



European  
Commission

# THE FUTURE OF ROAD TRANSPORT

IMPLICATIONS OF AUTOMATED, CONNECTED, LOW-CARBON AND SHARED MOBILITY

EXECUTIVE SUMMARY



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# EXECUTIVE SUMMARY

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52.790104, 4.684665

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50.838720, 4.365634

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# EXECUTIVE SUMMARY

We are witnessing nothing less than a revolution in transport. Technological drivers such as automation, connectivity and low-carbon technologies, coupled with new sharing trends are completely redefining the business of getting around. However, without the right policies in place, this may make things worse for most people in most cities.

Developments in road transport are the focus of this report, which is based on independent research and analysis by the European Commission's Joint Research Centre aiming to inform policy debate at the European level.

## **A perfect storm of new technologies and new business models**

With its EUR 7 trillion annual revenue stream, transport attracts disruptive technology companies that are not interested in preserving the current model in the same way as conventional players may be tempted to. A perfect storm of new technologies and new business models is transforming not only our vehicles, but everything about how we get around and how we live our lives.

Flexible options like electric bikes, scooters and modular automated shuttles may make public transport more accessible by shrinking the 'last mile' to and from our homes or workplaces. Innovation can slash costs and spur demand: full automation cuts out drivers, electrification simplifies production and lowers running costs, while sharing can increase profits by making vehicles work 24/7 and use the road more efficiently.

## **However, new technologies alone will not spontaneously make our lives better without upgrading our transport systems and policies.**

Early evidence suggests that transport efficiency is not necessarily improving. New mobility solutions such as car sharing, ride sharing and ride-hailing services are making cars even more appealing, thereby luring passengers from public transport which is often perceived as old, dangerous and uncomfortable. As a result, several cities, especially in the USA, are experiencing a significant increase in road congestion. If the introduction of automated vehicles makes car-based transport cheaper and even more comfortable, the situation will deteriorate further. At the same time, flexible options may remain out of the reach of the more price-sensitive segments of the population unless they are well integrated into the public transport system.

## **Policymakers must act to ensure that new technologies will make future transport cleaner and more equitable than its car-centred present.**

The technological upheaval represents a unique opportunity to turn the transport sector upside down and make it more efficient and rational. For example, greater automation and connectivity may allow for regulated access to the road which, in turn, could bring substantial benefits for traffic flow, transport efficiency and energy consumption. And this is no simple task. Policies, in particular, must take into account the fact that transport systems are extremely complex and their elements can often influence one another in unexpected ways. Today, uncoordinated

competition among service providers and a lack of leadership by transport authorities are leading to more traffic problems and unbalanced capacity provision. In addition, the lack of a predictable long-term framework, including standardisation, data governance, interoperability and digital security, may lead to suboptimal investments and create a glut of options in one place and a lack of them in others. To make the picture even more complex for policymakers, rapid changes in the transport system can have negative effects far beyond transport itself. For example, such changes influence the demand for and supply of workers and skills, the demand for critical raw materials, how data is treated and who can access different modes of transport.

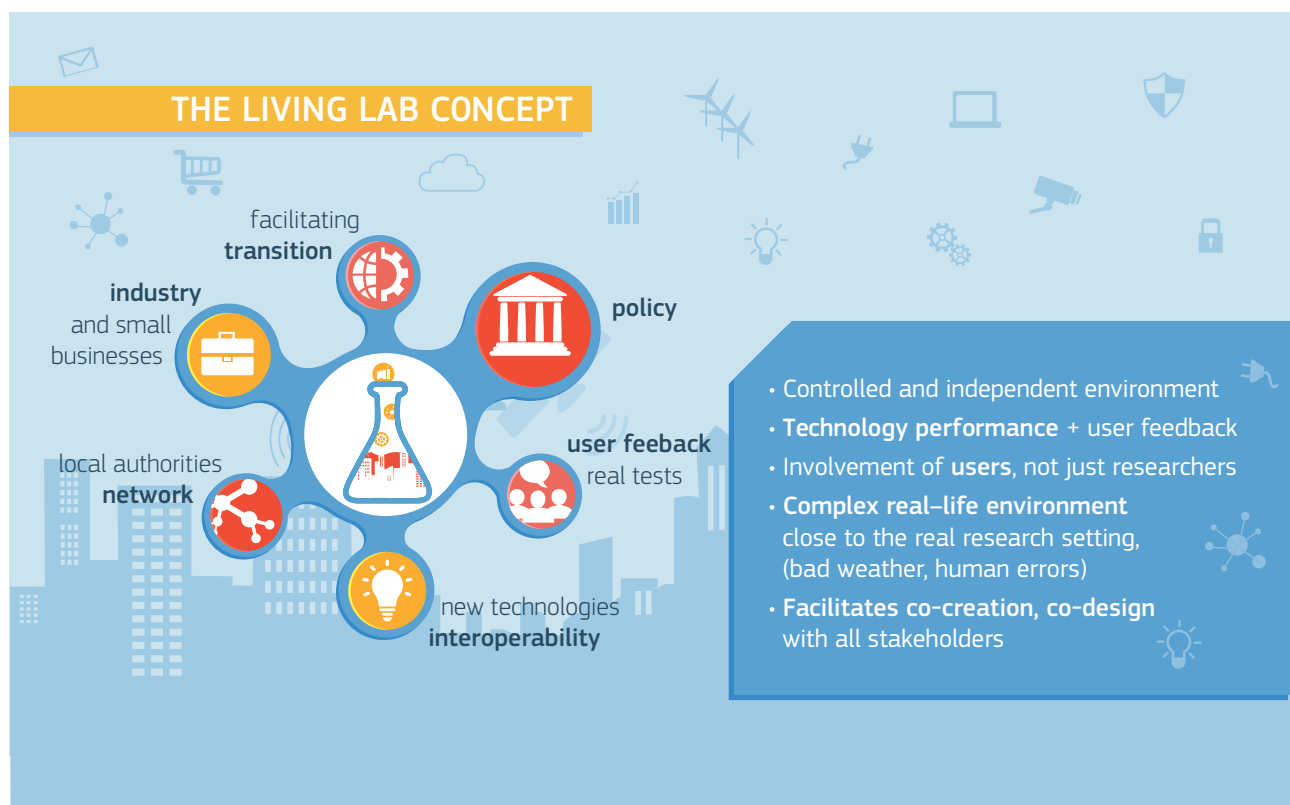
Left unmanaged, such changes may widen the gaps in our societies.

