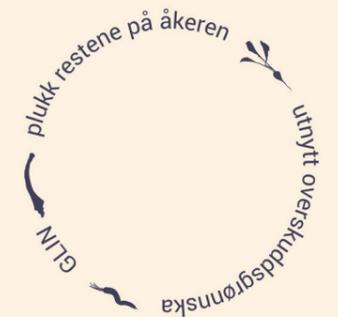
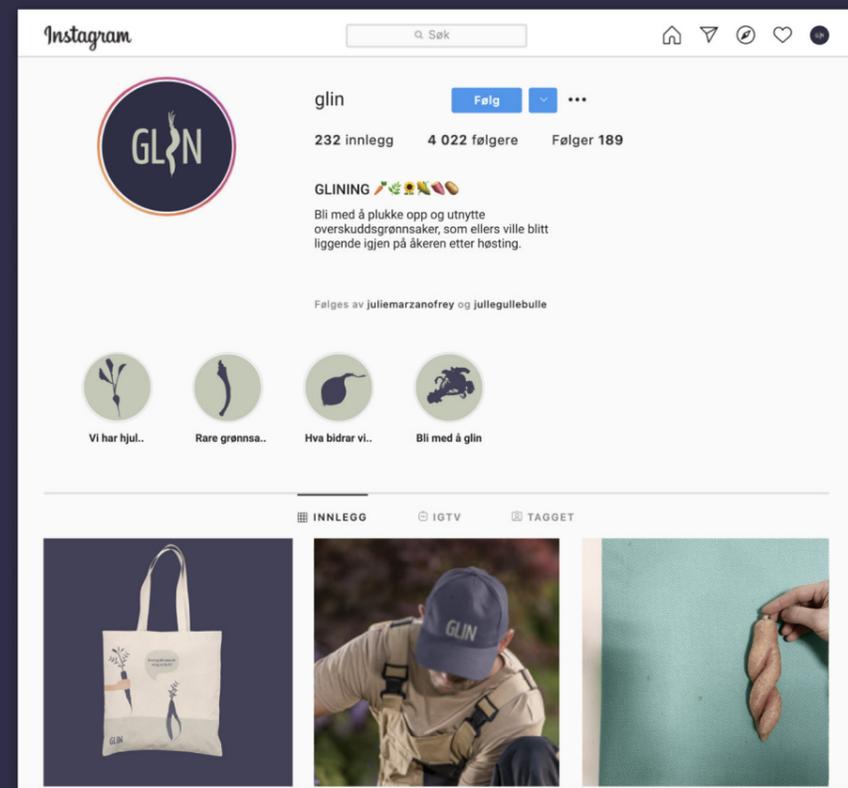
The purpose is to provide specific suggestions of branding items and elements that recipients can further use and be inspired of. In this way, the branding process can be more holistic and in line with the concept.

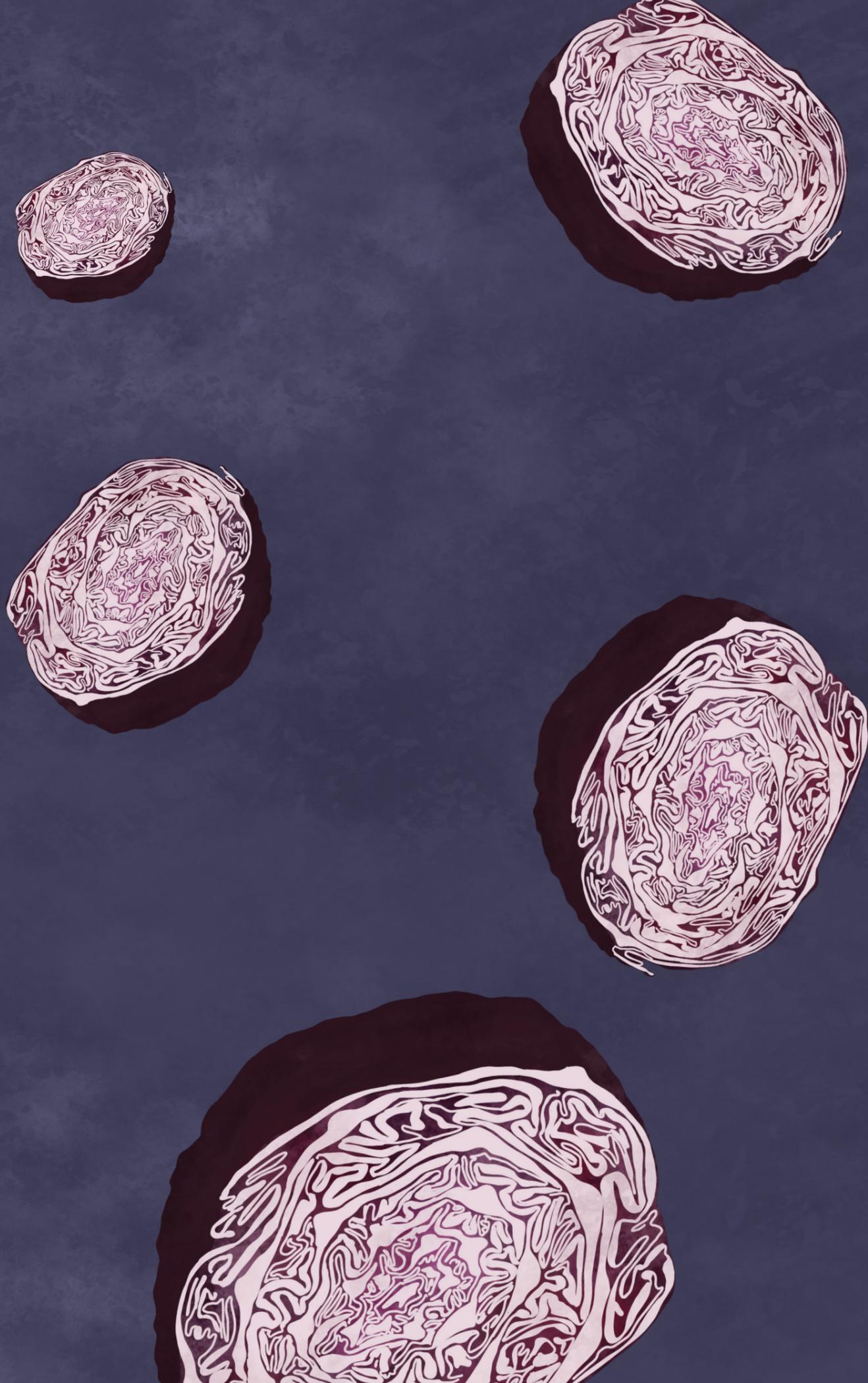
## How to use?

