

Infographic of behaviour change toward circularity in food and clothing

Deliverable D2.1

December 2024

Authors:

Tampere University (TAU):

Martta Vänskä, Nina Mesiranta, Mari Ainasoja, Elina Närvänen, Sonja Sulankivi

Oslo Metropolitan University (OsloMet):

Kirsi Laitala, Harald Throne-Holst

Lund University (LUND):

Emma Samsioe

Collaborating Centre on Sustainable Consumption and Production (CSCP):

Rosalyn Old



Funded by
the European Union

 circularhouseholds.eu

Deliverable Information

Deliverable No.	D2.1
Deliverable Title	Infographic of behaviour change toward circularity in food and clothing
Work Package No.	WP2
Work Package Title	Co-design for advisory services and pilots
Lead Organisation	Tampere University (TAU)
Main author(s)	Martta Vänskä (TAU), Nina Mesiranta (TAU), Mari Ainasoja (TAU), Elina Närvänen (TAU), Sonja Sulankivi (TAU), Kirsi Laitala (OsloMet), Harald Throne-Holst (OsloMet), Emma Samsioe (ULUND), Rosalyn Old (CSCP)
Contributors	Eva Rudolf (CSCP)
Reviewers	Maja Dahlbom (IVL), Annelise de Jong (IVL), Jannus Jaska (ZWEE), Mirell Merirand (ZWEE)
Type	DEC – Websites, patent filings, videos, etc
Dissemination Level	PU – Public
Deliverable Due Date	31/12/2024
Deliverable Date	20/12/2024
Version	Final for submission

CARE project summary

CARE (Circular consumption Activities to tRansform households toward material Efficiency) aims to empower consumer-citizens in European households in the transition to a circular economy (CE). The objective of CARE is to transform a total of 100 households in five European countries (Finland, Norway, Sweden, Germany, and Estonia) to circular model households. To achieve its aim, CARE will further develop, test, and validate two pilots related to two critical material flows: food and clothing. They both have high potential for circularity at the household level.

The CARE pilots will be implemented in five regions – both urban and rural - that are part of the Circular Cities and Regions Initiative (CCRI): Tampere, Asker, Gothenburg, Berlin, and Lääne-Harju. The pilots are based on the practice-theoretical approach, which goes beyond state-of-the-art by focusing on holistic, social, and material aspects of everyday life instead of individualistic and awareness-raising interventions. The pilots will contain both customized, inclusive, and cost-free circular advisory services as well as food and clothing related interventions that focus on making changes in consumption practices. CARE will make a strong contribution towards accelerating fair, inclusive and sustainable consumer-based transition to CE.

Glossary of abbreviations

CSCP	Collaborating Centre on Sustainable Consumption and Production
IVL	IVL Svenska Miljöinstitutet AB
OsloMet	Oslo Metropolitan University
T	Task
TAU	Tampere University
ULUND	Lund University
WP	Work Package
ZWEE	Zero Waste Estonia SA (previously Let's Do It Foundation)

Deliverable Summary

This deliverable presents infographics of behaviour change toward circularity in food and clothing. These infographics summarise the literature review done in WP2 under task T2.1 (Reviewing methods for behavioural change for circular practices). Two informational figures have been designed to explain the key evidence and research gaps from previous research on how to change consumption practices towards circularity at household level in the contexts of food waste reduction and sustainable clothing consumption. In the first section, the deliverable outlines the process of the literature review. In the second part of the deliverable, two infographics will be presented. These infographics will be shared digitally on CARE project website and will be also edited into shorter and more concise versions that will be used to communicate about the project, especially on social media.

Disclaimer

The CARE project is funded by the European Union under Grant Agreement No. 101135141. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

All intellectual property rights are owned by the CARE consortium members and are protected by the applicable laws. Except where otherwise specified, all document contents are: “© CARE project - All rights reserved”. Reproduction is not authorised without prior written agreement.

The commercial use of any information contained in this document may require a license from the owner of that information.

All CARE consortium members are also committed to publish accurate and up to date information and take the greatest care to do so. However, the CARE consortium members cannot accept liability for any inaccuracies or omissions nor do they accept liability for any direct, indirect, special, consequential or other losses or damages of any kind arising out of the use of this information.



