



Passenger Travel Behaviour in a Future Multimodal System - Insights from the Modus Project

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Modus



Founding Members



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Modus Objectives and Consortium



High-level objective of Modus to analyse how **performance of the overall European transport** system can be optimised by considering the entire **door-to-door journey holistically** and considering air transport within an **integrated, intermodal approach**



Understand

in a better way how ATM and air transport can better contribute to improve passengers' intermodal journeys and how this translates into an enhanced performance of the overall transport system

Explore and model

the connection and dependence between ATM/ air transport and other transport modes, with a special focus on the interplay between short and medium air and rail connections

Identify

the main barriers in achieving European (air) mobility goals and how air transport can evolve by efficiently connecting information and services with other transport modes to achieve the 4 hours door-to-door goal and a seamless journey experience for passengers.

<https://modus-project.eu/>

Modus

Call: ATM Role in Intermodal Transport (H2020-SESAR-ER4-10-2019)

Grant no. 891166

Duration: June 2020 – November 2022

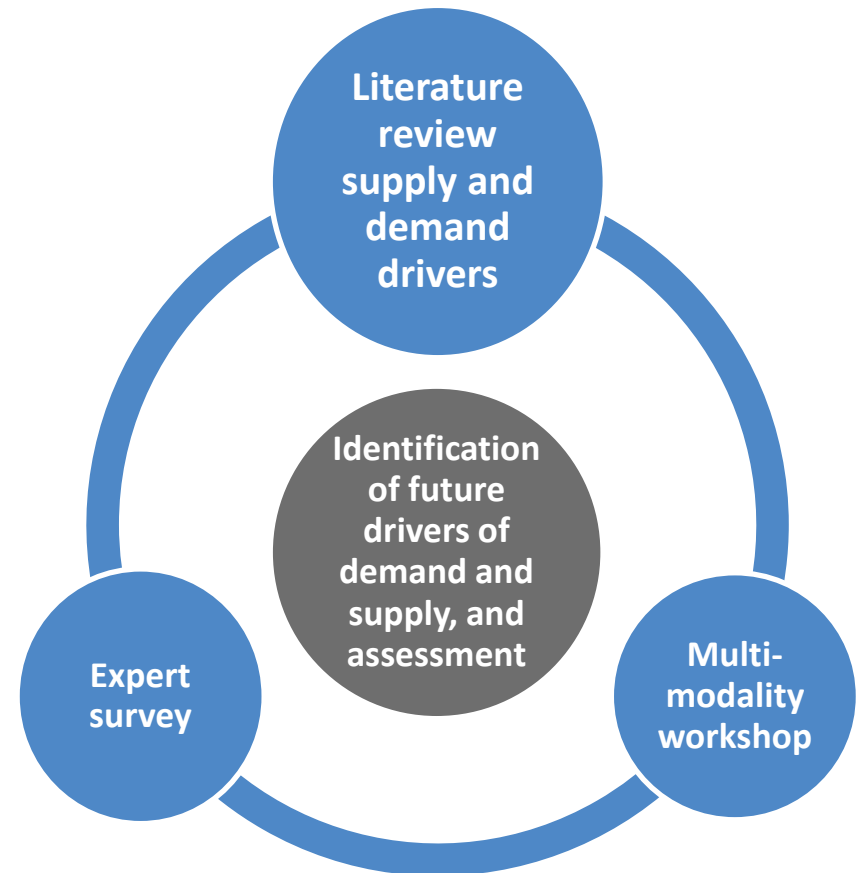


Drivers of Multimodal Passenger Demand

Manifold challenges ahead!

- Enabling a **seamless passenger journey**, including multiple providers and travel information
- Addressing **data, digitalisation and privacy** aspects along the journey
- Meeting **environmental goals** and facilitating a sustainable transport system
- Identifying and developing **new business models** that enable a multimodal transport system
- Tackling the **implications and changes** resulting from **COVID-19**
- Rethinking the use of current **infrastructure** and future challenges

Methods triangulation: Modus approach to identify supply and demand analysis



Selected Passenger Demand Drivers

Social

- Population change (size and age)
- Health concerns
- Motive of travel

Technological

- Communication technologies
- Connectivity
- Artificial intelligence (AI)

