The Future of Road Transport. JRC perspective on the implications of a Connected, Cooperative and Automated Mobility

SHOW 1st Pan-European Workshop «How to make CCAM in Cities a reality»

María Alonso Raposo

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Joint Research Centre

Digitalisation, automation, the emergence of shared, collaborative economy, and innovative mobility platforms are all disruptive trends challenging the current mobility and transport landscape, while also offering great possibilities for its enhancement.

Roadmap - Communication from the Commission on the EU Strategy for a Sustainable and Smart Mobility (European Commission, 2020)

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EU policy context

The European Green Deal

Accelerating the shift to sustainable and smart mobility

- **Transport accounts for a quarter of the EU's greenhouse gas emissions,** and still growing. To achieve climate neutrality, a 90% reduction in transport emissions is needed by 2050.
- **Strategy for sustainable and smart mobility in 2020**
- **Automated and connected multimodal mobility**

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CCAM Single Platform

for open road testing and pre-deployment of cooperative, connected, automated and autonomous mobility

- Purpose: (i) to coordinate efforts related to the open road testing of CCAM in Europe; and (ii) to identify research needs for the imminent European partnership on CCAM research and innovation.
- 6 WGs:
  - WG1 Develop an EU agenda for testing
  - WG2 Coordination and cooperation of R&I
  - WG3 Physical and digital road infrastructure
  - WG4 Road safety
  - WG5 Connectivity and digital infrastructure
  - WG6 Cybersecurity and access to in-vehicle data

DG MOVE, DG CNECT, DG GROW, DG RTD

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CCAM Implications

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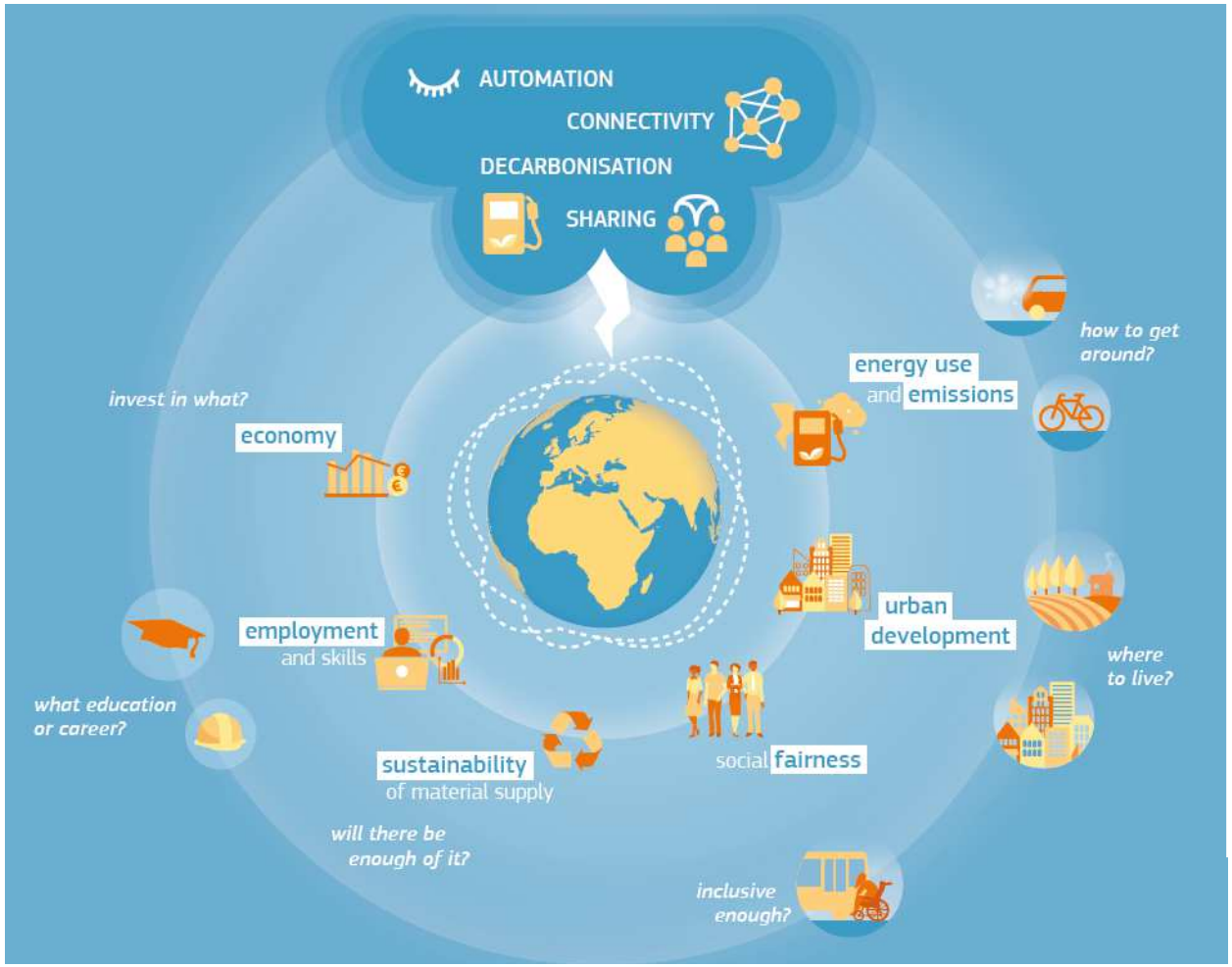
A perfect storm of new technologies and new business models…



