

# **Annual Report 2022**



Sustainable Accessibility and Mobility Services



Information & contact

 ${\it Mistra SAMS Sustainable Accessibility and Mobility Services} \\ {\it Annual Report 2022}.$ 

This annual report highlights the research carried out in the Mistra SAMS program during 2022 and shares scientific output and impact that we, along with our partners achieved during this period.

Mistra SAMS is supported by Mistra, the Swedish Foundation for Strategic Environmental Research, in which KTH Royal Institute of Technology and VTI, the Swedish National Road and Transport Research Institute have leading roles.

Web: www.sams.kth.se E-mail: info@sams.kth.se LinkedIn: @mistrasams

Production and layout: OTW and Sofia Hulting Where appropriate, this report uses hyperlinks in the text to help the reader find articles, publications and websites.

© Mistra SAMS, KTH Royal Institute of Technology, March 2023, Stockholm.

## **Contents**

■ Chair's page	5
■ Programme Directors' page	6
Insights from Mistra SAMS research	8
Avoid, Shift, Improve	9
Exploring sustainable citizenship	10
Enriching transformation processes with citizen participation	12
Supporting integrated learning 'beyond the flagship' setting	13
The perspective of market actors' on transport transformation	14
Conclusions from a local co-working hub in Tullinge	15
■ Impact	16
■ Scientific publications	18

### Chair's page



The Mistra SAMS research team on a study trip to Oslo in May 2022.

# Towards a transport-efficient society within planetary and social boundaries

In 2022, the Mistra SAMS research programme was halfway into its second phase. In this same year, the world reached half-time for the implementation of the UN Sustainable Development Goals, in which the transformation of the transport system plays an important role. The possibility of realizing Mistra SAMS's vision – that by 2030 Sweden will have largely achieved a transition to far-reaching sustainable accessibility and mobility in urban regions, backed by mobility services to support broad user groups – seem both increasingly challenging and distant.

The beginning of 2022 was a time full of hope, and the promise that society could return to mormal, as the vaccination coverage allowed us to leave the restrictive lifestyle of the previous pandemic years. Many also hoped that lessons learned in this period could help speed up climate action. But in February 2022, this hopefulness was replaced by horror as a cruel war hit Ukraine. The past year has in many ways been a dark one as, in addition to the climate crisis, we now have to deal with new difficulties like inflation, increasing geopolitical threats, and deficiencies in the energy system.

### Experimentation and evaluation as the basis for learning

However, we must not despair if we want to change the future. Precisely because of the dark picture drawn above, it is more important than ever that projects aimed at building

knowledge and changing unsustainable structures and behaviours continue and intensify their work. Mistra SAMS is one such initiative.

As the newly appointed chair of this initiative, I am impressed by the breadth of skills and disciplines gathered within the program. When I talk to the programme directors, I encounter a strong sense of commitment. Mistra SAMS focus on experimentation and evaluation provides an important basis for learning and scaling up real solutions, but also allows important insights into the challenges of implementing new understandings in policyoriented work.

During the pandemic, the practices of many organizations and working lives of many individuals changed fundamentally and, it seems, in a way that will last. Digital ways of working have become the new normal and digital knowhow has taken many steps forward. Together, these changes bring new opportunities for solving transport and accessibility challenges. Compared to when Mistra SAMS first started, the conditions for local work hubs and a less travel-dependent working life have changed radically, which Mistra SAMS has picked up on and uses to further develop its projects.

This report provides a taste of the research and ongoing activities of the program. It is our hope that it inspires readers to learn more about the Mistra SAMS project and that this knowledge will help advance the transformation of the transportation system.



Pernilla Bergmark, Chair of the board, Mistra SAMS

# The urgency of other possible transport futures

Research in Mistra SAMS has not been directly affected by world events in the past year. However, we see that the multiple crises sharpen the relevance of knowledge building into transformations to other possible transport futures. There is an urgent need to better understand under what conditions digitalization together with other measures for sustainable mobility and accessibility can help reduce emissions of greenhouse gases while safeguarding goals of social equity within and between generations.

#### Concrete research results from phase two

During 2022, we started to see concrete results from the research initiatives that were launched at the beginning of our second programme period. The new Living Lab (which investigated possibilities for sustainable everyday mobility) started in Riksten in September and will be further developed over the spring of 2023.

