TDA Training Program on Transport Decarbonisation

Module 3

Urban Multimodal Mobility II (Public Transport)

Deployment: Online / blended
Workload: 3 hrs
Extra learning: 2 hrs

Module working group:

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Learning outcome

By the end of this chapter, students should understand the main concepts about public transport, its financial models and the relevance of good public transport policies to shape cities and large urban areas.

Public transport is crucial to accomplish goals and targets related to CO_2 emissions. Public transport is also one of the best answers to the lack of space and congestion in dense cities.
With the provided examples, students will learn about the structural role of public transport in cities mobility and citizens' quality of life.

Syllabus

1 Public transport: definition and current perspectives

The use of public transport is usually related with the movement of great amounts of people. In fact, most of the modes of public transport involve mass movement but taxis and other services must also be included in this definition.

This topic intends to explore the ideas that motivate the existence of public transport and why it is so important for cities and large metropolitan areas management.

2 Financial perspective of public transport

Urban Areas are densely populated. Residents, workers, tourists and visitors are examples of potential commuters that need to reach the cities everyday with different purposes. Their movements are very much influenced by the constant struggle for space and this is the main reason why it is crucial to provide and well manage the public transport options. In fact, public transport is often the most cost, time and environmentally effective way to satisfy the mobility needs.

On the other hand, private mobility is paid by the end user while public transport tariffs do not usually cover all the costs of the system. Hence, it is expensive for public authorities to provide and to manage good and efficient public transport systems. Emissions reduction comes at a cost with public transport.

This chapter will endorse the large variety of management and financing models for public transport based on real life examples, from the more traditional public direct management ones to the contracting and outsourcing models that usually involve private equity.

3 Public transport vehicles and infrastructures

It is extremely relevant to highlight that different needs and purposes motivate different solutions for users. Multimodal mobility systems allow users to choose and combine several trip solutions from a larger spectrum of options. Innovative solutions and mobile applications are being introduced to provide decision support tools for users to take the most suitable trip solution.

There are different types of public transport and most of them can be used in a seamless way. Train, tram, metro, metrobus in a larger scale, together with buses and boats can transport more passengers per single trip. Other public modes of transport such as taxi and similar, funicular or cable cars are smaller but also provide public transport service. Some of the vehicles options requires specific infrastructure. This topic will focus on their main characteristics, costs and usability purposes as well as service design factors that drive public transport ridership (reliability, travel time, safety, etc.).

4 Decarbonisation perspective of public transport

Public transportation is strongly connected to decarbonisation policies. Every time an individual transport trip is shifted to public transport, it will be acting in favour of the reduction of CO_2 emissions.

Nowadays, the challenge is to decarbonise all public (and private) transport fleets, that hopefully is charged with energy from clean and renewable sources (note: this subject will be detailed in other chapters).

5 Management and monitoring systems of public transport

As important as providing public transport is to find efficient ways to monitor and manage its presence in the city. Nowadays, big data provided by these vehicles are very important to manage and therefore provide better services to the users.

Data provided by public transport organized in geographic information systems, big data analysis, vehicle smart counters and other new technologies allows city operation centres to make more accurate real time and strategic decisions concerning public transport management.

Artificial intelligence and automatic responses are also being used as new approaches to manage public transport and to provide better service levels to customers.

The main focus of this topic will illustrate how to increase public transport ridership by taking advantage of data and available technology.

Case studies

Luxemburg makes all public transport free

Luxemburg announced the free public transport in the county. As probably the first country to introduce free public transport in the world covering the entire network. The public policy measure will come into effect on 1 March 2020 and some countries and cities/regions are already seen it as viable option to increase the ridership and therefore help them to achieve their environmental targets.

PART - Public Transport Tariff Reduction Support Program - Portugal

This is a program to subsidise the public transport monthly ticket prices in Portugal. The value around 100 million each year is for all the country and it is financed by the national Government (using funds from carbon taxes). This measure resulted in substantial reductions in the monthly fees for the transport monthly ticket with great acceptance from the users and a significant reduction on the individual transport usage (e.g. estimated effects are less 100.000 vehicles commuting in Portugal every day).

Tallin free public transport for residents

The capital of Estonia introduced free public transport at the beginning of 2013 after their mayor called a referendum on the decision. The city remains committed to the programme – claiming that instead of it costing them money, they are turning a profit of €20m a year.
To enjoy Tallinn's buses, trams, trolley buses and trains for free you must be registered as a resident. Residents only need to pay €2 for a "green card" and then all their trips are free.

Shenzhen's all-electric bus fleet

Shenzhen's all-electric bus fleet is the world's first of its kind and was supported by massive government funding programme. By the end of 2017, the city operated more than 16.000 electric buses and by the end of 2018, all 13.000 taxis turn on to be electric vehicles (EV). This currently is the world's largest eco-friendly bus fleet.

Transport for London

Transport for London (TfL) is a company entirely publicly owned. It is responsible for enacting the Mayor's transport strategy, across several different transportation modes. London is widely recognized as having one of the most effective transport systems and TfL is usually a role model for most of the transport authorities. Its red buses, black cabs and Tube trains are known the world over.

Major references

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https://www.citylab.com/transportation/2018/05/how-china-charged-into-the-electric-bus-revolution/559571/
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