Higher capacity

Safer

Higher energy efficiency

Lower number of vehicles

Reduced costs

Better use of public space

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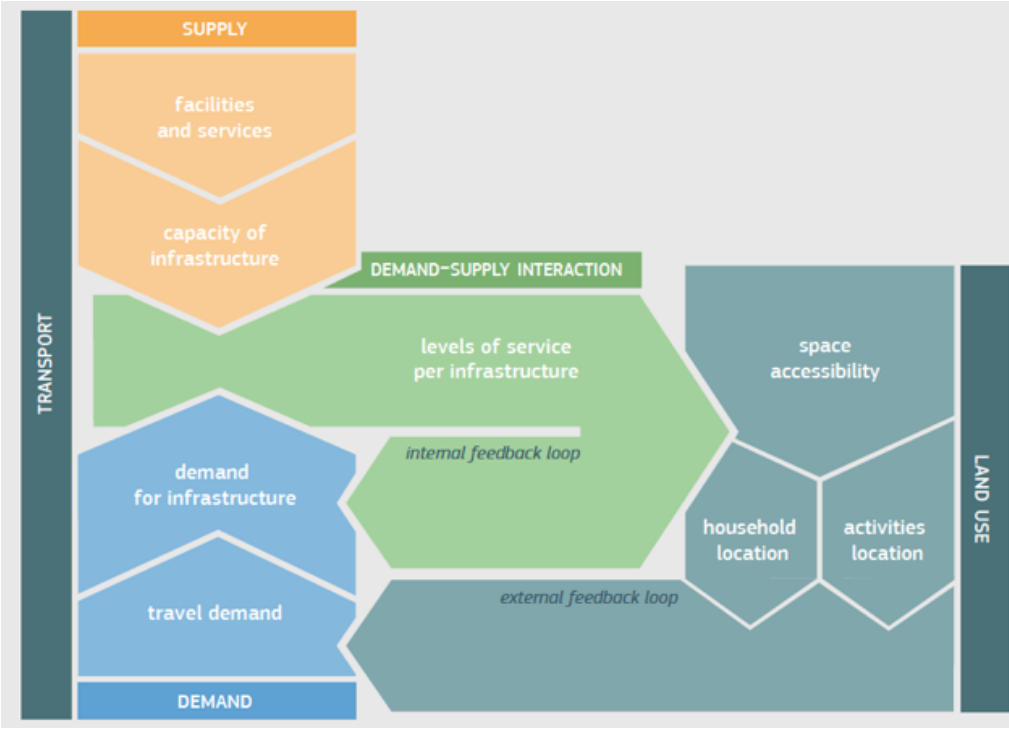
Transport complexity

- Transport systems are "*internally complex systems, made up of many elements influencing each other both directly and indirectly, often nonlinearly, and with many feedback cycles*" (Cascetta, 2009)
  - Transport policies have implications for the economy, land use, environment, quality of life, and social cohesion. In this respect, they have a "*bearing on many, often conflicting, interests*" (Cascetta, 2009)



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Implications of transport complexity

Lower number of vehicles

- Ride-hailing and car-sharing services are increasing vehicles' use and congestion
  - ~50% of trips "would not have been made at all, or made by walking, biking, or transit" (Clewlow and Mishra, 2017)
- AVs may generate new demand of mobility from currently underserved population
- AVs will make travel experience more comfortable and cheaper
  - Considerable risks that road traffic will eventually increase