### Developing efficient and equitable governance systems by engaging citizens.

To deal with the challenges facing the transport sector, policymakers will have to address

road transport, which is putting increasingly unbearable burdens on society, be it through lives lost, economic losses, pollution or greenhouse gas emissions. To harness the promise of new technologies, public authorities must define and coordinate all actors in the public interest and establish efficient and equitable governance for complex, multimodal transport systems.

Given the many interconnected issues to be considered in shaping future transport and mobility, research and experimentation with the engagement of citizens must be promoted. Establishing a network of ‘European living labs’ is one way to create the right environment in which innovative mobility solutions are tested and rolled out with the direct involvement of people. If framed in the right way, upcoming trends in road transport have the potential to significantly improve our lives, although decision-making must take account of the complexity of intertwined dimensions that are related to road transport and should be based on a debate with citizens to assess visions and needs.



# THE FUTURE OF ROAD TRANSPORT

IMPLICATIONS OF AUTOMATED, CONNECTED, LOW-CARBON  
AND SHARED MOBILITY

KEY MESSAGES

Under current trends,  
**road transport** and **private cars**  
remain dominant



If no action is taken,  
the **challenges** faced in road  
transport will get even harder

productivity  
**losses**

**accidents**  
and fatalities

air **pollution**



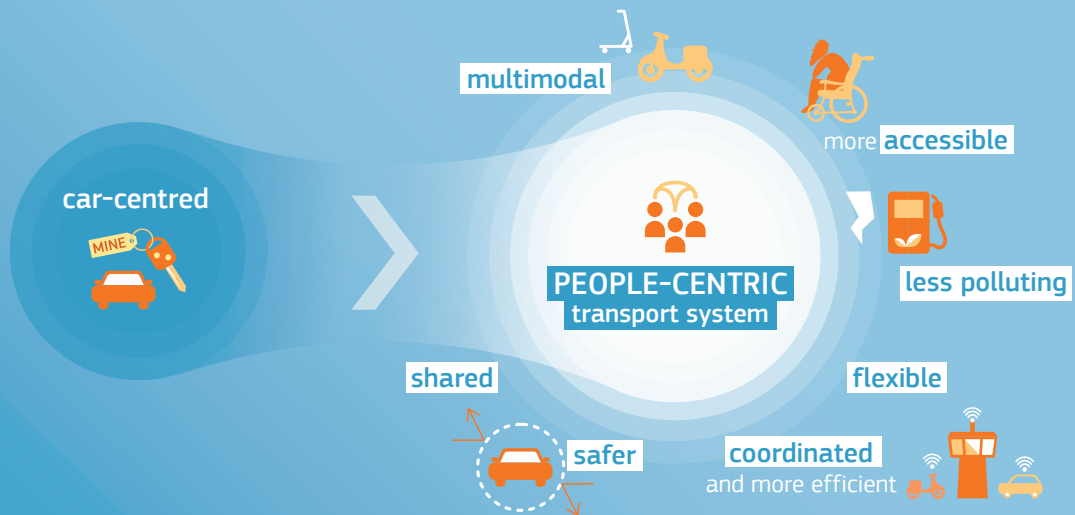
## A STORM OF NEW TECHNOLOGIES AND BUSINESS MODELS

IS TRANSFORMING EVERYTHING ABOUT HOW WE GET AROUND AND HOW WE LIVE OUR LIVES

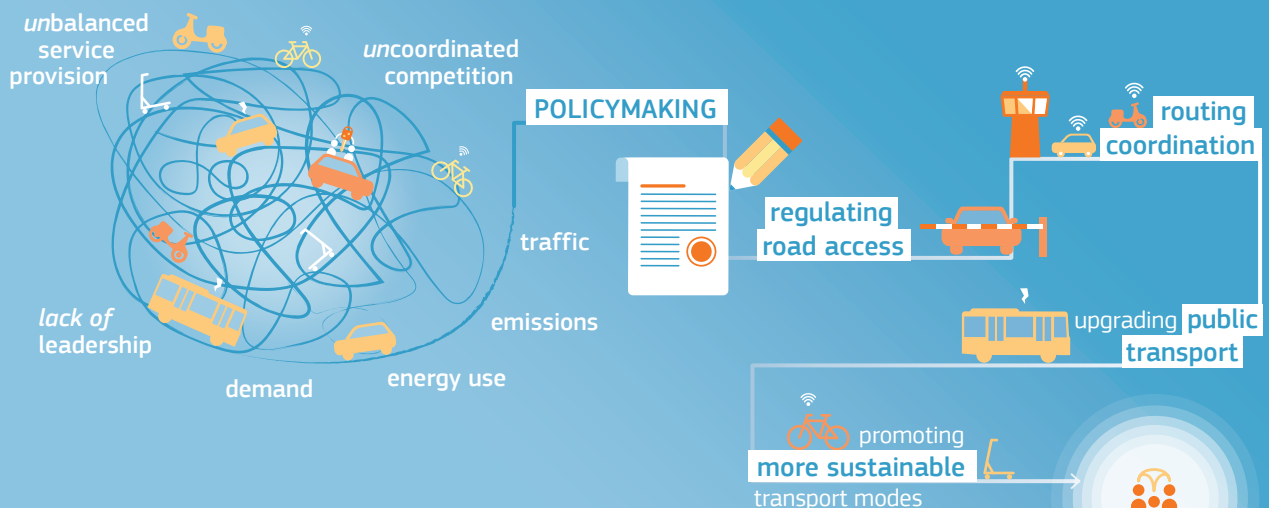




## ...OFFERING OPPORTUNITIES FOR A BETTER TRANSPORT SYSTEM

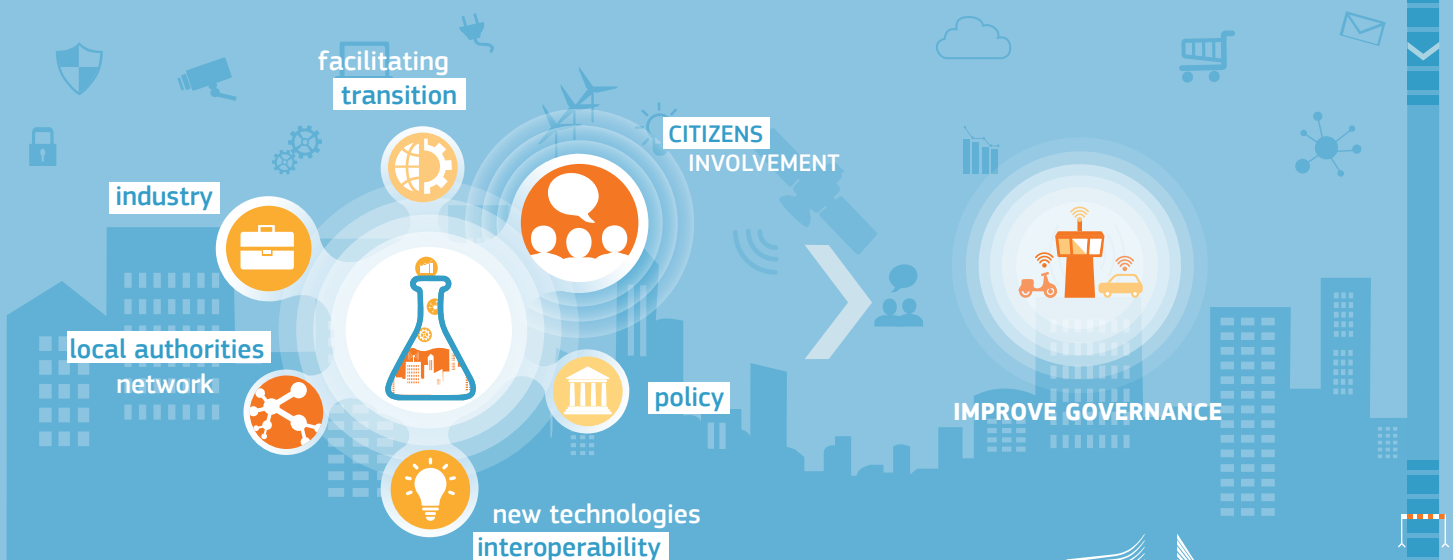


## BUT THE TRANSPORT SYSTEM AND POLICIES NEED TO BE UPGRADED BECAUSE NEW TRANSPORT TECHNOLOGIES ALONE WON'T SPONTANEOUSLY MAKE OUR LIVES BETTER



### THE FUTURE OF ROAD TRANSPORT

## AND LIVING LABS CAN SHOW THE WAY TOWARDS INNOVATIVE MOBILITY SOLUTIONS



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Joint Research Centre

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