The branding elements and items vary in purpose and area of usage. Graphical elements such as logos aim to be used on desirable platforms and arenas in branding and advertising. The customized bag and cap are intended for sale at activities related to gleaning and at the gleaning day. Doing so can promote "Glin" and can be part of financing future gleaning programs. Both the bag and the cap can be useful for the participants during the gleaning day, bags for bringing home crops, and caps for protection on a sunny day.

# BRANDING

Denne siden inneholder elementer og eksempler på hvordan "GLIN" kan presenteres i Norge. De fysiske elementene er tiltenkt for salg i tilknytning til gleaning-aktiviteter. De grafiske eksemplene kan brukes som en del av branding og grafisk profil.





# Evaluation

*In this final section of the thesis, we look forward and reflect on the future of "Glin". Then, we take one step back to evaluate and discuss the project, looking at the approach, the user involvement, and the result and testing.*

|                  |      |
|------------------|------|
| Content:         |      |
| Future of "Glin" | 193. |
| Discussion       | 196. |

## FUTURE OF “GLIN”

In this section, we assume that someone is willing to take gleaning further and conducts a pilot. In that case, we have thoughts, suggestions, ideas, and wishes for what happens next.

### What happens after the due date?

After delivering this master's thesis, we hope that our documents can be valuable for initiators and stakeholders. In addition, that the initiators will follow our guidelines and use our designs in the planning and implementation of the gleaning pilot. It will be beneficial if they see the value in our user insights and broad understanding of perspectives and use the elements we have designed. Most of all, we hope to see a gleaning pilot during 2021, even through media or by being present. That does not seem impossible, but regardless we hope that we have inspired others and conveyed the concept of gleaning.

### What to consider when implementing a pilot?

There are some key factors to consider for succeeding in implementing gleaning in Norway. These factors need to be tested, by arranging multiple gleaning pilots. Doing so can help to figure out if the outcome of gleaning has a total higher value to society than the resources required to arrange a gleaning. We have been investigating the number of available crops in fields and the willingness and feasibility of volunteers and farmers. Nevertheless, factors are unpredictable and necessary to test in practice. Below are some thoughts regarding approaching the testing and what to consider for evaluating and improving the pilot.

Firstly, it is essential to test the pilot by getting feedback from the people involved. This can be achieved in various ways, such as through dialogues, evaluation sheets, questionnaires, summarizing meetings, or deliberate observation. By listening to volunteers, one can determine the participants' satisfaction, their learning outcomes, predictability, engagement and identify advantages and disadvantages with the current gleaning day. Additionally, map their motivation for participating again and whether or not they would recommend gleaning to others. Furthermore, receiving feedback from the participants can indicate

the degree of social advantages, as personal benefits matter.

It is also beneficial to receive feedback from the farmers, and listening to their advice and desires will be crucial. It is essential to make sure the farmer experiences the participation as valuable and positive. The testing can also determine to what extent the farmer needs to be involved in the gleaning program. As mentioned earlier, Matsentralen is dependent on a sufficient number of crops to increase engagement and involvement in gleaning, in a long-term perspective. Therefore, regular communication with Matsentralen and reporting the number of gleaned crops and resources required can indicate the impact of gleaning. Finally, it will be relevant to evaluate the interest and attention gleaning obtains in media and among stakeholders when implementing the gleaning pilot. If gleaning is well received among the people, the pilot can expand and continue improving.

### If the pilot succeeds, what is next?

Although the goal of our project is to fulfill a gleaning pilot, we have envisioned something more than the goal since the beginning. The vision is as follows:

“Reduce food waste and give more people access to nutritious food in a long-term perspective, through introducing gleaning in Norway.

Besides, people's attitudes and values related to food and farmer's work can be improved, which can have positive ripple effects to make even bigger changes in today's food industry. In addition, individual outcomes in participating may contribute positively at a societal level.”

In other words, our vision includes an aim for the gleaning to continue and escalate to become a future continuous activity. For that matter, we have some thoughts and ideas considering the future of gleaning in Norway. Most importantly, the gleaning pilot should transform into an independent non-profit organization providing regular gleanings and incomes. It will be appropriate to create a separate income in addition to financial supports, and for that, we have some

suggestions. The suggestions consist of additional products, both for gaining income and promoting “Glin” as a brand. The additional products can be bags or caps, as introduced in the result section, or food products made from the surplus gleaned crops. The products could have been jam, fermented vegetables, juice, or soups. We believe the food products would

have been attractive for people due to today's increased focus on sustainability. In addition, we have created some graphical elements with the purpose of branding, promoting, and certification for those who have contributed or supported gleaning. Certification can be beneficial for companies to verify and highlight their contribution.