At the same time, we have gained insights into the role of market actors in the transition to shared, sustainable mobility and accessibility. Data collection and other research initiatives concerning the role of citizens in a transformation to sustainable mobility and accessibility are also in full swing, as is research on the conditions for public actors to strengthen their transformative capacity for realizing climate and sustainable development goals.

Researchers in the programme have analysed how combined mobility can allow sustainable transport and reduce emissions in line with the transport sector's 2030 goals.

2022 was also the year for finalizing the pilot project on commercialization of local job hubs together with Botkyrka municipality and the Vakansa space-sharing initiative. Researchers and other partners in the program have contributed to the public debate by sharing research with public investigations, participating in conferences and seminars, publishing opinion pieces, and generally raising issues related to the need for a more transport-efficient society so that climate goals and social equity can both be achieved.



Consortium meeting in Riksten, May 2022.



Anna Kramers



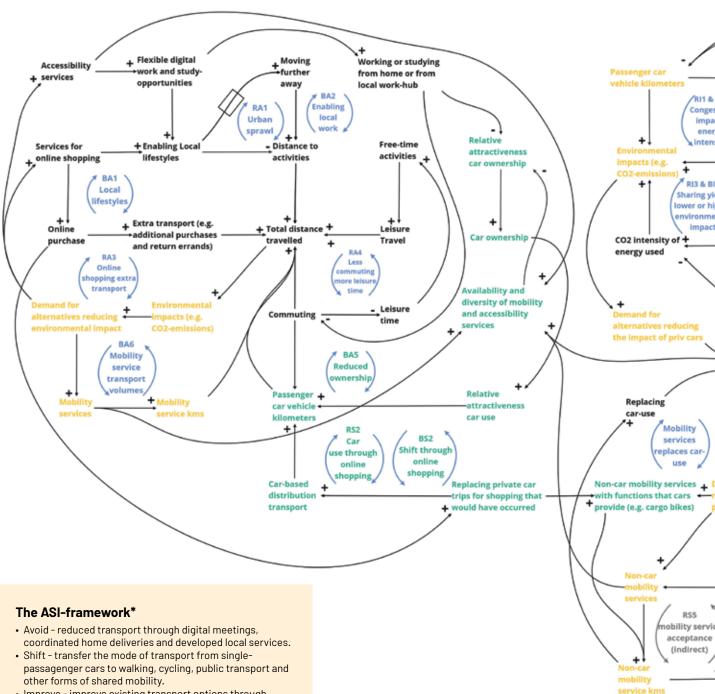
Karolina Isaksson Photo: Satu/VTI

### Strong interest from society at large but uncertain national route ahead

A study trip to Oslo in May 2022 gave new insights into how the public sector can lead the transformation of the transport sector. In Swedish national politics, the strategy for how to reach the 2030-target (a 70% reduction of greenhouse gas emissions from the transport sector compared to 2010) is currently under debate. This increased political uncertainty is unfortunate. Our assessment is that it is more important than ever to identify robust ways to rapidly reduce emissions from the transport sector. We see a continued strong interest in these issues from many local and regional actors, from citizens and civil society, and from enterprises. From Mistra SAMS' side, we will therefore place extra importance on reaching out with our research results in 2023.

We look forward to continued discussions and exchanges of experience with everyone interested and involved in transformative approaches for sustainable transport and accessibility futures.





• Improve - improve existing transport options through technological factors such as cleaner fuels etc.

\*UN (2016) Mobilizing sustainable transport for development, Analysis and Policy Recommendations from the United Nations Secretary-General's High-Level Advisory Group on Sustainable Transport United Nations 2016.

Causal Loop Diagrams visualising the complexity of the ASI-framework.

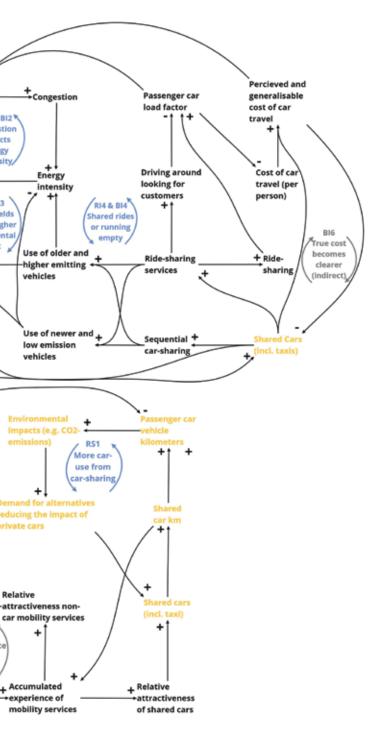


Image by Hampus Berg Mårtensson, Katarina Larsen and Mattias Höjer.

