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Book of Abstracts

SCORAI Europe Conference 2025

8-10 APRIL 2025, LUND SWEDEN



EDITORS

Dr. Matthias Lehner (*Conference Chair*)

Senior Lecturer, International Institute for Industrial Environmental Economics (IIIEE), Lund University, Sweden

Dr. Jessika Luth Richter

Associate Senior Lecturer, International Institute for Industrial Environmental Economics (IIIEE), Lund University, Sweden

Josefine Henman

Doctoral Student, International Institute for Industrial Environmental Economics (IIIEE), Lund University, Sweden

Marianne Ekdahl

Project Assistant, International Institute for Industrial Environmental Economics (IIIEE), Lund University, Sweden

Prof. Göran Finnveden

Professor of Environmental Strategic Analysis, Department of Sustainable Development, Environmental Sciences and Engineering, KTH Royal Institute of Technology, Sweden

Assoc. Prof. Marlyne Sahakian

Associate Professor of Sociology, Department of Sociology, University of Geneva, Switzerland

Prof. Oksana Mont

Professor in Sustainable Consumption Governance, International Institute for Industrial Environmental Economics (IIIEE), Lund University, Sweden

Prof. Doris Fuchs

Director, Research Institute for Sustainability – Helmholtz Centre Potsdam (RIFS), Germany
Professor of Sustainable Development, University of Münster

Prof. Mikael Klintman

Professor of Sociology, Department of Sociology, Lund University, Sweden

This Book of Abstracts represents the entire agenda for the **SCORAI Europe 2025 Conference**, 8-10 April 2025, Lund, Sweden. Abstracts underwent a double-blind peer-review process facilitated by the conference's Scientific Committee.

The SCORAI Europe Conference 2025 was supported by:

- The EU Horizon EU 1.5° Lifestyle Project
- The Mistra Sustainable Consumption Programme
- The SCORAI Europe Network
- The International Institute for Industrial Environmental Economics at Lund University



A publication by:

The International Institute for Industrial Environmental Economics (IIIEE) at Lund University

ISBN: 978-91-8104-559-8

Cover Image Front "Keynote audience" by Håkan Rodhe

Cover Image Back "Blommande magnolia" by Mikael Risedal

Published in 2025 by IIIEE, Lund University, P.O. Box 117, 221 00 Lund, Sweden, Te.: +46 46 222 02 00, e-mail: iiiee@iiiee.lu.se

This pilot study is part of two UK projects: i-Doddle (Impacts of Digitalised Daily Life on climate change) and EDOL (Energy Demand Observatory and Laboratory). It uses a mixed-methods approach to investigate energy consumption patterns in a sample of 47 households, both WFH and non-WFH. The study is conducted in three consecutive phases:

1. Online survey: Examining working practices and appliance ownership to stratify the sample.
2. Appliance use diary: Participants log appliance usage and activity times over a one-week period.
3. Mini intervention: Participants are asked to explore their flexibility by shifting appliance usage to times between 9 a.m. and 5 p.m. over a one-week period.

Adaptation practices are categorised into high, moderate, and low flexibility, focusing on key activities such as cooking, laundering, heating, and miscellaneous appliance use. The pilot tested the effectiveness of these research methods to provide insights into the current and potential flexibility of participants who WFH. Specifically exploring their willingness to shift energy-intensive activities to non-peak hours, and whether this flexibility is specific to those who WFH. Additionally, the study identifies key barriers to behavioural change, such as personal and family commitments, work schedules, and a lack of awareness about peak demand periods.

For participants with smart meter data, the study also provides insights into energy use showing the effect of shifting practices to non-peak hours and exploring the potential to reduce peak energy consumption.

This research contributes to the broader goal of mainstreaming sustainable consumption as the methods and insights from this pilot study will inform a more robust quantification of the potential for demand-side flexibility and energy system optimisation in a larger sample of 2,000 households through the EDOL project. Identifying barriers to flexibility and where targeted policies and interventions can effectively promote sustainable consumption behaviours will enhance energy system models and peak demand scenarios, leading to more accurate forecasting and planning. By understanding and harnessing this flexibility, policymakers and energy planners can develop more effective strategies for mainstreaming sustainable consumption and accelerating the transition to a net-zero future.

AI's Shadow: Risk perceptions and their impact on sustainable consumption

Emilie Vrain, Charlie Wilson

University of Oxford, United Kingdom

Generative AI has captured global attention over the past two years, with media coverage emphasising both its transformative potential and risks, particularly regarding data privacy. This phenomenon, referred to as "AI hype," encompasses the heightened public awareness and discourse surrounding AI technologies, fuelled by advancements in large language models and generative AI applications. This research examines how such heightened salience of AI, including concerns about privacy and risks, hinders efforts to mainstream sustainable consumption practices enabled by digitalisation.

Using survey data from a nationally representative sample of 2,078 UK respondents collected in April 2024, this study uses structural equation models to investigate the pathways linking exposure to AI-related information, perceptions of AI risks, and data privacy concerns to the usage of 15 digital sustainable consumer products and services across four domains: retail, mobility, food, and home. Self-reported changes from the previous year were also captured to allow further analyses into influential factors. Additionally, respondents participated in an experiment featuring vignettes that manipulated the perceived involvement of AI collecting personal data in four of these technologies: 1) retail – peer-to-peer retail platform; 2) mobility – bike share scheme platform; 3) food – food waste reduction app; 4) home - smart thermostat. Two vignette variants for each technology were developed to emphasise either: 1) high salience or 2) low salience of AI collecting data. Paired t-tests were used to analyse changes in propensity before and after the vignette and independent t-tests used to analyse differences between high and low AI salience.

Findings challenge the assumption that exposure to AI information amplifies perceptions of risk. Instead, individuals with limited exposure or direct experience of AI reported higher risk perceptions. Despite overall increases in perceived AI risks and privacy concerns since 2023, these concerns were not uniformly linked to reduced usage of digital sustainable technologies. Potential explanatory factors include: 1) such technologies are not currently perceived as posing a significant risk to data privacy, or 2) AI involvement for functionality is not currently salient. However, under controlled experimental conditions results demonstrated that if AI salience is high then willingness to use such technologies decreases, particularly when their perceived relative advantage was low.

This research highlights the nuanced relationship between AI salience, risk perceptions, and sustainable consumption. As AI technologies become more prominent in society, we argue so too will public awareness of the personal data they collect—potentially creating new barriers to the usage of digital sustainable consumption products and services. To fully leverage AI's potential in addressing sustainability challenges, policy frameworks must prioritise data privacy and sovereignty through transparency, and "privacy by design" to foster trust and encourage usage of sustainable consumption technologies. This systemic approach is essential to align technological advancements with sustainability goals.