## How can gleaning contribute to system changes?

Gleaning in itself only focuses on symptoms and the effects of a problematic food system. Nevertheless, we believe gleaning can contribute to positive systemic changes due to many ripple effects within the food system and the surroundings.

Today, the consumer, society, the food industry, and imports are responsible for high-quality requirements, leading to food waste throughout the food value chain. Introducing gleaning in Norway can contribute to a closer relationship between the city and the countryside, both the mental and physical distances. Said in other words, letting people access the fields can cause long-lasting effects. Among other things, these people get to see large amounts of food waste, learn about food production and its origin, the farmer's important work, and people might get a better understanding of the problematic industry. Through media coverage, the focus and attention to these topics can increase socially and make people more aware of current challenges. Hopefully, in the long term, people will not only buy perfect-looking vegetables, and consumer requirements may decrease. In addition, this increased focus and awareness may lead to reducing the high requirements throughout the whole food industry. These positive ripple effects can contribute to reducing food waste in all parts of the food value chain, and little by little, contribute to a more sustainable food system.

As mentioned in the insight phase of this project, gleaning aims to reduce food waste in the primary sector of the food value chain. If this gleaning pilot contributes to just this, more crops will stay within the loop, which again contributes to the total circular economy

In addition to the ripple effects against possible system changes, gleaning can contribute to positive lasting changes for individuals and society.

For individuals, gleaning can be a valuable social experience. New experiences and social gatherings can have a considerable impact on the daily lives of many people. Gleaning as a new arena of socialization can be positive for individuals in various ways and degrees, and at best, can help people out of loneliness. Hopefully, new experiences and learnings can affect

individuals, not only concerning food waste but also in other areas of life, by inspiring and motivating more sustainable thinking.

To facilitate an arena where people potentially can experience personal benefits and increased knowledge can lead to societal benefits in various ways. Increased focus on sustainability in general, through individual learnings and awareness, can benefit society both economically and environmentally. Additionally, activating people who are otherwise inactive or left out of society can potentially increase people's mental health. That can, in turn, have positive ripple effects on society. Lastly, giving more people access to free, nutritious food can likely increase public health and help more people out of poverty. These positive impacts evaluated are just some of the many possible positive ripple effects connected to gleaning.

There may be limits to the pilot's effects. However, the arguments and the positive ripple effects mentioned is what the non-profit organizations and initiators work to achieve. Whether they achieve these broad changes is uncertain, but in any case, the guide will inspire and influence in different ways and to different degrees.

## DISCUSSION

### Approach

As already mentioned, we started this project with an open mind and broad approach. Even though we were introduced to gleaning from the beginning, we wanted to explore if this was the best way of redesigning collaborations in Trøndelag. From a critical perspective, we could have decided to focus the task on gleaning from earlier on, which would most likely have given us more time to complete gleaning as a concept. Nevertheless, we did not have enough knowledge regarding gleaning and necessary topics, to ensure good decisions. Therefore, in line with design principles, we explored root causes and problems. We believe this holistic approach and understanding have given us crucial perspectives from all parties involved and enabled us to design a solution where relevant parties are considered. The inputs through talking to stakeholders have given us valuable insight otherwise hard to obtain. Nevertheless, it can be discussed, whether all the conversations have been equally relevant. Still, we believe that all people have been advantageous to involve and provided us new helpful impressions and knowledge. Several times during this project, we have discovered surprising facts about food waste, hunger, and problems regarding the food system, that we think is vital to convey to others. These learnings have directed and affected the outcome of this thesis to a large extent. Other positive outcomes gained from the broad and comprehensive insight phase have also been helpful when introducing gleaning, such as the harvesting calendar and the carrot journey.

It has been challenging and exciting to work in a new field with a design approach. We have learned a lot about many exciting topics and gained valuable experiences within the design field. We believe we have achieved personal growth as designers during this project, as we have explored ways of approaching an unknown wicked problem using new methods and tools. Our explorative approach has helped us understand the whole system and the perspectives and interconnections of stakeholders involved. This in-depth understanding and realization of problems have emphasized the importance of achieving changes in today's food industry. In addition, it has supported

the benefits of increasing the awareness around food waste among the people, through introducing gleaning. Since we chose an exploratory task, it has sometimes been challenging to make choices and decide on sub-goals. Therefore, a clear plan, structure, and recurring evaluations of the process have helped and forced us to move forward and take decisions.

### User involvement

Involving users is essential for creating a gleaning activity where volunteers are willing to participate. Whether the process of collecting user insight from the various user groups has been entirely realistic and successful, can be evaluated and discussed. Firstly, we can question whether the people we have talked to represent the intended user groups properly or fully. In our workshops, we included 2-5 users within each of the user groups. Nevertheless, we supplemented this method with other methods such as surveys and conversations with, among others, Matsentralen. That has supported the user insight and strengthened our findings. In addition, the most essential desires and needs from each of the user groups turned out to be quite similar, which made it easier to ensure good solutions for everyone involved.

Another aspect worth discussing is that the user groups have never heard about or taken part in gleaning. Therefore we have focused on ensuring that the participants have understood the concept before meetings, surveys and workshops. We have ensured that they are able to visualize and relate to a future gleaning day through storytelling and careful explanations of the term. We can evaluate to what extent the users have perceived gleaning in the same way as us, and if this is not true, their answer might be based on misunderstandings. Still, we have planned all the workshops, surveys, and interviews to get the most out of it. Consequently, we feel satisfied with the insight.

This process of using tools and principles from co-design in the meeting with users, stakeholders, and experts involved has been a beneficial and motivating

experience. We have been listening and considering their perspectives and believe that this trusting, respectful and open atmosphere, which we worked to achieve, has contributed to honest and genuine reflections and discussions.

