

# Study of the social response to technological innovations and evaluation of a tradable travel credit scheme as a tool to achieve a more sustainable mobility

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# Introduction



# Administrative information

- Beginning of the PhD program in Q2 2021
- Estimated defence in Q1 2024
- Focus of my study:
  - how different user groups will respond to transport innovations like CAVs, automated last mile delivery droids, EVs etc.
  - how Tradable Credit Schemes could improve sustainable mobility.

# What is a TCS and why it is important?

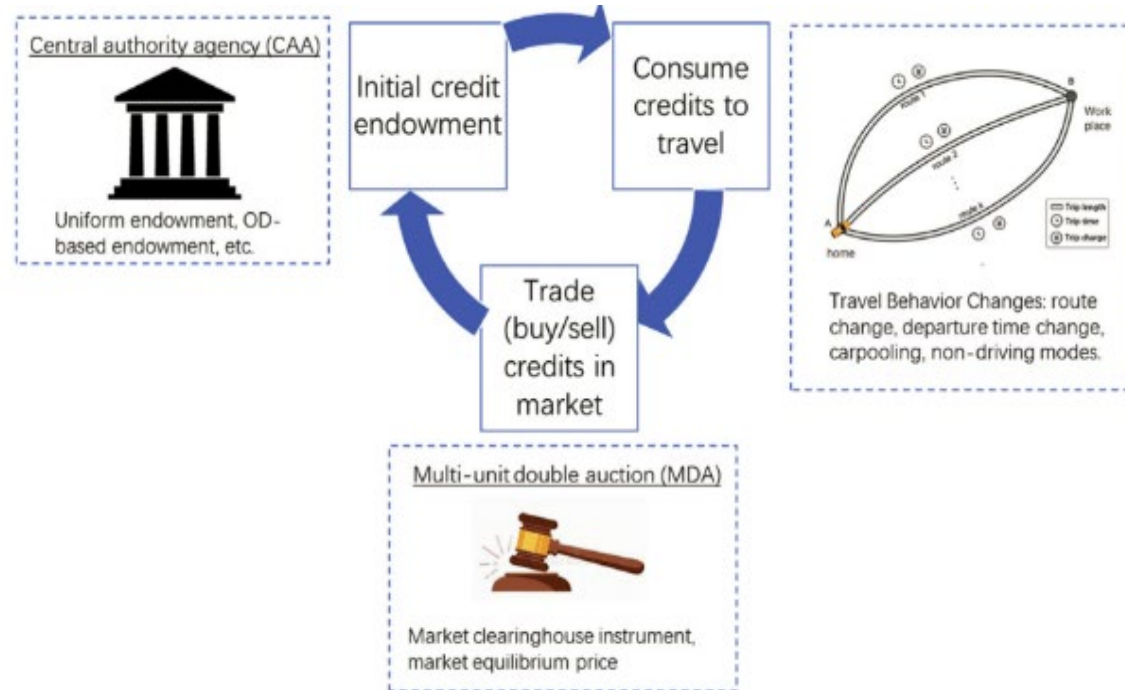


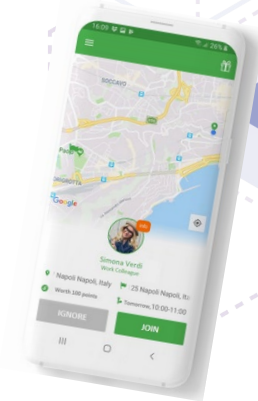
Fig. 1. Lifecycle of tradable mobility credits.

- The regulator distributes a certain amount of credits to all eligible users
- Credits are freely tradable among users
- Credit price is determined by the competitive market.
- Managing congestion and mode choice
- Providing incentives to travelers who manage to overachieve traffic reductions or alternations and imposing penalties towards congestion contributors
- Revenue-neutral transport policy
- Public acceptability is strongly connected with equity and fairness of the proposed measure

# Performed activities so far

- Exploration of expectations and concerns of different user groups (experts, non-experts, women, teenagers) on Connected and Automated Vehicles (and other innovations in the context of the Future Mobility Solutions Living Lab) through focus group discussions and surveys.
- Literature review on the acceptance of Tradable Credit Schemes (project is about to start).

**Living Labs** are user-centered, open innovation ecosystems based on systematic user co-creation approach, integrating research and innovation processes in real life communities and settings.