Economic

- Change in disposable income
- Intermodal cooperation and ticketing; MaaS

Environmental

- **Environmental attitudes and willingness to change behaviour**

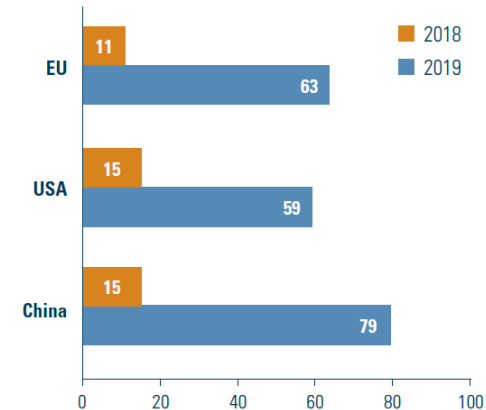
Political

- Regulatory change - passenger rights, various modes

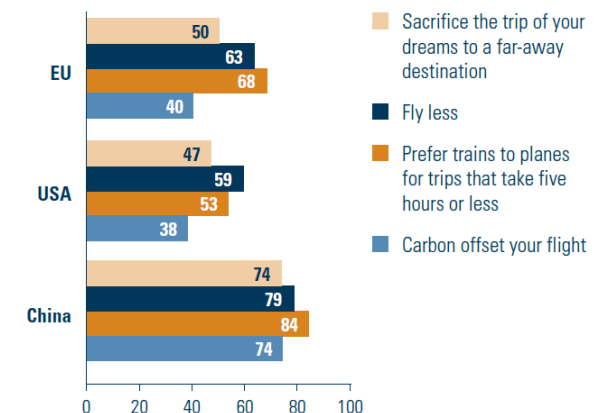
Mobility

- Transport time
- Change in tourism patterns
- Interoperability

Personal plans to travel less often by plane or to fly less



Personal plans to reduce climate impact of flying (2019 survey)



Source: Modus D3.1, Bauhaus Luftfahrt Yearbook 2019; EIB 1st and 2nd climate survey, <https://www.eib.org/en/surveys/index.htm>

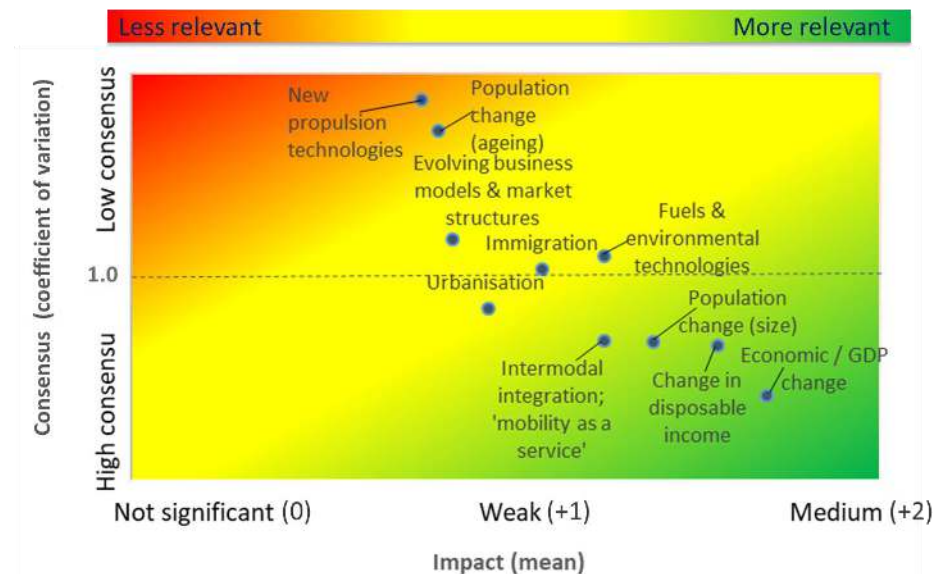
Expert Assessment: Impact on Air Travel Demand

Supporting **economic factors** as still strong drivers for future demand

Intermodal integration and **Mobility as a Service** shaping the future transport system

Passenger **environmental attitudes and environment-related regulation** are expected to boost rail supply and demand further

Assessment of drivers for air travel demand



This analysis only includes those factors which are considered to lead to an increase in air travel demand by the experts; factors assumed to have a negative impact are not depicted here since there is very low consensus across experts in regard to factors.

Expert Assessment: Future Mobility Solutions

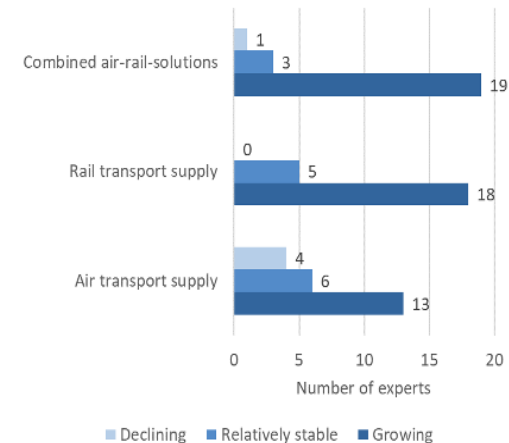
Rail transport playing a major role in **future multimodal transport**

Growth of and investment in **combined air-rail solutions** expected

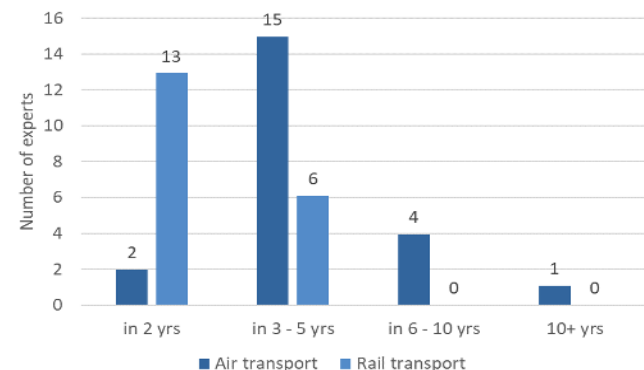
Travel for **business purposes** expected to grow less than for leisure