The corona situation has affected the interactions with users, but we generally think that the total quality of the insight phase has been just as good. We have talked to virtually all the people we have tried to get in contact with by digital meetings, which might have been easier for them to commit to. On the other hand, we can consider whether meeting physically could be experienced more engaging for all involved.

### Result and testing

The journey of designing the final result has been fun, interactive, and characterized by co-creation and system thinking. As earlier mentioned, gleaning as an activity is challenging to test at this time of year. Therefore, testing the concepts and result in alternative ways has been crucial. We have managed to test the concept and results by listening to and observing reactions to the recipient's wishes and the consumer's perceptions. This has ensured that the result is perceived correctly, understood and that it is valuable. All in all, we are satisfied with the response we have received, both the constructive and the positive feedback.

When evaluating what could have been done differently, we consider if we could have been more specific throughout the concept. Would it be more convenient for the recipients if we conveyed one clear concept, rather than adding alternatives and examples during the pilot? For instance, transport and farmer involvement could be more specified. Nevertheless, a disadvantage of doing so would be the ethical aspect of creating agreements without implementation security. In addition, we have the impression that the stakeholders and initiators have existing contact networks, good collaborations, and more experiences within this field. Due to the inability to test the pilot in real life, we chose not to specify the result even further. Further specifications could probably lead to too many assumptions, which conflict with our way of thinking as designers.

When testing the results, stakeholders and possible initiators have shown interest in using some of the

posters and parts of the delivery, regardless, of whether gleaning occurs or not. Initially, we are positive about them doing so, but it may lead to some challenges. Initially, we are positive about them doing so, but it may lead to some challenges. For instance, cases where posters are used in other settings parallel to the pilot, can potentially be confusing or perhaps weaken "Glin" as a brand. On the other hand, the main goal of the stakeholders involved is a more sustainable and just future. Therefore, hopefully, this rather leads to collaborations to achieve a common goal.

### Conclusion

The purpose of this project has been to reduce agricultural waste and urban needs through redesigning relationships. And later in the process, we determined the requirements and goals presented in the design brief. In short, we focused our project on a gleaning pilot and aimed to motivate possible initiators. Redesigning relationships by proposing this pilot can be a starting point towards reducing agricultural waste and urban needs.

Reducing food waste is done directly through gleaning, as surplus crops get saved from rotten in fields. In addition, gleaning can also indirectly reduce food waste through the possible ripple effects of creating awareness and increase knowledge.

The starter kit is inspiring and attractive, as proven through testing and co-design with stakeholders. The comprehensive solution is designed for both recipients and all stakeholders involved and aim to create awareness around relevant topics, which has been a significant part of our goal.

In conclusion, we are well satisfied with the process, cooperation, and result and hope one day that gleaning occurs.



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## APPENDIX

This section includes the instagram survey, with more details

### Appendix-A, instagram survey

#### Questions

#### INSTAGRAM QUESTIONNAIRES

25.january.2021

#### Questions

#masterprosjekt :) HVOR MYE AV MATEN PRODUSERT PÅ JORDA KASTES?

- A) 7 %
- B) 18 %
- C) 33 %
- D) 48 %

#masterprosjekt HVOR MANGE KILO MAT KASTER OLA NORDMANN HVERT ÅR?

- A) 12 kg
- B) 43 kg
- C) 22 kg

HVOR MANGE AV DISSE NÅR ALDRI BUTIKKHYLLA?

- A) 18 %
- B) 6 %
- C) 10 %

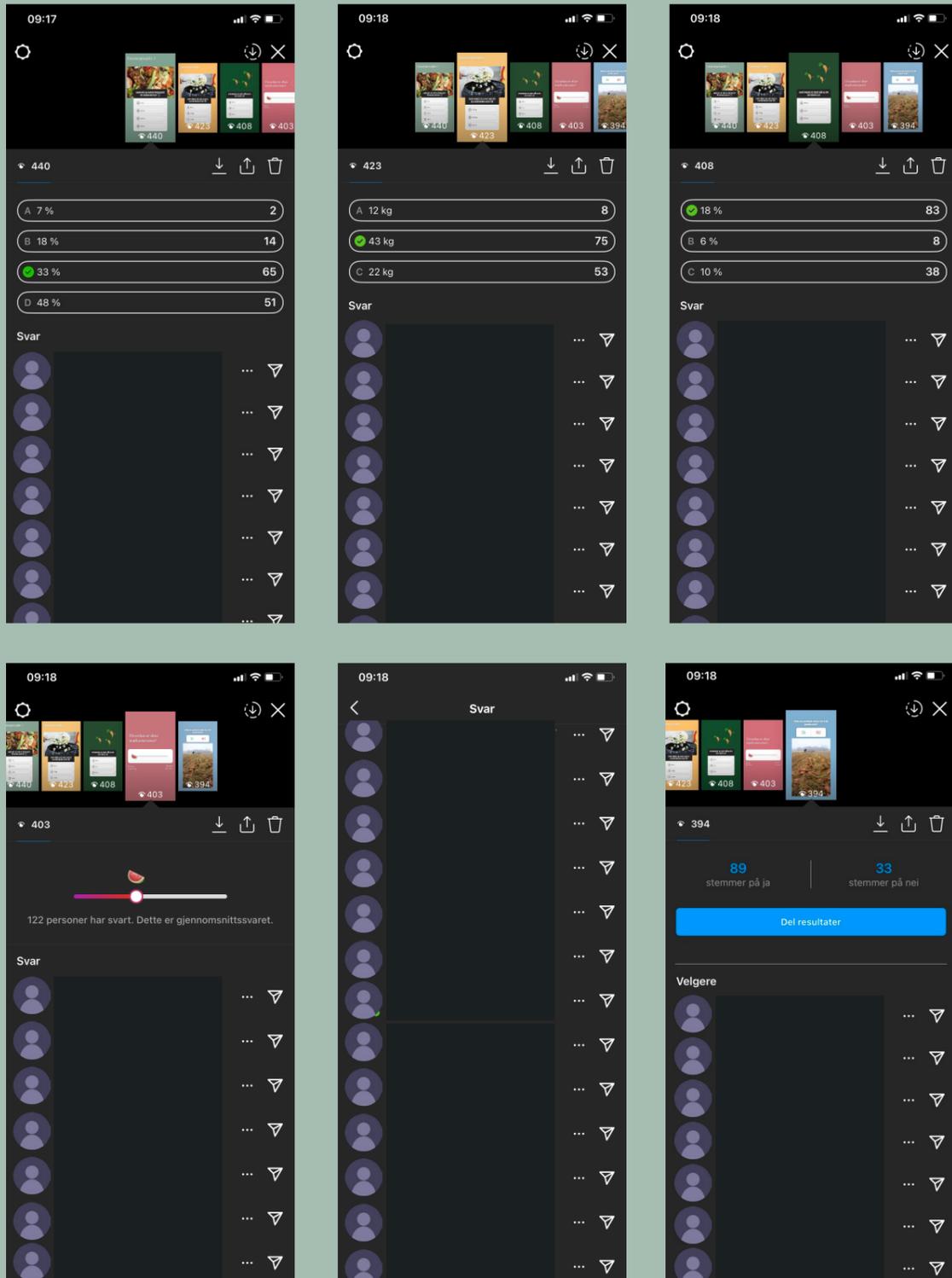
Hvordan er dine matkastevaner?