# What is next?

- Draft publications with the results gained from different user groups on the transport innovations (CAVs - teenagers)
- Grasp users' views on additional transport innovations (EVs, last-mile delivery droids or other related projects of the Future Mobility Living Lab)
- Explore views and attitudes of JRC employees on a potential implementation of a TCS → provide input for the market design

# Resulted publications

- **Duboz, A., Mourtzouchou A., Grosso, M., Kolarova, V., Cordera, R., Nägele, S., Alonso Raposo, M., Krause, J., Garus, A., Eisenmann, C., dell’Olio, L., Alonso, B., Ciuffo, B. Exploring the acceptance of connected and automated vehicles: focus group discussions with experts and non-experts in transport, Transportation Research Part F: Traffic Psychology and Behaviour, 2022 (in review process).**
- **Grosso, M., Mourtzouchou, A., Duboz, A., Raileanu, I. C., Alonso Raposo, M., Garus, A., Krause, J., Ciuffo, B., Naegele, S., Kolarova, V., Cordera, R. Engaging with different transport user groups for a smooth transition to Connected and Automated Mobility Transportation Research Arena (TRA) Conference, Lisbon 2022 (abstract accepted, paper under preparation).**
- **Mourtzouchou, A., Raileanu, I. C., Grosso, M., Duboz, A., Alonso Raposo, M., Garus, A., Krause, J., Cordera, R. and Ciuffo B. Are teenagers ready to use Connected and Automated Vehicles? Transport, Tourism and Sustainable Development, XXIV Conference of the Italian Society of Transport Economics and Logistics (SIET), Varese 2022 (abstract submitted).**

## Other publications

- Alonso Raposo, M., Mourtzouchou, A., Garus, A., Brinkhoff-Button, N., Kert, K. and Ciuffo, B., JRC Future Mobility Solutions Living Lab (FMS-Lab): conceptual framework, state of play and way forward, EUR 30906 EN, Publications Office of the European Union, Luxembourg, 2021.
- dos Santos, F.L.M., Duboz, A., Grosso, M., Raposo, M.A., Krause, J., Mourtzouchou, A., Balahur, A. and Ciuffo, B., 2022. An acceptance divergence? Media, citizens and policy perspectives on autonomous cars in the European Union. Transportation Research Part A: Policy and Practice, 158, pp.224-238.
- Grosso, M., Raileanu, I.C., Krause, J., Raposo, M.A., Duboz, A., Garus, A., Mourtzouchou, A. and Ciuffo, B., 2021. How will vehicle automation and electrification affect the automotive maintenance, repair sector?. Transportation Research Interdisciplinary Perspectives, 12, p.100495.
- Garus, A., Alonso, B., Raposo, M.A., Grosso, M., Krause, J., Mourtzouchou, A. and Ciuffo, B., 2022. Last-mile delivery by automated droids. Sustainability assessment on a real-world case study. Sustainable Cities and Society, 79, p.103728.