Review of behavioural change for circular practices

The first part of this deliverable presents the process of the literature review conducted in WP2 under task T2.1 'Reviewing methods for behavioural change for circular practices' (M1-M12, January 2024 – December 2024).

The review was conducted by eight researchers from four CARE partner institutions (TAU, OsloMet, ULUND and CSCP). The objective of the literature review was to build knowledge from previous research on how to change consumption practices at household level, especially in the contexts of food waste and clothing consumption. Through the literature review, the project gained knowledge on the type of interventions that have been carried out in previous studies and the results of these interventions.

The review begun by running searches in three databases: Academic Search Ultimate (EBSCO), Web of Science, and Scopus. After testing the search terms and strings¹ as well as narrowing the search to peer reviewed publications in English, the first search produced 6.762 articles in total. After removal of duplicates the sample had 2.173 articles relating to food waste and 2.157 articles relating to clothing consumption. The articles were distributed among researchers before the first round of the literature review.

During the first round, the goal was to exclude all irrelevant articles based on the abstract. In this round, the researchers excluded articles that were clearly outside of the project's research field (e.g., engineering, healthcare, medical journals), articles that did not address households or individual consumers, and articles that did not contain empirical data. Only peer-reviewed journal articles were accepted. As a result, 332 articles relating to food waste reduction and 167 articles relating to clothing consumption were included to the next round.

During the second round of exclusion and inclusion, the goal was to detect articles containing studies that include an intervention. The research team defined an intervention as: "any kind of attempt to change consumer behavior related to food waste or clothing to more circular or sustainable. It can mean exposing participants to information, challenge, tips, experiments etc. with the aim of changing behaviour". The following list of examples of intervention types (see also Strengers & Maller, 2014) was used to ensure that all studies with the aim to change consumer behaviour were found:

1. Interventions concerned with the individual: modifying human behaviour, changing social norms or encouraging people to make better choices (e.g., theory of planned behaviour, nudging)
2. Interventions occurring through markets (e.g., rational economic approaches like price incentives and disincentives)

¹ The final search string used for searching the food waste articles were: ("food waste" OR "sustainable food") AND ("interve*" OR "trial*" OR "challenge" OR "pilot" OR "initiative" OR "case" OR "program*") AND ("circular*" OR "sustainab*" OR "environmental" OR "green") AND ("household" OR "consum*" OR "behavi*")

The final search string used for searching the clothing consumption articles were: ("textile*" OR "cloth*" OR "apparel" OR "garment*") AND ("interve*" OR "trial*" OR "challenge" OR "pilot" OR "initiative" OR "case" OR "program*") AND ("sustainab*" OR "Repair*" OR "laund*" OR "clean*" OR "wash*" OR "mend*" OR "redesign*" OR "upcycl*" OR "circular*" OR "shar*" OR "second-hand*" OR "resale" OR "rent*" OR "collaborative") AND (consum* OR household OR behavi*)

3. Interventions that use technology and devices (e.g., engineering and design approaches, technology mediating or automating human action)
4. Interventions approached from practice theoretical perspective
5. Other interventions (e.g., actions targeted to a community or neighborhood)

Those articles containing an intervention went through a closer examination by the researchers to find the most relevant papers for the CARE project. This phase of the literature review included several questions, such as what the focus of the intervention was and how it was conducted, details of the participants, what methods were used and was there a pre-post assessment of the intervention's impact. During this final phase, the researchers also evaluated whether the interventions in the reviewed studies targeted any elements of social practices (materials, meanings and competences).

The CARE project adheres to the practice theoretical approach when designing interventions for households. Social practice theories view human social action as taking place through "practices", which consist of interconnected elements: materials, meanings, and competencies (Shove and Pantzar, 2005; Suski et al., 2021). A practice is "a routinized type of behaviour which consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge" (Reckwitz, 2002, p. 249). Practice theory is a school of thought developed in the social sciences that focuses on these practices, rather than on individual attitudes or values. Practices can be carried out individually or collectively, but they are always social in nature. In the circular economy context, it has been suggested that more attention should be paid to consumers' everyday practices, including skills and competencies, shared cultural meanings or social norms, and material infrastructures (e.g., Mylan et al., 2016). Through the literature review, the researchers explored how practice theoretical interventions or practice theoretical elements (materials, meanings, competences) have been applied in previous research.