Kaster ingenting Kaster for mye

Vil du plukket dette for å få gratis mat?

JA NEI

## ANSWERS KRISTINE



## ANSWERS - Kristine

Are there any correlation between being knowledged and how they act upon food?

User one:

Man, 24, student, finance, engineer

- Q1: Answer: A, 7 %. wrong.
- Q2: Answer: A, 12 kg, wrong. thought we where better, or didnt know it was this bad?
- Q3: Answer: A, 18 %, Correct.
- Q4: Answer: 100% full!!!
- Q5: Answer: no!

User two:

Man, 26, chef, surfer

- Q1: Answer: D, 48 %. wrong. Thoght it was worse, or at least know its bad. (or guess the highest because its usually right;))
- Q2: Answer: B, 43 kg, correct.
- Q3: Answer: A, 18 %, Correct.
- Q4: Answer: 0% nothing! :)
- Q5: Answer: yes

User three:

Women, 29, nurse, sporty, mom.

- Q1: Answer: C, 33 %, correct
- Q2: Answer: B, 22 kg, wrong
- Q3: Answer: A, 18 %, correct
- Q4: Answer: under the middle
- Q5: Answer: yes

User four:

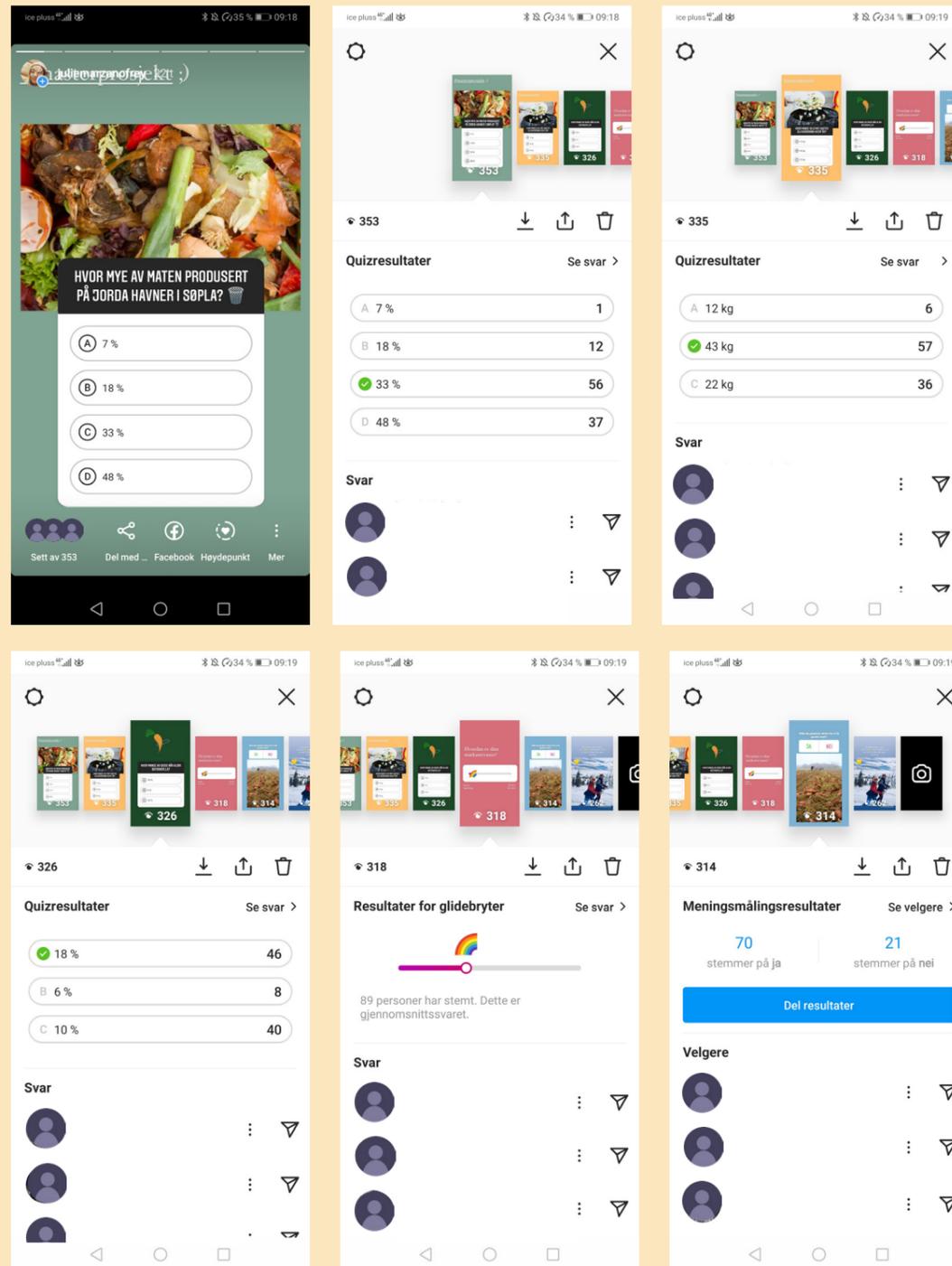
Man, 30, nurse, sporty.

