Editorial

Transport Systems for Sustainability: Policy, Planning and Exploitation

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Sharing a common global vision for the improvement of the world, accompanied by a framework that operationalizes this vision, is a crucial step for the long-term sustainability of the planet and its people. Transport needs are created by territorial activities undertaken by societies and are also influenced by the degree of freedom in transactions between countries and/or regions. Movements of both freight and people are a direct result of how societies operate. Fuelled by several megatrends, such as information connectivity, global markets or new manufacturing processes, demand for passenger and freight transport has been on the rise in recent decades. The current global turmoil due to the COVID-19 pandemic crisis is believed to have only slowed down this long trend [1].

Unsurprisingly, transport is responsible for a large share of the world's greenhouse gas emissions and is a major contributor to climate change. In recent years, emissions from transport have risen compared to most other economic sectors, such as power production and industry. By way of example, transport emissions now account for more than one-quarter of the EU's total greenhouse gas emissions [2]. A major challenge is that the bulk of the energy still comes from oil, which makes any reversal of this trend difficult to achieve. The majority of the greenhouse gas emissions come from cars, vans, trucks and buses, while the remainder comes mainly from shipping and aviation [3].

This Special Issue aimed to gather contributions from transport policy and planning to the sustainability of the world. Looking to past decades, several societal changes can be observed. Their consequences have implications for how transport can contribute to the Sustainable Development Goals (SDGs) defined by the United Nations. Sustainable transport drives poverty eradication and sustainable development. There are several SDG targets directly linked to transport, including SDG 3 on health (increased road safety), SDG 7 on energy, SDG 8 on decent work and economic growth, SDG 9 on resilient infrastructure, SDG 11 on sustainable cities (access to transport and expanded public transport), SDG 12 on sustainable consumption and production (ending fossil fuel subsidies) and SDG 14 on oceans, seas and marine resources. In addition, sustainable transport will enable the implementation of nearly all SDGs through inter-linkage impacts [4]. Access to sustainable transport for all should be at the forefront, including for vulnerable groups such as women, children, persons with disabilities and the elderly. This Special Issue aims to address these issues and collect the output of different high-quality studies.

The papers included in this issue reflect policies and measures taken at different decision levels (i.e., strategic decisions, tactical planning and operational outcomes) and cover passengers and freight, as well as services, infrastructure and third-party providers.

This Special Issue publishes 16 papers covering different modes of transport, spatial dimensions and scientific domains. They provide a broad overview of the current knowledge on sustainable transport.

Four papers address problems at the *urban scale*:

- Hensher, Quoc Ho, Liu, Wei, Ellison, Schroeckenthaler, Cutler and Weisbrod introduce MetroScan, a strategic-level transport and land-use planning application system that

allows for mapping of passenger and freight activity, as well as an endogenous treatment of the location of households and firms. The authors summarise the analytical framework of MetroScan and show its capability (including the many useful outputs) with a case study for a 25 percent reduction in public transport fares across the entire network.

- Nogal and Jiménez discuss the potential factors influencing station attractiveness, supported by the related literature on cyclists' and pedestrians' preferences and the characteristics of the stations themselves. The authors propose a new measure of the attractiveness of bike-sharing stations. The proposed tool is expected to allow urban and transportation planners to reduce re-balancing costs and to maximise user satisfaction at a low cost, which could have a direct impact on improving urban sustainability.

- Petrova, Grunin and Shakhbazyan propose a methodology of Integral Index of Traffic Planning (Integral TP Index), which is based on the primary data on vehicle speeds, traffic volumes, number of accidents, etc., for Moscow and allows for basic assessment of the transport situation in Russian's capital.

- Zak and Mainka verify if the construction of a cross-regional highway through the city centre affected air quality in the neighbourhood of a newly built road. The authors concluded that the construction of the new artery by the city centre, using appropriate technical solutions and traffic organization (tunnel, noise barriers, roundabouts, speed limit) likely contributed to an overall reduction in NO2 concentrations.

Transport infrastructure is addressed in five papers from different perspectives, including financing and investment, socio-economic development, environment or public policies:

- Raicu, Costescu, Popa and Dragu elaborate a reflection aiming to clarify the effects of new infrastructure on socio-economic development.