# Avoid, shift and improve

A framework for the transport challenge.

Mistra SAMS takes a long-term perspective on how the transport system can develop in socially just and sustainable directions. In 2022, we worked with the Avoid-Shift-Improve (ASI) framework (a general guide proposing three ways of creating a more sustainable transport system) to explore how these goals can be attained.

In our work, "Avoid" means avoiding transport (of people and goods) altogether by reducing the number of trips or by shortening the required distances. "Shift" means shifting the mode of transport away from single-passenger cars to more environmentally sustainable modes of transport. "Improve" means improving the environmental performance of car-travel through technological factors, which will decrease energy used and CO2- emissions (this factor also includes increasing occupancy rates in order to reduce the number of vehicle kilometres per passenger).

### Visualising connections with Causal Loop Diagrams

The ASI-framework was a starting point for an exercise with Causal Loop Diagrams, which is way of visualising how various factors are, or can be, causally connected. The ASI-framework and Causal Loop Diagrams have been used in workshops with partners as a way to find and illustrate possible positive changes in the transport system. The results are summarized in a paper that is currently (early 2023) under revision.

The Causal Loop Diagrams demonstrate that mobility services can have both positive and negative effects, and these diagrams also reveal the causes of those effects. Causal Loop Diagrams are a potentially useful tool for further developing transport policies. This result is also supported by the specification of direct, enabling and systemic levels in the analysis.

# Exploring sustainable citizenship

Living Lab Riksten.

A key part of the research in Mistra SAMS phase 2 is designing, implementing, and sustaining living labs that can provide empirical material and spaces for transdisciplinary learning within the programme.

We use a design approach to co-create and iterate all parts of the living lab with different stakeholders and test prototypes of the future in everyday life.

### 14 co-researchers engaged in Living Lab Riksten

September 2022 saw the launch of Mistra SAMS' Living Lab Riksten, set in the semi-suburban area Riksten outside of Stockholm in the municipality of Botkyrka. To set up the living lab, we held co-creative workshops and interviews with citizens who live and work in Riksten, as well as with public actors and market actors with connections to the area. We analysed the needs and interests of these actors in relation to the possibility of phasing out car dependency.

All in all, fourteen co-researchers living in Riksten were engaged to take part in the living lab. Through a smartphone application that we developed and launched for the living lab (SAMSAS), these participants have access to electric bicycles placed strategically in Riksten and to a co-working hub in nearby Tullinge. The participants have also set individual goals to reduce car use and will track their car journeys using the app.



The visual identity of the SAMSAS-app.

#### Prototyping future practices together

The living lab is designed on the assumption that to change travel behaviour, people need to try new ways of travelling and find these new mobility practices meaningful and feasible in their everyday lives. Easy access to relevant mobility and accessibility services is crucial for establishing new travel habits and practices. In Living Lab Riksten, we prototype future possibilities of such service systems. Challenges that co-researchers receive in the SAMSAS app spur them to try new and sustainable ways of travelling and



thus let them explore the meaning of sustainable citizenship. The challenges are designed to gain participants' different perspectives on citizens' roles in transformation processes.

Over the upcoming months, researchers from Mistra SAMS will conduct several rounds of interviews with the co-researchers and analyse the potential that mobility and accessibility services have for altering the mobility practices of citizens and pushing towards a future with more sustainable and equitable travelling.

### **Living Lab Riksten**

- Set in the semi-suburban area Riksten outside of Stockholm in the municipality of Botkyrka.
- An area with fairly sparse public transport.
- Mixture of housing, apartments; both rental and condominiums, as well as townhouses and villas.
- 14 co-researchers living in Riksten.
- The SAMSAS-app is used to book electrical bicycles, to set individual goals to reduce car journeys, and receive challenges.
- Runs though summer 2023.