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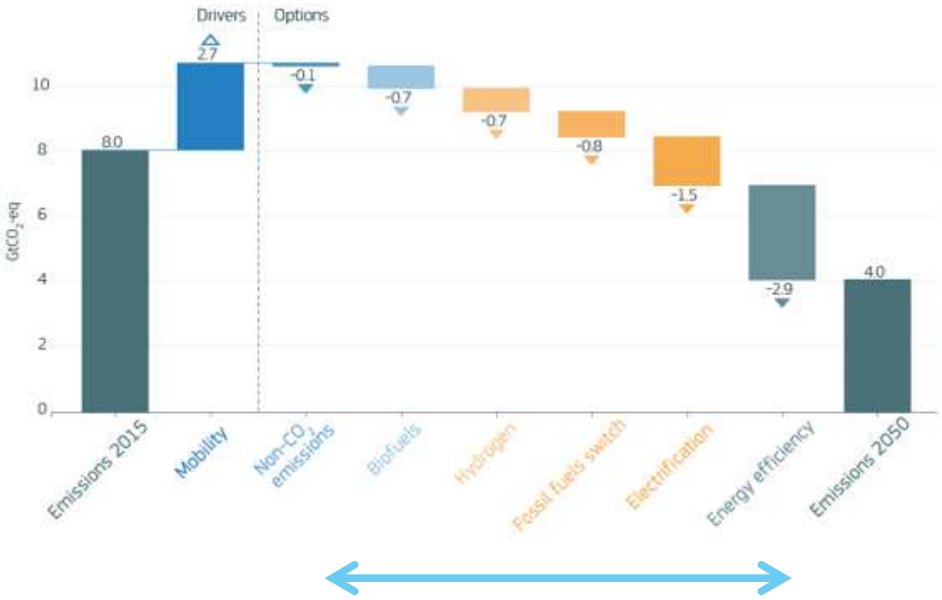
Implications of transport complexity

Higher energy efficiency

- Under current transport evolution trends, alternative fuels and increase in vehicles energy efficiency can reduce CO2 emissions from transport by 50% (Keramidas et al., 2018) or even more (Krause et al., 2019)
- What's the effect of increased transport activities?
  - Overall energy consumption may increase by up to 30% (Taiebat et al., 2019)



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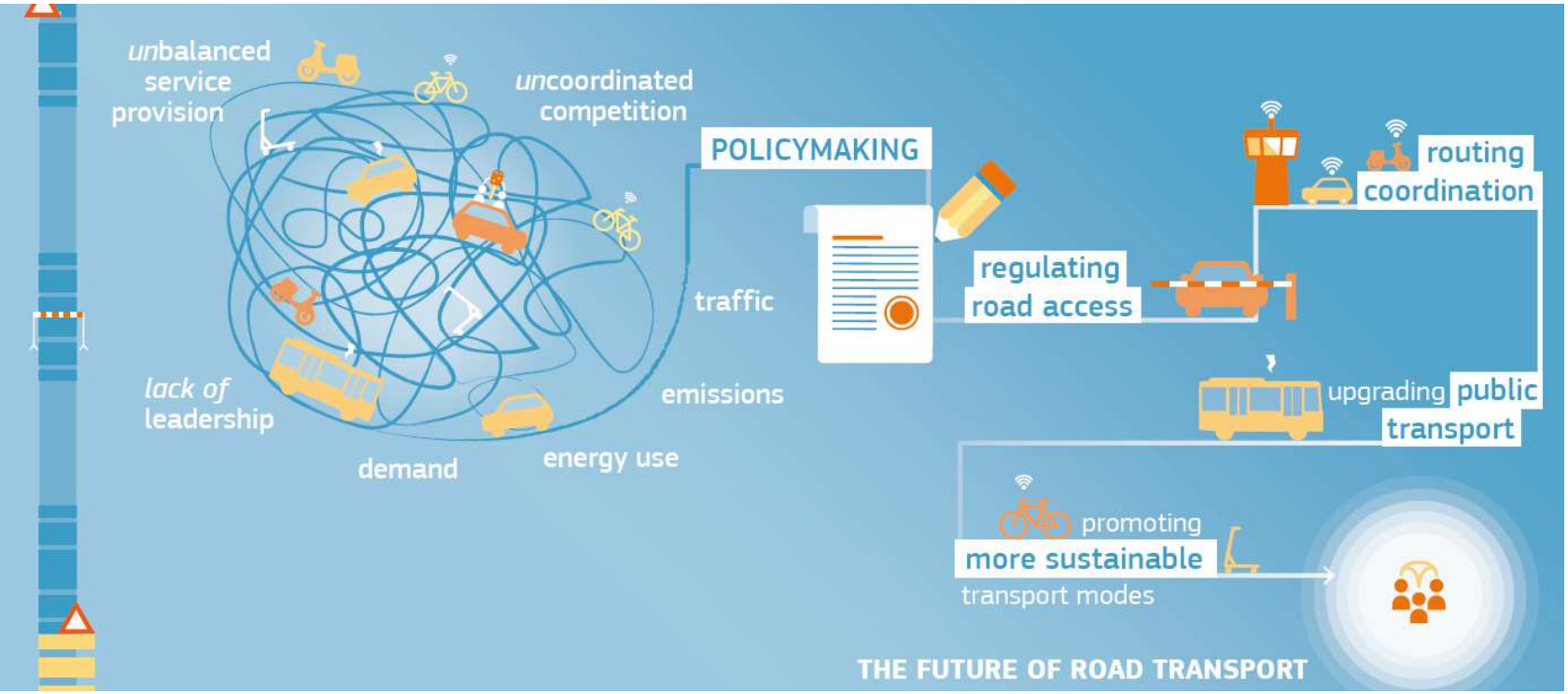
New transport technologies alone won't spontaneously make our lives better…