- Beškovnik and Golnar contribute with pollution data elaboration to demonstrate the need and justification for high investment in the Baltic–Adriatic Corridor in order to establish sustainable transport chains. The study shows that pollution values from supply chains on the Asia–Central Europe axis could be reduced by up to 30% by eliminating infrastructural barriers in the port of Koper and on the railway network at BAC, which is one of the primary goals of BRI.

- Henke, Cartenì and Francesco propose a sustainable evaluation process for investments in the transport sector, based on the combined use of both CBA and MCA analysis and stakeholders' engagement. The proposed evaluation method was also applied to a real case study: the decision-making process for a new highway in a high naturalistic and touristic area in the North of Italy.

- Lopes dos Santos, Macário, Delaplace and Di Vita address a particular problem with mobility in the Olympic Games, not only in a city but also in the Olympic region. They propose a theoretical framework to systematize the mobility problem at the Olympic Games, identifying the dimensions of the related knowledge frames. Using the case study of the first ever Olympic region—the Milan-Cortina 2026 Winter Games–they then extrapolated the proposed framework to cases of Olympic regions in order to identify any shifts in the paradigm of mobility planning when increasing the spatial scale of Olympic hosts, maintaining the sustainability of the territory and the event.

Tsakalidis, Gkoumas, Grosso and Pekár present an overview of TRIMIS and its benefits as an integrated analytical tool that provides support to sustainable transport governance and decision-making. Moreover, it provides insights on current technology trends in the road transport domain with a focus on smart innovation and identifies emerging trends with a potential future impact through a dedicated case study, combining a techno-economic assessment with findings of a horizon scanning exercise.

Freight transport was the selected perspective in three papers, as follows:

- Saderova, Rosova, Kacmary, Sofranko, Bindzar and Malkus develop a modelling tool for the removal of extracted raw material from a mining area to the entry point for the next technological process. The article presents the results of calculations and the results of simulation experiments and also verified the results obtained by calculations.
- Bartholomeu, Lopes and Yoshizaki report the CO_2 emissions from diesel combustion in the following stages of the Brazilian ethanol supply chain: (a) agricultural operations (management), (b) sugarcane transportation to the mill and (c) biofuel transportation to the destination. The results indicate that diesel consumption varies greatly by region of origin and that agricultural management, such as tilling, planting and harvesting operations, accounts for about 70% of total diesel emissions to the ethanol supply chain. Rail and pipeline transportation are ultimately important for mitigating emissions from fuel consumption in logistics corridors for exporting ethanol.
- Hintjens, Hassel, Vanelslander and Van de Voorde study the bundling of road cargo flows of neighbouring seaports to a common hinterland. In specific cases, some hinterland flows can be too small to make bundling in a sufficient frequency possible. The result is a business model that helps port authorities, and other port actors, to identify bundling projects that will lower the direct, generalised and external costs of the hinterland connectivity.

Finally, we have four papers that focus on specific modes of transport—road and maritime:

- Jovanov, Vranješ, Jovanov, Otic, Vasiljevic, Petric and Aleksic deep dive into the experience of the driver rehabilitation process in the Republic of Serbia, with the analysis of the rehabilitation process and the changing of drivers' attitudes. The key goal of this work is to make the sustainability e-learning model based on mistakes, which will eliminate the same mistakes made by drivers. The result would be optimal training and high-quality performance in traffic.
- Kapidani, Bauk and Davidson assess the level of digitalization in several developing maritime business environments in Albania, Bosnia and Herzegovina, Montenegro, and Serbia. The assessment was done in reference to Holtham's and Courtney's Intelligent Information and Communication Technologies (ICT) Exploiter Model.
- Dillman, Árnadóttir, Heinonen, Czepkiewicz and Davíðsdóttir perform an extensive literature review of existing EV life-cycle assessments (LCAs) and a meta-analysis of the studies in the review, extracting life-cycle GHG emission data combined with a standardized methodology for estimating GHG electrical grid intensities across the European Economic Area (EEA), which were used to estimate a set of environmental breakeven points for each EEA country.
- Woldemariam proposes an incremental benefit–cost analysis (IBCA) framework to prioritize low-volume road (LVR) projects that maximize road network accessibility considering project cost and network accessibility requirements. The study results show that the accessibility benefits of road projects depend not only on their cost requirements but also on their spatial locations in the network that affect their network-level accessibility benefits per unit cost of investment.

We believe that this Special Issue provides an interesting set of measures, policies and actions that can work toward sustainability.