# Enriching transformation processes with citizen participation

Why the active involvement of citizens is essential.

An important point of departure for our work in Mistra SAMS is that a multitude of actors need to be involved in order to steer society towards a socially just and sustainable transport system. The active involvement of citizens in the transformation processes is crucial for several reasons. For one thing, citizens bring new ideas and real-world experiences. Citizen involvement is also critical for shedding light on questions concerning justice, and for building legitimacy for controversial policy measures. To serve these purposes, citizen participation must be integrated into current planning processes, and these processes must include dialogue with various groups and a way for those citizens to give feedback on planning outcomes.

The outcomes of living labs and experiments that test for example new mobility services in a specific context should ideally influence ongoing planning processes. In Mistra SAMS, we have initiated a series of policy workshops to analyse what we've learned from Living Lab Riksten and pave the way for citizen participation as a means to enrich transformation processes.

## Workshops connecting research and the municipality

In 2022 we conducted two workshops with key stakeholders in Botkyrka municipality. In the first workshop, we explored which methods could be suitable for promoting sustainable mobility and accessibility in Riksten. The workshop showed that citizen participation (such as participating in a living lab, being interviewed, or attending public hearings)



Living Lab Riksten opened in September 2022.

gives crucial workshop, we identified the policy lab process and output of Living Lab Riksten as important subjects for future workshops and collaborations.

Our aim with these workshops is to build a bridge between the lessons learned from the living lab and the municipality's day-to-day planning processes. In 2023, we plan to present our findings to Botkyrka from the focus group conversations with Riksten citizens regarding their roles in the transition, as well as how the living lab participants responded to the challenges they were given in the SAMSAS app.

# Supporting integrated learning in 'beyond the flagship' settings

Identifying challenges in semi-suburban areas.

Living Lab Riksten's location in a semi-suburban area outside of Stockholm means that it differs considerably from many other sites where living labs have been established. In recent years, living labs have often been introduced in "flagship urban developments" – new, high-profile urban neighbourhoods with grand sustainability visions and dedicated public resources, with organizations to govern and learn from urban experimentation.

In our research we use the phrase "beyond the flagship" to refer to areas such as Riksten, that have limited planning resources and modest sustainability profiles. We want to explore the role experimentation can play in such "beyond the flagship" settings to contribute to sustainability transitions in line with societal goals, and to identify ways of strengthening public administration capacities to govern and integrate learnings from experiments.

### Finding ways to address challenges in other semi-suburban areas

In 2022 we studied the relationship between experimental processes carried out in Mistra SAMS and the municipality's strategic planning and governance of Riksten's developments. We identified conditions which limited the use of knowledge gained from experiments (such as lack of up-to-date urban planning strategies and limited strategic planning resources directed towards Riksten's development) which demonstrate the challenges of learning from urban experiments "beyond the flagship". Establishing favourable settings for integrating and embedding mobility interventions intobroader municipal strategic planning



The bicycle shed where the bikes are parked and charged.

and governance is more challenging in such contexts. We argue that experiments need to consider the conditions and capacities of specific sites and actively respond to existing planning contexts. Experimental urban research projects need to actively support knowledge integration between experimental practices and existing governance and planning configurations.

Going forward, we plan to carry out a series of explorative workshops together with the local municipality, which will be intended to encourage knowledge integration as well as identify how our mobility experiments can inform municipal land-use strategies and transport planning.

# The perspective of market actors' on transport transformation

What do they need to accelerate the pace?

Another focus area for Mistra SAMS phase 2 is understanding what conditions are needed for market actors and entrepreneurs to accelerate the pace of the required transformation toward a climate-neutral and socially just transport system.

As a step towards generatinge these insights, we arranged three business model labs in 2022 to learn the market perspective of shaping Living Lab Riksten. The invited participants were mobility and accessibility service providers active in Stockholm and Mistra SAMS partners.

### Discussions about digital platforms, governance and sustainable behaviour

Each business model lab focused on one of three topics: the role of digital platforms, governance that would contribute to sustainable business models, and strategies that would encourage sustainable mobility behaviour in customers. The labs allowed for engaged discussions among the participants, highlighting possibilities, interactions and challenges among the fields.