- Q1: Answer: C, 33 %, correct
- Q2: Answer: B, 43 %, correct
- Q3: Answer: A, 18 %, correct
- Q4: Answer: Nothing!!
- Q5: Answer: yes

Error source:

People might answer the highest number, because it is typical these kinds of tests. Maybe some people dont try to answer correct beacuae they just want to click ahead the story, but they are too curious to not check the answer? - At least they might learn!

ANSWERS - Julie



ANSWERS - Julie

- Is there a correlation of being knowledge within foodwaste and the actions and values of the users?

- Randomly investigation tree users to see if there is an correlation:

User\_1:

Girl, 23, student, active, enjoy nature:

- Q1: Answer: D, 48%. Wrong, thought that more food is wasted than the reality.
- Q2: Answer: B, 43 %. Correct
- Q3: Answer: A, 18 %. Correct
- Q4: Answer: Slightly under the average.
- Q5: Answer: Yes

It seems like she knows the problem and believe that a lot of food is being wasted. She waste some food herself and are willing to glean it she had the opportunity.

User\_2:

Girl, 22, student, enjoy reading, games, socializing, :

- Q1: Answer: D, 48%. Wrong, thought that more food is wasted than the reality.
- Q2: Answer: B, 43 %. Correct
- Q3: Answer: A, 18 %. Correct
- Q4: Answer: Above the average.
- Q5: Answer: No.

It seems like she knows the problem of food waste and believe that a lot of food is being wasted, she thought more food was wasted than the reality. She admits that she waste too much food but are not willing to glean

User\_3:

Girl, 45, work with food science, sporty, mother of two :

- Q1: Answer: D, 33%. Correct
- Q2: Answer: B, 43 %. Correct
- Q3: Answer: A, 10 %. Wrong
- Q4: Answer: Average.
- Q5: Answer: yes.

She have a knowledge, but she admits that she waste too much food.

# Appendix-B, Result in English

Advertising posters



# GLIN

GLINING is to collect and utilize surplus vegetables, which otherwise would be left in the field after harvesting.



Volunteers glean weird vegetables in the field



The vegetables are donated to non-profit organizations, but volunteers can also bring vegetables home



The vegetables are utilized and given to people in need for food



Increased focus on food waste, current quality requirements and the farmer's important work

# GLEANNING

can benefit the society



## Who participates at the glining-day?

**JOAR, 75**

Joar lived his first 8 years on a farm outside of Trondheim. Today, Joar is retired, lives alone, and enjoys socializing. He signed up for the glining-pilot and appreciates the free shuttle bus, as he dislikes using his car during longer distances. Joar thinks that farmers get too little credit in today's society. He looks forward to being at a farm.

**The value of including**

Through activation and socialization of this otherwise little included group, valuable labor can be utilized, at the same time as retirees may feel that useful. The benefit of going so can be high, both for society, but also for the individuals.

**Motivation**

- Be social with new people
- Share experiences
- Get inspired and get to know the "young"
- Get physical during useful work
- Get a break from everyday life

**IDA, 23**

Ida is a committed student in Trondheim, originally from Oslo. Ida and her flatmates are concerned with saving food. Sometimes they go dumpster diving as they want to save food from being wasted and save money. Ida and her flatmates were introduced to glining at school and were interested in participating. She looks forward to getting out of town, which is usually difficult without a car.

**The value of including**

Ida and other student's attitudes related to food and agriculture may possibly change for the better through glining. Additionally, students may contribute to a great extent, at the same time as free food is greatly appreciated.

**Motivation**

- Get free food
- Save food
- Learn about agriculture
- Help people in need
- variety from everyday life as a student

Kristine Hoff & Julie Frey  
Master's thesis 2021  
Industriell design, NTNU

## Scenario from the glining-pilot

Joar and Ida takes part in the glining pilot, which is illustrated through significant moments from a scenario of the intended day

## Challenges and benefits

10% of the population in Norway live beneath the relative poverty line.

Farmers have little power in today's food industry, despite their important work in making Norway more self-sufficient.

Sometimes vegetables are left in the field, harvested because they do not meet the stores' high quality requirements according to appearance.

Today each person in Norway today throws away 43 kg of eatable food yearly.

Consumers and the food industry today puts extremely high demands on the appearance of vegetables.

Retirees and students are groups of people among the most lonely in society.