List of Contributors:

1. Santos, G.; Macário, R.; Delaplace, M.; Di Vita, S.; The Long-Standing Issue of Mobility at the Olympics: From Host Cities to Host Regions in the Ongoing Case Study of Milan–Cortina 2026.
2. Hamiga, W.; Ciesielka, W.; Numerical Analysis of Aeroacoustic Phenomena Generated by Truck Platoons.
3. Woldemariam, W.; Prioritization of Low-Volume Road Projects Considering Project Cost and Network Accessibility: An Incremental Benefit-Cost Analysis Framework.

4. Raicu, S.; Costescu, D.; Popa, M.; Dragu, V.; Dynamic Intercorrelations between Transport/Traffic Infrastructures and Territorial Systems: from Economic Growth to Sustainable Development.
5. Jovanov, N.; Vranješ. D.; Jovanov, G.; Otić, G.; Vasiljević, J.; Petrić, Z.; Aleksić, S.; Implementation of the E-Learning Model for Sustainability of Driver Rehabilitation Program.
6. Żak, M.; Mainka, A.; Cross-Regional Highway built through a city centre as an example of the sustainable development of urban transport.
7. Tsakalidis, A.; Gkoumas, K.; Grosso, M.; Pekár, F.; TRIMIS: Modular development of an integrated policy-support tool for forward-oriented transport research and innovation analysis.
8. Hintjens, J.; van Hassel, E.; Vanelslander, T.; Van de Voorde, E.; Port cooperation and bundling: a way to reduce the external costs of hinterland transport.
9. Bartholomeu, D.; Lopes, C.; Yoshizaki, H.; CO2 emissions from fuel consumption in the logistic stages of the Brazilian bioethanol supply chain.
10. Henke, I.; Cartenì, A.; Francesco, L.; A Sustainable Evaluation Processes for Investments in the Transport Sector: A Combined Multi-Criteria and Cost–Benefit Analysis for a New Highway in Italy.
11. Kapidani, N.; Bauk, S.; Davidson, I.; Digitalization in Developing Maritime Business Environments towards Ensuring Sustainability.
12. Nogal, M.; Jiménez, P.; Attractiveness of Bike-Sharing Stations from a Multi-Modal Perspective: The Role of Objective and Subjective Features.
13. Saderova, J.; Rosova, A.; Kacmary, P.; Sofranko, M.; Bindzar, P.; Malkus, T.; Modelling as a tool for the planning of the transport system performance in the conditions of a raw material mining.
14. Hensher, D.; Quoc Ho, C.; Ellison, R.; Liu, W.; Wei, E.; Schroeckenthaler, K.; Cutler, D.; Weisbrod, G.; MetroScan: A Quick Scan Appraisal Capability to Identify Value Adding Sustainable Transport Initiatives.
15. Beškovnik, B.; Golnar, M.; Eliminating barriers for sustainable transport systems on Maritime Silk Road and Baltic-Adriatic Corridor under BRI.
16. Petrova, T.; Grunin, A.; Shakhbazyan, A.; Integral Index of Traffic Planning: case-study of Moscow city transportation system.
17. Dillman, K.; Árnadóttir, Á.; Heinonen, J.; Czepkiewicz, M.; Davíðsdóttir, B.; Review and Meta-Analysis of EVs: Embodied emissions and environmental breakeven.

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References

1. Christidis, P.; Christodoulou, A.; Navajas Cawood, E.; Ciuffo, B. The post-pandemic recovery of transport activity: Emerging mobility patterns and repercussions on future evolution. *Sustainability* **2021**, *13*, 6359. [CrossRef]
2. Bhat, A.; Ordóñez Garcia, J. Sustainability and EU Road Transport Carbon Emissions from Consumption of Diesel and Gasoline in 2000 and 2018. *Appl. Sci.* **2021**, *11*, 7601. [CrossRef]
3. Michalopoulos, S. Europe's Oil Dependency to Stick to Transport Up to 2030. EURACTIV, 2020. Available online: https://www.euractiv.com/section/transport/news/europes-oil-dependency-to-stick-to-transport-up-to-2030/ (accessed on 13 October 2021).
4. UNECE Transport and the Sustainable Development Goals. Available online: https://unece.org/transport-and-sustainable-development-goals (accessed on 13 October 2021).