After the final round of inclusion and exclusion, the final sample of reviewed articles consisted of 43 articles on reducing food waste and 20 articles on circular clothing consumption. In addition to the infographics presented in this deliverable D2.1, the results of the review of these articles will be disseminated as conference presentations and journal articles (under WP5).

The second part of this deliverable presents the two infographics created as a visual representation of the literature review.

Infographics of behaviour change toward circularity in food and clothing

After the final round of the literature review, the researchers decided on the content and visual elements of the infographics. Due to the considerable heterogeneity of the studies containing an intervention (e.g., intervention types, sample sizes, duration of the intervention and reporting of results), an exhaustive comparison or ranking of the interventions was not possible. Therefore, the researchers chose to focus on the articles coded as the most relevant for the CARE project. This ranking was also part of the final round of the literature review. From these articles, marked as "Highly relevant", the researchers identified all the different intervention components and categorized them under the three social practice elements (materials, meanings and competences).

The content of the infographics was created with the aim to target an informed audience: individuals who have some previous knowledge and interest on the topics of sustainability, circularity, food waste reduction and sustainable clothing consumption. Possible stakeholders and groups who would be interested in the infographics and topics, and who could possibly share them to their network, were identified during the design process. The infographics were designed to be eye-catching and visually attracting. The visuals and content of the infographics were also designed to endorse the CARE project. These infographics will be published on the CARE project website. They will be later modified for other CARE project communication purposes, for example, to create social media snippets for enabling sharing on social media.

How to inspire food waste reduction among households

The average European throws away

144

portions of food every year.

If every EU citizen would cut their food waste in half

32.7 M

people could be fed yearly.

We have looked into previous research on food waste in households



2173

Research articles found in total



43

Included an intervention to change consumer behaviour

Intervention = any kind of attempt **to change consumer behaviour** for example by giving the participants information, challenges or developing their skills.

Practice = routine, everyday activities involving **materials, meanings and competences**



Food waste emerges in our mundane everyday food practices, such as buying, cooking and storing food. **Changing these social practices is the key to reducing food waste.**



Examples and key findings from the analyzed studies:

MATERIALS



Meal planning website, magnetic shopping list, carbon footprint graph, storage devices, food waste container

MEANINGS



Motivational messages, sharing progress with others, interaction on Facebook, cook-alongs with chefs

COMPETENCES



Tips on food storage, safety and seasonality, food waste audit, expert webinars, tailored recipes



The most impactful intervention components were: an online community, 'ask the expert' videos and product samples¹



A tool package with a motivational message based on social norms was more effective than the tool package alone²



The impacts of interventions were as varied as the households themselves and their social dynamics³

References:

¹Trewern, Chenoweth, & Christie (2022) DOI:10.1016/j.appet.2022.105933. ²van Herpen et al. (2023) DOI:10.1016/j.jclepro.2023.139604.

³Devaney & Davies (2017) DOI:10.1177/1469540516631153

Conclusions:

- Don't settle for only giving information, because then you only change awareness and not practices
- A holistic approach works best: consider the whole process relating to food and eating (e.g., planning, buying, storing)
- Reducing food waste is possible by focusing on changing everyday practices!

Our approach to interventions in CARE:

- Practice theoretical approach (focus on materials, meanings and competences)
- 18 months implementation time to ensure changes in practices
- Pre-post measuring the impact of the interventions
- Community, learning together and co-creation are at the centre of the interventions.

Learn more at:
circularhouseholds.eu



The CARE project is funded by the European Union under Grant Agreement No. 101135141.

Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

How to inspire sustainable clothing consumption among households

An average European buys

42

clothing items every year,

although the sustainable amount would be max.

5

new items a year to stay within the planetary boundaries

We have looked into previous research on sustainable clothing consumption



2157

Research articles found in total



20

Included an intervention to change consumer behaviour

Intervention = any kind of attempt to change consumer behaviour for example by giving the participants information, challenges or developing their skills.

