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Towards future innovative transport: visions, trends and methods

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Towards future innovative transport: visions, trends and methods

This issue of Transportation Research Procedia includes some selected and revised articles presented at the 43rd European Transport Conference (ETC) organized by the Association for European Transport (AET), from September 28th to September 29th 2015, at the Campus Westend of Goethe-University in Frankfurt, Germany.

The ETC is a major annual event where European transport practitioners and researchers come together to keep abreast of policy issues, research findings and best practices across a broad spectrum of transport topics: from advanced modelling for passenger and freight transport to appraisal methods; from sustainable planning to public transport and rail case studies. Uniquely in Europe, the Conference provides a forum for those engaged in research, policy and business in transport, bridging the gap that often arises between theory and practice.

In 2015, out of about 240 articles presented at the Conference, 75 papers were first short-listed by respected members of the transport profession in Europe for publication in this issue. Each of these papers was then peer-reviewed by experts in the related field. At the end of the review process, a total of 19 papers were accepted for publication based on their quality and on their relevance to the main themes of interest to all working in transport planning, identified by the Conference Programme Committee.

The selected papers share the common aim of understanding how to plan, manage and design mobility and transport, to move towards a future that addresses current challenges such as resource scarcity, transport-related externalities, institutional barriers, etc., and promotes long-term well-being for society and the planet.

The paper by Ortegon and Tyler [1] conceptualizes a preferable future vision as a set of principles that ought to characterize policy, design and operations of future mobility, and identifies potential pressure points, barriers and triggers for change. In a context of rapid change and great uncertainty, opportunities may come from the “technological challenge”. An examples is given by self-driving cars (or autonomous vehicles) that have recently generated significant attention and discussion. While it is recognized that a number of technical and legal issues need to be solved, widespread adoption of self-driving vehicles is increasingly considered to be inevitable. However, the long-term direct and indirect effects of this technology, and the net

impact in terms of societal benefit or harm, are far from clear. The paper by Gruel and Stanford [2] identifies several of these outcomes and, using the System Dynamics approach, explores conditions in the broader transportation system under which self-driving vehicles may be either harmful or beneficial. On the other hand, some empirical evidence on feasibility and acceptability of driverless electric vehicles is given by Christies et al. [3] reporting on tests carried out in Lausanne (Switzerland) within the framework of the European project CATS, “City Automated Transport System”, and by Jacobs et al. [4] considering German house owners as potential early adopters of electric cars.

A second set of selected papers analyzes the recent trends in urban and ex-urban transport, using a variety of quantitative and qualitative approaches. The paper by Goletz et al. [5] discusses, with a specific focus on passenger mobility, four case studies from Paris, Santiago de Chile, Singapore and Vienna, in light of their recent mobility trends, concluding that similarities can arise across modes and cities at unexpected points, such as between cyclists in Santiago and car users in Singapore, or public transport users in Vienna and cyclists in Paris. The main findings can be transferred only if the overall context is considered, including both socio-emotional and rational motives.

Trends in car use are analyzed by Cornut [6] and Van der Loop et al. [7]. The former paper, aiming to find determinants of car ownership in the Paris region by means of longitudinal data analysis, shows generational changes in behavior and attitude toward the automobile; the latter paper, evaluating demand level induced by new road infrastructures, concludes that is important to gain insights into the types and the degree of behavioral reactions that generally occur after the opening of new infrastructures, in particular on route choice and preferred departure times.

Thust et al. [8] discuss recent trends of long-distance travel in Germany after bus market liberalization, using the PRIMA model. The authors confirm that competition between transport services and modes is a matter of price rather than level of service (as also found in other studies, e.g. the case of Italian High-speed Rail), showing that, whereas base fares have remained unchanged, there have been many more low-price offers between 2014 and 2015, this resulting in increasing rail passengers and lower average fares, with an overall decrease in revenues for the rail operator (i.e. DB FV) of 2% in one year.

Trends in European long-distance travel coupled with its environmental impacts and suitability for EU policies are addressed in the paper by Aparicio [9], calling for demand management action by the governments of those countries with high levels of air and car demand.

A third set of papers focuses on assessment and project appraisal methods: Meunier et al. [10] discuss the evolution of values recommended by national guidelines in France, Germany and the UK, for cost-benefit analysis (CBA); Voros et al. [11] present a state-of-the-art review of the methods to assess indirect economic benefits, with a case study in Hungary; Nunez et al. [12] propose a methodology based on Multi-Criteria Decision Analysis and Bayesian Networks for measuring sustainability of inland port locations; Keseru et al. [13] propose a new flexible and integrated evaluation toolkit developed within the framework of the NISTO project (New Integrated Smart Transport Options), co-financed by the Interreg IVB programme, to overcome some deficiencies of traditional appraisal methods when applied specifically to small-scale mobility projects; Andersen et al. [14] discuss how land use can be affected by the opening of a fixed link, using four different case studies in Norway.

Furthermore, this topical collection also includes articles proposing innovative methods for management and design of transport infrastructure and mobility projects: Cuevas et al. [15] propose two analytical models to optimize the fleet size of car-sharing systems and the number of taxi stands, with an application to the case of Barcelona (Spain); Gregorio et al. [16] present an analytical model able to accurately estimate speed limits on rural two-ways roads, based on objective and easily measurable geometric variables of the road section and the surrounding areas; Fahnenschreiber et al. [17] propose a network design model for dynamic ride-sharing systems connecting public transport stations; Goves et al. [18] describe a model based on Artificial Neural Networks (ANNs) to forecast traffic conditions 15 minutes ahead, given current and historical traffic information. Finally, using a game-based analysis, Bablinsky [19] explores how the existing railway capacity allocation process can be improved in order to strengthen the competitiveness of freight train operators with an application to a British case study of the Brighton main line.

As the guest editor of this issue, I am pleased to see such a variety of articles contributed by scholars and professionals from all over the world. Special thanks go to all reviewers, members of the International Advisory Committee, to the publisher, and to those involved in the technical

processes involved. I would also like to thank all those who contributed to making this issue a reality.

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The Editor is indebted with the following colleagues for their assistance in refereeing papers submitted to this special issue:

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