The participants agreed on several issues one of which was the benefit of there being a publicly-owned digital platform. The participants agreed that such a platform would be best run at the regional level, but should be governed at the national level and co-financed through a private/public partnership. Another item of agreement concerned data and its potential

for allowing new enterprises. To develop successful business models, the market actors agreed that data needs to be open and and sharable in order to provide in-depth knowledge of the needs of both citizens and companies.

Another insight was that service providers have taken for granted that people understand the environmental benefits of their services; the workshops made it clear that these providers need to actively encourage sustainable mobility behaviour among their customers and lower the threshold for users to try out

### Building an eco-system of sustainable services

Services in semi-suburban areas like Riksten were also discussed during the labs, as well as how public and private actors could work together to build an 'ecosystem' for sustainable services in these areas. Here, the participants agreed that a good start would be including input from all types of users and setting targets for utilization rates for all types of services. Having a breadth of input may accordingly lead to collaborations among service providers.

To continue to learn from each others' experiences and to build a stronger ecosystem for current and future collaborations, the next step of Mistra SAMS research is to share the results of Living Lab Riksten with service providers and to hear their views on those results.

# Conclusions from a local co-working hub

New leads gained from research on our local co-working hub in Tullinge.

Our co-working hub in Tullinge was developed as a living lab 2019–2021, and then run for a year as a commercial pilot by Botkyrka municipality in collaboration with a local space-sharing entrepreneur, Vakansa. The pilot project was closed at the end of 2022. Botkyrka municipality will publish a report about the pilot phase of the hub in early 2023. The final research results of Mistra SAMS will be published in 2023.

# Expanding the possibilities of work hubs in a post-pandemic reality

Living lab research has led to several interesting new leads about our post-pandemic reality, in which digital work is the new normal for many people. Over the upcoming year, Mistra SAMS will continue to investigate the role of the municipality



in establishing local workhubs and explore the opportunities of intra-municipal and intra- governmental hubs, where employees of municipal or governmental agencies can work from shared premises across the region or country a couple of days a week.

Finally, Mistra SAMS will explore how the increased use of digital services may influence emissions and energy footprints.



The co-working hub in Tullinge.

### Next step for the co-working hub research

- To continue investigate the role of the municipality in establishing local workhubs.
- To explore the opportunities of intra-municipal and intra-governmental hubs.
- To explore how increased use of virtual services influence the carboon and digital practises of game developers and how that change can affect emissions and energy footprints.

## **Impact**

Participation at conferences, events, workshop and media.

### **Lectures & presentations**

- Viable Cities and Drive Sweden Transition lab 9, June 2022: Klimatsmart mobilitet 2030 outlook in "How are we doing in the work for climate-smart mobility?" with Anna Kramers.
- PlanNord i Aalborg, August 25-26 2022: "Strategic planning in times of experimental governance – on institutional conditions and capacities" with Kelsey Oldbury and Jacob Witzell.
- Region Sörmland cycling day: lecture with Karolina Isaksson about cycling, sustainability and justice.
- The Swedish Transportation Research Conference 2022, October 18-19: "The value of using mixed methods for evaluating use of car sharing vs own car", Fredrik Johansson and Greger Henriksson.
- Miljøministeriet in Denmark, November 3 2022: "Some thoughts on policy legitimacy and the role of visions in transformation of passenger mobility" with Claus Hedegaard Sørensen.
- Stora Mobilitetsdagen arranged by Dagens industri, December 6, 2022. Anna Kramers participated in a panel discussion about the future of mobility.
- Almedalen, July 3-7, 2022: Presentation "Mobility and energy" by Anna Kramers within the session "Who will drive the climate transition". Participation in the seminar "Can environmental bonuses for mobility services reduce private driving?", arranged by Taxiförbundet.

#### News & media

- Expressen, 3 Januari 2021, Forskare: cykelpooler kan spela en viktig roll i städer.
- Dagens Industri, 19 januari 2022, Vem ska egentligen ansvara för framtidens hållbara resor? by Malin Henriksson.
- <u>Poddcast Snåret, Januari 2022</u> Bygga för framtidens resande, Anna Kramers.
- SVT Rapport lokalnyheterna, March 23 2022, Jobbhubb ska underlätta vardagspusslet för Tullingebor with Anna Kramers.