1/3 of the all food in the world intended to be eaten by humans is today thrown away, at the same time, 8.9% of the earth's population are hungry.

# THROUGH GLEANING CAN ...

people in need get a greater access of fresh vegetables and potentially greater financial freedom

people open their eyes to the farmer's work and gain an understanding of their frustrations and challenges in today's food industry

positive ripple effects occurs and affect the food industry and its high demands

people's views and attitudes towards food waste and the value of food are changing

one with their own eyes see weird vegetables "no one wants"

socialization and activation are offered through a new and free arena

organizations save large amounts of food from the fields, as Espigoladors have saved 1380 tons of food since 2014

# GUIDE TO A GLENNING-PILOT

## Gleaning on the agenda

This pilot aims to put gleaning and related topics on the agenda in Norway. Collecting and utilize unwanted crops for good purposes can have many positive ripple effects, both in the long and short term. Among other things, gleaning can lead to increased knowledge and focus on weird vegetables and food waste, highlights farmer's work and link city and countryside closely together. To achieve regular gleaning in Norway, you have to start somewhere, the concept must reach out to the people and get attention. A dreaming scenario for this pilot is that gleaning one day can be attractive and familiar to people.

Recommendations and guidelines in this guide are a result of, among other things, user insights (through workshops, surveys and interviews) from committed people, pensioners and students. In addition, this guide bases on insight work on relevant topics and inspiration from gleaning-programs in other countries. It covers eight steps on how to implement a pilot in Trøndelag. Furthermore, the guide concludes with suggestions for how gleaning can be organized and arranged in the long run. What does the future of gleaning look like after the pilot?

## How to arrange gleaning?

### 1. Get Familiar

Get to know local conditions in Trøndelag.

### 3. Contact Farmers

Find a farmer who welcomes volunteers on his farm and contribute to the gleaning pilot.

### 5. Transportation

Find out how both the vegetables and the volunteers can be transported to the farm and back.

### 7. Promoting

Spread the word and promote gleaning to increase attention and put gleaning on the agenda in Norway.

### 2. Create Collaborations

Create partners and obtain financial support to arrange a gleaning pilot in Trøndelag.

### 4. Recruit Volunteers

Find volunteers who are keen to glean.

### 6. Beneficiaries

Contact local recipients such as charities and Matsentralen to donate the vegetables.

### 8. Atmosphere

Make sure that the participants experience a good atmosphere and well-being on the gleaning day.

## Future From pilot to future organization

The goal of arranging a gleaning pilot is the desire to test the potential for introducing gleaning in the long term in Norway. This can indicate how much impact gleaning can have on the environment, society and the food industry. In other countries, gleaning of different kinds has proven to provoke value, on the environment, utilization of food and for those in need of food. To develop the pilot for a future gleaning activity, it is useful to get feedback from all parties involved, so that gleaning can be implemented in the best possible way over time. It is recommended to document success factors and pitfalls from the gleaning pilot. Examples of what can be important to document are measures of vegetables available in the field, what creates engagement around gleaning, what makes an impression on the participants, how did the transport of both volunteers and the vegetables work and what worked in collaboration with the farmer?

So what separates the future vision of gleaning from this pilot? The gleaning program of the future will have other funding requirements. In the long run, funds will be needed to cover necessary costs. The funds can be earned in various ways:

- Donation from private individuals, organizations or companies. This can be rewarded with reputation and proof of participation through, for example, a logo or stamp.
- Various support schemes
- Sales of additional products, such as shopping nets, caps or products made from vegetables.
- Parallel activities.

It is also desirable that the gleaning of the future should include more user groups and more farmers. In addition, there are greater demands on the recruitment process and continuity and organization concerning transport.

Carrying out a gleaning pilot will have value, regardless of the outcome. Among other things, the pilot will shed light on the farmer's work, highlight Matsentralens important work and focus on food waste and the high-quality requirements for vegetables. In addition, the participants in the gleaning pilot will gain direct value in the form of activation, new knowledge and socialization. Any changes in attitudes can help to create positive changes in today's society and the food industry. Although gleaning is desirable and important now, there is still a hope that one day we will not need to collect unwanted vegetables from the fields.

## 2. Create collaboration

Many companies today are concerned with taking social responsibility and want to contribute to the community. Taking part in a gleaning-pilot can contribute to a good reputation for companies. It may be appropriate to

- Guidelines:**
- Use attachments and content in this delivery to promote gleaning and the event.
  - Focus on all the positive effects gleaning can have in the short but also long term.

Highlight the positive effects of gleaning on the social benefits, desires and needs of the community. Use the social benefits, desires and needs of the community. Use the social benefits, desires and needs of the community.

## 1. Get to know the basics

There are many reasons why Trøndelag is a suitable place to test the concept of gleaning. Among other things, Trøndelag has a diverse agricultural landscape, with a lot of knowledge and has long been in front when it comes to innovation. At Frostås in Trøndelag, there is a large diversity of vegetables, and the place is essential for Trøndelag's and Norway's food production.

Local conditions, weather and climate, must be considered when arranging a gleaning pilot. Most of the vegetables in Frostås are harvested in late summer and autumn, which means that this is the time to arrange gleaning. The harvesting map below gives an overview of times to sow and harvest the various crops at Frostås.



The food industry consists of interconnections of complex systems essential to acknowledge when designing a pilot. Matsentralens work of saving food and help beneficiaries is growing and is important to the food value chain. To reduce Norway's total food waste, each link in the food chain must work together. There is a need for more initiatives at the primary level in the agricultural sector.

The farmer's position in the food industry has changed over the last few years and can now be characterized by little influence and low wages. Many farmers feel underappreciated and downgraded. The farmer's position and situation must be taken into account in case of collaboration.