Practice = routine, everyday activities involving materials, meanings and competences

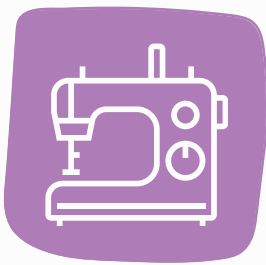


To promote more sustainable clothing consumption, we need to focus on everyday clothing practices, such as buying, storing and washing clothes. **Changing these social practices is the key to sustainable clothing consumption.**



Examples and key findings from the analyzed studies:

MATERIALS



Access to community spaces, repair equipment and materials to learn about clothing making, mending and modification

MEANINGS



Reflections on why clothing is bought, kept, and used, emotional connection to clothes, new friends in communities, and empathy for textile workers

COMPETENCES



Learning new skills and approaches, evaluating needs versus wants and quality over quantity



Workshops were successful in increasing knowledge and changing attitudes, but actual changes in behaviour were less measurable.¹



Barriers to sustainable consumption included temptations by marketing and compulsive shopping tendencies.²



The participants blamed themselves for their unsustainable consumption instead of criticizing the fashion industry.³

References:

¹Saunders et al. (2024) DOI:10.3390/su16031282. ²Joyner Armstrong et al. (2016) DOI:10.1007/s10603-016-9330-z. ³Petersson McIntyre (2019) DOI:10.1080/1362704X.2019.1676506

Conclusions:

- Don't settle for only giving information, because then you only change awareness and not practices
- A holistic approach works best: consider the whole process of clothing consumption (e.g., storing, wearing and maintaining)
- Promoting sustainable clothing consumption is possible by focusing on changing everyday practices!

Our approach to interventions in CARE:

- Practice theoretical approach (focus on materials, meanings and competences)
- 18 months implementation time to ensure changes in practices
- Pre-post measuring the impact of the interventions
- Community, learning together and co-creation are at the centre of the interventions.

Learn more at: circularhouseholds.eu



The CARE project is funded by the European Union under Grant Agreement No. 101135141.

Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

References

- Devaney, L., & Davies, A. R. (2017). Disrupting household food consumption through experimental HomeLabs: Outcomes, connections, contexts. *Journal of Consumer Culture*, 17(3), 823–844.
- Joyner Armstrong, C., Connell, K., Lang, C., Ruppert-Stroescu, M. & LeHew, M. (2016). Educating for sustainable fashion: Using clothing acquisition abstinence to explore sustainable consumption and life beyond growth. *Journal of Consumer Policy*, 39, 417–439.
- Mylan, J., Holmes, H., & Paddock, J. (2016). Re-Introducing consumption to the ‘Circular Economy’: A sociotechnical analysis of domestic food provisioning. *Sustainability*, 8(8), 794.
- Petersson McIntyre, M. (2019). Shame, blame, and passion: Affects of (un)sustainable wardrobes. *Fashion Theory*, 25(6), 735–755.
- Reckwitz, A. (2002). Toward a theory of social practices: A development in culturalist theorizing. *European Journal of Social Theory*, 5(2), 243–263.
- Saunders, C., Griffin, I., Hackney, F., Barbieri, A., Hill, K. J., West, J., & Willett, J. (2024). A social practices approach to encourage sustainable clothing choices. *Sustainability*, 16(3), 1282.
- Shove, E., & Pantzar, M. (2005). Consumers, producers and practices. *Journal of Consumer Culture*, 5, 43–64.
- Strengers, Y., & Maller, C. (2014). Introduction: Social practices, intervention sustainability: beyond behaviour change. In Y. Strengers, & C. Maller (Eds.), *Social practices, intervention sustainability: Beyond behaviour change* (pp. 1–12). Routledge.
- Suski, P., Speck, M., Liedtke, C. (2021). Promoting sustainable consumption with LCA – A social practice based perspective. *Journal of Cleaner Production*, 283, 125234.
- Trewern, J., Chenoweth, J., & Christie, I. (2022). Sparking change: Evaluating the effectiveness of a multi-component intervention at encouraging more sustainable food behaviors. *Appetite*, 171, 105933.
- van Herpen, E., Wijnen, T., Quested, T., Reynolds, C. & Sharda, N. (2023). Convenient tools and social norms: Measuring the effectiveness of an intervention to reduce household food waste. *Journal of Cleaner Production*, 429, 139604.

Project partners



OSLO METROPOLITAN UNIVERSITY
CONSUMPTION RESEARCH NORWAY SIFO