- Cykelfrämjandet's Magazine and website, April 5, 2022: DEBATT: "Offentliga aktörer bör styra hållbara mobilitetslösningar" by Malin Henriksson, Jacob Widzell and Karolina Isaksson.
- Dagbladet Information, November 22, 2022: "Vi skal tale mere om alle de afledte goder, den grønne omstilling fører med sig" by Claus Hedegaard Sørensen.
- <u>Dagens industri, December 21, 2022 "40 experter:</u>
   <u>Trenderna som förändrade vårt resande" with Anna Kramers and Karolina Isaksson as experts from Mistra SAMS.</u>
- Svenska Dagbladet, December 24, 2022 "Vi måste se det goda i ett långsammare liv" by Claus Hedegaard Sørensen.
- <u>Dagens Nyheter, December 31, 2022, "Klimateffekter måste redovisas hederligt", (reply to the government's debate article), by Anders Gullberg.</u>
- K2:s report Rådslaget hållbar omstart, participating from Mistra SAMS were Anna Kramers, Claus Hedegaard Sørensen, Jessica Berg and Karolina Isaksson.

### **Public inquiry**

 Rätt för klimatet, SOU 2022:21, Karolina Isaksson participated as an expert in this public inquiry on the Climate Law. Jacob Witzell contributed with input on scenario methods.

### **Kitchen Talks**

Once a month, the Mistra SAMS network is invited to informal lunch webinars in which researchers and partners present actual and relevant research results.

A diversity of topics within Mistra SAMS' research fields have been discussed over the year, including citizen participation, co-creation of sustainable transport systems and practices, why innovation projects are difficult for municipal administrations, and the relationship between strategic planning and experimental governance.

## Scientific publications

Scientific articles, reports and chapters.

- <u>JCT Bieser, M Höjer, A Kramers, LM Hilty (2022)</u> <u>Toward a method for assessing the energy impacts of</u> <u>telecommuting based on time-use data</u>, <u>Travel Behaviour</u> <u>and Society 27, 107-116.</u>
- Kriukelyte, E., Sochor, J., Kramers, A. Public Policy Instruments and Mobility Providers' Business Models – Are Sticks and Carrots Leading to Climate-Neutral and Just Transport? 3rd International Conference on Mobility as a Service (Tampere, Finland, November 29-30, 2022).
- Henriksson, M., Wallsten, A., & Ihlström, J. (2022). Can bike-sharing contribute to transport justice? Exploring a municipal bike-sharing system. Transportation Research Part D: Transport and Environment, 103, 103185.
- Sjöman, M. & Hesselgren, M. (2022) Designerly Living Labs:

  Design-driven experimentation. In: Oldbury, K., Isaksson,
  K., Marsden, G. (2022) Experimentation for sustainable
  transport? Risks, strengths, and governance implications.
  Linnefors förlag.
- <u>Vaddadi, B.; Hesselgren, M.; Kramers, A.(2022), Report</u> "Living Lab #2 Work near, Travel Smarter".

- Vaddadi, B.; Hesselgren, M.; Kramers, A. (2022), Report "Living Lab #2 Work near, Travel Smarter: Effects of COVID-19 pandemic on work & travel life".
- Vaddadi, B.; Ringenson, T.; Sjöman, M.; Hesselgren, M.; Kramers, A. (2022), "Do they work? Exploring possible potentials of neighbourhood Telecommuting centres in supporting sustainable travel", in "Travel Behaviour and Society", Volume 29, October 2022, Pages 34-41.
- Witzell, J., Oldbury, K., Göransson Scalzotto, J., Gullberg,
   A., Bieser, J. (2022), "Exploring new mobility services: insights from three perspectives –public actors, citizens, and market actors" Swedish National Road and Transport Research Institute (VTI), Report 1122A.
- Witzell, J., Henriksson, M., Håkansson, M., & Isaksson, Karolina (2022) Transformative capacity for climate mitigation in strategic transport planning – principles and practices in cross-sectoral collaboration. Journal of Environmental Policy & Planning 2022, 24 (6) 719–732.
- Vaddadi, B. Understanding the system-level for Mobility as a Service: A framework to evaluate full-scale impacts of MaaS, PhD Thesis, TRITA-ITM-AVL 2022:30 ISBN: 978-91-8040-371-9