## 4. Recruit volunteers

When participants of the gleaning pilot are to be recruited, it is a recommendation to target people already engaged, especially retirees and students. The reason why retirees and students are suitable for gleaning is

- Retningslinjer**
- Use varied motivational factors to draw attention to the different types of intended participants.
  - The motivational factors can be as follows: reduce food waste, help others, socialize, or something new.

It is necessary to include necessary information about the gleaning pilot, such as dates, transport and practical information. Make sure that participants get the information they need to participate. Use the information they need to participate.

## 3. Contact farmers

Get in touch and establish a partnership with one or more local farmers with motivation to have volunteers on their farm and willingness to donate surplus crops from the field. Close and good collaboration with the farmer is essential to arrange a gleaning pilot. Find out what kind of vegetables they have and possibly how much that is usually left on the field after harvest.

**Recommendation:** Use channels such as Facebook or the "bondelaget", to reach farmers who may be interested in a collaboration.

- Guidelines:**
- It is essential to treat the farmers with respect, as they have no direct financial gain from contributing to a gleaning pilot.
  - Many farmers today appear to be frustrated by the high quality demands due to the appearance and shape of vegetables. Therefore, it may be appropriate to emphasize that getting people in the fields can possibly have positive ripple effects on consumer requirements, in the long term.

Make sure the farmer feels valued and informed about what their contribution may entail.

- Make sure to have good and friendly communication with the farmer, as harvesting can be unpredictable depending on the time and amount of vegetables available.
- Listen to the farmer's wishes and advice, as they are the experts on their farm and agriculture in general.
- It may be appropriate to establish cooperation with farmers who are already engaged and innovative, open and a desire for changes.

**Options:** Many of the farmers in Trøndelag are members of Gårdehøllene, which makes them a potential link to get in touch with and establish cooperations with farmers.

## 6. Beneficiaries

The pilot is a great opportunity to test different aspects of gleaning in Norway, such as the number of vegetables possible to collect, willingness among volunteers, as well as organization and distribution. Ahead of the gleaning pilot,

- Guidelines:**
- Many of the intended recipients are part of vulnerable or vulnerable groups in society, so it is wise to be proven in the communication and delivery of the vegetables.

It is one of many collaborations with the intended recipients. It can be nice to offer recipes for using vegetables, as many volunteers do not have experience with the vegetables. Prepare refreshments for the gleaning volunteers participating. Invite all the vegetables to the food centre.

## 5. Transportation

The distance from Trondheim city centre to Frostås is 72 kilometres and takes 1 hour and 15 minutes by car.

**Recommendation, transport of vegetables:** It is recommended to organize a free public bus to transport the volunteers from Trondheim city centre to the current farm on Frostås and back to the city. This will probably be one of the biggest expenses associated with the gleaning day. Nevertheless, offering a free bus will require little resources and planning for the participants, which can be essential to make an attractive pilot that is worthy, in addition, there are many students and pensioners without access to a car.

**Guidelines:**

- The bus ride can be a suitable opportunity to convey encouraging and useful information about the gleaning pilot and what the participants can expect.

- Options:**
- Assist the volunteers with the organization of carpooling.
  - Contact AFB and organizer "flexible transport".
  - The volunteers can make sure to get to and from the farm themselves.

## 8. Atmosphere

In Norway, many people have a distant relationship to where the food they eat comes from and how it is produced. This contributes to a mental distance between city and countryside.

- Options:**
- Meet any animals on the farm and see different parts of the farm, preferably through a tour of the farm.
  - A tour of the farm can be a good way to share knowledge. Participants can then learn about current food production and farming, as well as history and facts about farming in Norway. Focus on the social aspect and fun activities, discussions and gatherings. Ensure a balance between work and rest, with openness to breaks and socialization. Focus on creating an idyllic and a good atmosphere on the farm. Refreshments can effectively contribute to a good atmosphere, whether it is sponsored food, or food/drink made from the vegetables that are collected. This shows that the work is appreciated.

## 7. Promoting

The main goal of arranging a gleaning pilot in Norway is to draw attention to the positive ripple effects associated with gleaning. It is important to spread the message of gleaning to the people by promoting through media. Promotion can also play a major role due to collaboration with various partners and sponsors.

**Recommendation:** There are several ways to promote the messages. The first recommendation is to ensure media coverage on the actual gleaning day. It may then be appropriate to disseminate information about and images of, among other things, food waste, the effect of gleaning and the atmosphere on the farm. Furthermore, it is recommended to use some of the vegetables collected to promote in Trondheim city centre. Passers-by in the centre of Trondheim can receive the vegetables as part of promoting weird vegetables and gleaning.

- Guidelines:**
- Use the various elements that are attached to promote the messages.
  - Promotion in the centre of Trondheim can be done in different ways, for example, you can hand out gleaned fresh vegetables as they are or make a finished meal. Here, those who need food can get an extra meal, while others can open their eyes to gleaning and weed-looking vegetables.

- Options:**
- Create a contest for the participants on the gleaning day. For example: Who can find the most "frog" vegetable? Furthermore, participants can be encouraged to share photos of the most weed-looking vegetable or dishes made at home from the vegetables, and share on social media with #glean.
  - Volunteers together with the initiator of the gleaning pilot hands out the gleaned crops in the city.
  - Merch - shopping nets, caps or similar that can be used and bought on the gleaning day. The products should be in line with the sustainable values of gleaning.
  - Promote gleaning in the media in advance of the gleaning day.

# BRANDING

This page contains elements and examples of how "GLIN" can be presented in Norway. The physical elements are intended for sale in connection with gleaning activities. The graphic examples can be used as part of the branding and graphic profile.