# Basic skills



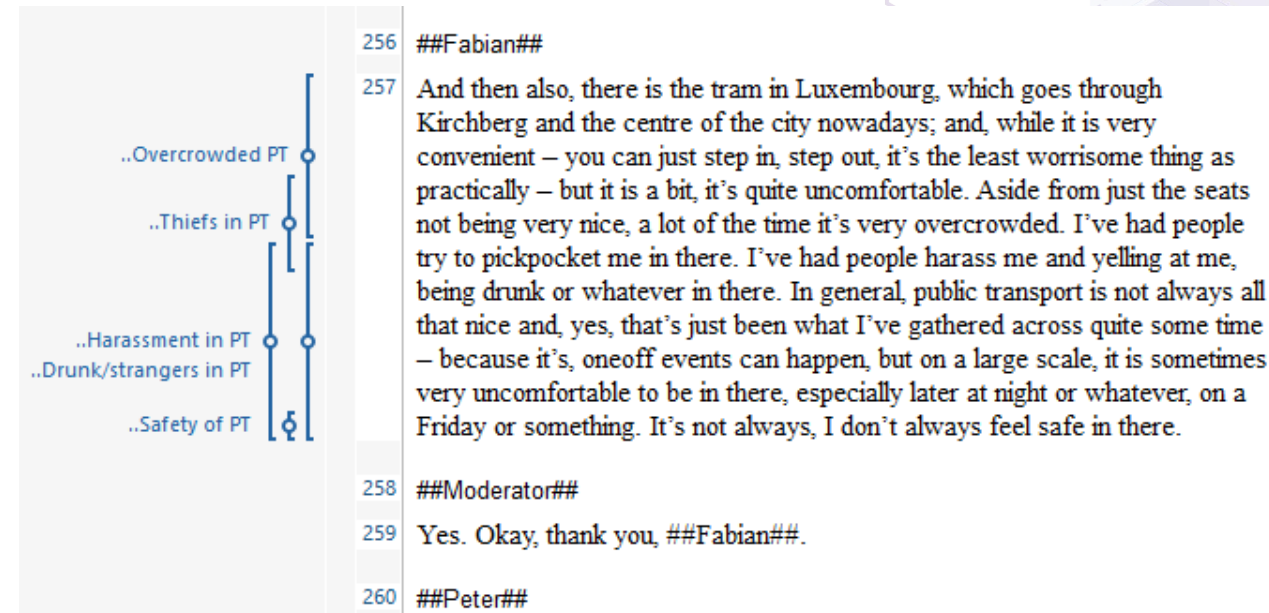


# CB11 – Systematic understanding of a field of study and command of the skills and research methods related to the field

- The systematic understanding of the field of my study came through the literature review on Tradable Credit Schemes related to mobility but also to similar schemes used to trade house/industry emissions permits.
- Skill supported by deepening on qualitative methods and citizen engagement activities able to grasp people's views.

# CB12 – Skill to conceive, design or create, implement and adopt a substantial process of research or creation

- Skill developed during the ethical assessment of our project, in order to review and set up procedures of the ethical aspects touched.
- Skill developed during the coding procedure of the focus group discussions using a combination of deductive and inductive category construction.



The screenshot displays a coding interface. On the left, a vertical list of categories is shown with a tree structure: `..Overcrowded PT`, `..Thiefs in PT`, `..Harassment in PT`, `..Drunk/strangers in PT`, and `..Safety of PT`. On the right, a transcript is visible with line numbers 256 through 260. The transcript includes a participant's comment (Fabian) and a moderator's response.

```
256 ##Fabian##  
257 And then also, there is the tram in Luxembourg, which goes through  
Kirchberg and the centre of the city nowadays; and, while it is very  
convenient – you can just step in, step out, it's the least worrisome thing as  
practically – but it is a bit, it's quite uncomfortable. Aside from just the seats  
not being very nice, a lot of the time it's very overcrowded. I've had people  
try to pickpocket me in there. I've had people harass me and yelling at me,  
being drunk or whatever in there. In general, public transport is not always all  
that nice and, yes, that's just been what I've gathered across quite some time  
– because it's, oneoff events can happen, but on a large scale, it is sometimes  
very uncomfortable to be in there, especially later at night or whatever, on a  
Friday or something. It's not always, I don't always feel safe in there.  
258 ##Moderator##  
259 Yes. Okay, thank you, ##Fabian##.  
260 ##Peter##
```

## CB13 – Skill to contribute to the enlargement of the knowledge limits through an original research

- This skill will be developed with the implementation of a Tradable Credit Scheme at the Joint Research Centre of the European Commission, that has never been implemented before.

# CB14 -Skill to carry out a critical analysis and assessment and synthesis of new and complex ideas.



- The critical analysis was developed during the literature review.
- Annual PhD evaluation and specific transversal courses contributed to the development of the SWOT profile.
- Frequent feedback from colleagues and supervisors helps on handling better new and complex ideas.

# CB15 – Skill to communicate with the academic and scientific community and with society in general about the scope of knowledge in the ways and languages of common use in the international scientific community

- Skill obtained during all our activities where we engaged with experts, women, teenagers through focus group discussions, demonstrations, surveys. The language was adapted according to the age and the prior knowledge of participants.
- In the framework of Living Labs we exchange knowledge and lessons learnt with other institutions, universities, networks and practitioners.







# Thank you



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Slides 4: Tian, Y., Chiu, Y.C. and Sun, J., 2019. Understanding behavioral effects of tradable mobility credit scheme: An experimental economics approach. Transport Policy, 81, pp.1-11, slides 10 and 12:slidebazaar.com and 6seconds.org (respectively)