… without upgrading our transport systems and policies to the 21st century

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Addressing transport complexity…

LIVING LABS CAN SHOW THE WAY TOWARDS INNOVATIVE MOBILITY SOLUTIONS

… by improving governance systems and involving citizens in the roll-out of innovative mobility solutions

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Living Labs as a tool to address the complexity of urban systems

- Test user adoption and behavioural change
  - 76% of EU citizens would not feel comfortable in an AV without any human supervision (Special Eurobarometer 496: European Commission, 2020)
- Support policy design and monitoring
- Provide a test-bed for startups and SMEs
  - **Call for expressions of interest – Pilot living labs at the JRC**
- Encourage users co-creation and co-evaluation

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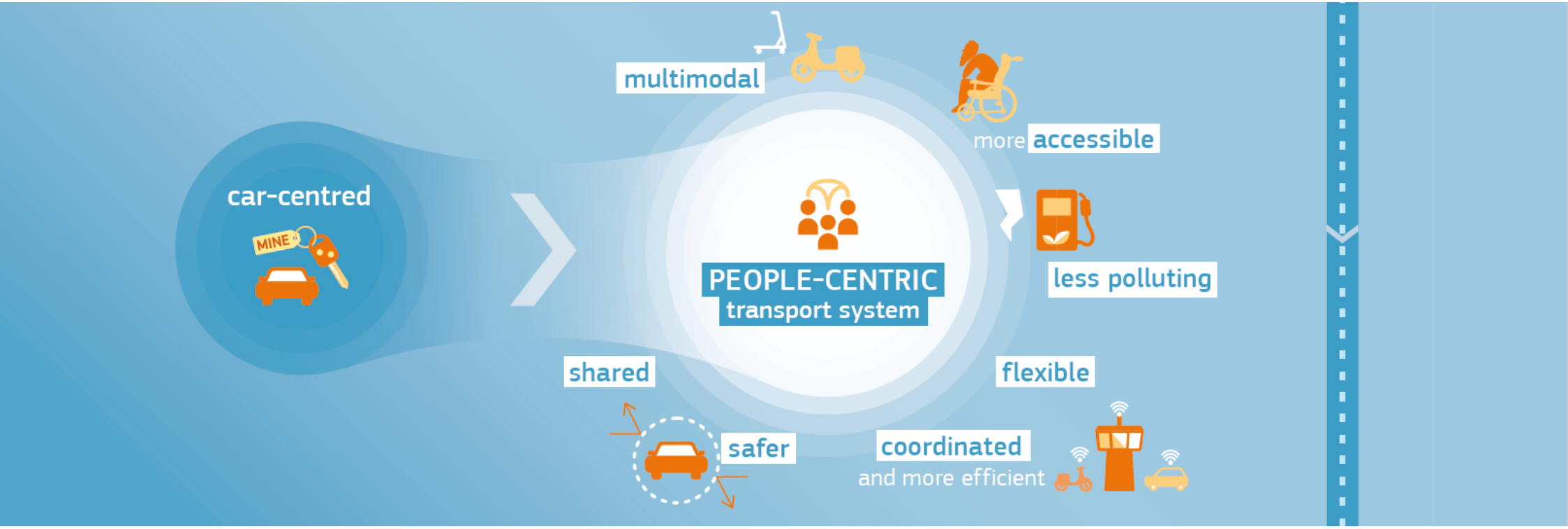
The opportunity to build a better transport system



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E-mail to: maria.alonso-raposo@ec.europa.eu

Keep in touch

EU Science Hub: ec.europa.eu/jrc

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JRC LIVING LABS LINKS

Pilot Living Labs at the JRC:

https://ec.europa.eu/jrc/en/research-facility/living-labs-at-the-jrc

Call for expression of interest: https://ec.europa.eu/jrc/en/research-facility/living-labs-at-the-jrc/call-expression-interest-future-mobility-and-digital-energy-solutions

JRC FMS-Lab:

https://trimis.ec.europa.eu/project/jrc-living-lab-future-urban-ecosystems-future-mobility-solutions

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Thank you

JRC "The Future of Road Transport" Report available at:
https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/future-road-transport

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