Covid-19 recovery: experts expect faster recovery for rail sector compared to air

Air and rail travel solutions by 2040



Experts' estimations for recovery to pre-Covid-levels (end of 2020)

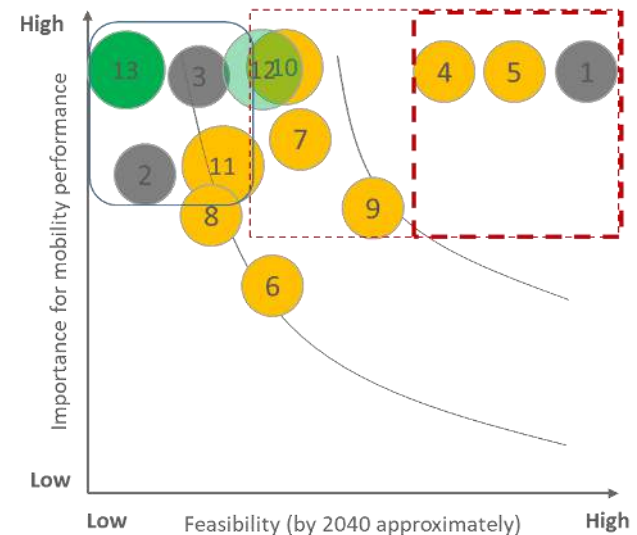


Source: Modus D3.1

Moving towards a **truly multimodal European transport** system

- **Data as key enabler** for improvement (sharing across providers, security and privacy, initiation of shared platforms).
- Focus on **regulations** which are an important foundation to introduce multimodal solutions.
- **Passenger focus of utmost importance** when considering infrastructure needs, business models, and door-to-door journeys.

Future passenger needs and potential improvements



1 Regulations

4 Journey planning

5 Booking and ticketing

9 Personalisation of travel

7 Ticketing innovations

10 Accessibility and comfort

12 Green travel

Source: Modus D3.1

Impact on the (Future) Transport System

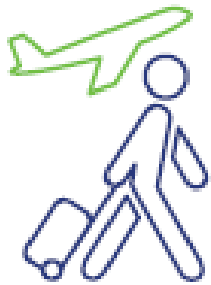
Possible effects of **changing environmental awareness** and **regulations** on demand for air transport

- Carbon off-setting approaches
- Substitution away from air to rail
- Less air travel on short-haul routes
- Moving towards more efficient complementarity between air and rail

The screenshot shows a flight search results page for the route MUC-LAX. The top navigation bar includes options: 'Günstigste Option' (448 € • 16:55 Std.), 'Beste Option' (448 € • 16:55 Std.), 'Am wenigsten CO2' (1.470 € • 17:32 Std., highlighted with a red circle), and 'Benutzerdefiniert' (Erstelle deinen Reiseplan). Below this, a section titled '4.310 kg ist der durchschnittliche CO₂-Ausstoß auf dieser Strecke.' provides information about CO2 emissions and factors influencing the calculation. A 3D airplane model is shown with labels for 'Flugzeugtyp', 'Airline-Rating', 'Direktflüge', 'Passagierauslastung', and 'Kabinenklasse'. The main results section shows two flight options: 1) Virgin Atlantic (11:40 - 21:05, 1 Stopp CDG, 18:25 Std., 1.470 €, Economy Light, Basic Economy) and 2) British Airways (21:05 - 22:45⁺, 1 Stopp LHR, 16:40 Std., 1.470 €, Economy Light, Basic Economy). A third section shows '23 % weniger CO2' for 'Mehrere Airlines' (7:40 - 18:50, 1 Stopp LHR, 20:10 Std., 448 €, Travelgenio) and '21:05 - 19:45⁺, 1 Stopp LHR, 13:40 Std., 448 €'. The bottom of the page includes 'Codeshare-Flüge verfügbar' and links to '450 € flugladen.de' and '450 € CheapTickets.de'.

Source: https://www.momondo.de/flight-search/MUC-LAX/2020-12-15/2020-12-22?sort=co2_a

Capturing Multimodal Performance



Passenger experience

Efficient multimodal disruption management will also minimise the impact on passengers. Furthermore, a connectivity indicator will show progress towards enabling better connectivity for European citizens.



- In terms of development, support to airspace users is required on the definition and validation of new operational and social indicators.

Flightpath 2050 Europe's Vision for Aviation

Serving society's needs

- Meeting societal and market needs for affordable, sustainable, reliable and seamless connectivity for passengers and freight with sufficient capacity

Modus Contact



If you have any questions or like to **learn more about Modus**:

Modus Website

<https://modus-project.eu/>

Modus Twitter

@Modus_project

Modus LinkedIn

<https://www.linkedin.com/company/moduseuproject/>

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Thank you very much for your attention!



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