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Recent Advances and Emerging Issues in Transport Research – An Editorial Note for the Selected Proceedings of WCTR 2019 Mumbai

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Abstract

This edition of Transportation Research Procedia includes full-length papers which have been successfully reviewed and presented at the World Conference on Transport Research (WCTR) held at Indian Institute of Technology Bombay in Mumbai, India during 26-31 May 2019.
This editorial provides information on the main conference organizer WCTRS – World Conference on Transport Research Society, on the organization of WCTR 2019 Mumbai, on the Topic Areas and Session Tracks covered by the conference, on the reviewing process for WCTR 2019 Mumbai, and on some key research findings of the conference.

Keywords: World Conference on Transport Research; Editorial

1. About WCTRS – World Conference on Transport Research Society

The objective of the WCTRS is to provide a forum for the interchange of ideas among transport researchers, managers, policy makers, and educators from all over the world, from a perspective which is multi-modal, multi- disciplinary, and multi-sectoral. The members span almost all aspects of transport research, planning, engineering, policy and management. The Society has become a primary forum for such international exchanges in transport.
One unique role for the WCTRS is to identify emerging issues and opportunities of a policy, managerial, or technical nature which will influence transportation research, policy, management and education in future years. In this way, the Society intends to play a strong leadership role in bridging the gaps between research and practice.
The World Conferences are the platforms where leading transport professionals from different countries and areas convene to share and learn from one another. After a Pre-WCTR conference in Bruges, Belgium, 1973, the following World Conferences on Transport Research took place: (1) Rotterdam, The Netherlands, 1977, (2) London, UK, 1980, (3) Hamburg, Germany, 1983, (4) Vancouver, Canada, 1986, (5) Yokohama, Japan, 1989, (6) Lyon, France, 1992, (7) Sydney, Australia, 1995, (8) Antwerp, Belgium, 1998, (9) Seoul, South Korea, 2001, (10) Istanbul, Turkey, 2004, (11) Berkeley, USA, 2007, (12) Lisbon, Portugal, 2010, (13) Rio de Janeiro, Brazil, 2013, (14) Shanghai, China, 2016, (15) Mumbai, India, 2019.
Information on the WCTRS, on all conferences and on current and future activities is available on the Society's website (www.wctrs-society.com).

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2. About WCTR 2019 Mumbai

The 15th WCTR conference was hosted by Indian Institute of Technology Bombay, India. The conference attracted 1065 participants from 65 countries, with close to 50% of the delegates visiting from developing and emerging countries. During the conference, the authors presented 753 papers, covering all major aspects of transport research. 135 of these papers were presented in 7 poster sessions. In addition, there were 44 special sessions with invited speakers and 33 meetings of WCTRS Special Interest Groups. The plenary keynote speech was held by Prof. Dr. Ernst Ulrich von Weizsäcker. Subsequent keynotes speeches were given for every Topic Area, launching the respective sessions tracks. The conference was further enriched by interesting technical tours and lively social programs. On 26 May 2019, the WCTR Young Researchers Conference (WCTR-Y) was held.

WCTR Mumbai 2019 marked some modest changes in the scientific preparations of the World Conference on Transport Research. For the first time, instead of the usual abstracts, full papers were called for and reviewed in a single round, allowing to compress the timeline of reviews by some months. We initiated an early process to commit partner journals for special issues parallel to the Conference Proceedings, resulting in over 20 arrangements in place at the time of the conference, with leading journals in the field. We gave increased emphasis to the poster sessions, with more visibility and thematic ordening. As of this year, all SIGs hosted at least one open formal committee meeting, allowing interested delegates to join and consider becoming active. Building on the 2016 success, Elsevier supported the conference with her Conference Management System, conference material and planning support throughout the preparations.

3. Definitions of Topic Areas and Session Tracks

To facilitate the interchange of ideas between researchers working in the same area, WCTR has structured the topics into 9 categories with a total of 35 session tracks. Each session track consisted of a series of sessions, each of them featured several presentations. Poster sessions were related to the defined topic areas and session tracks.

The Topic Areas are described below, and the related Session Tracks are listed. The names are those of the Topic Area Managers and Session Track Organizers. The numbers following each Session Track indicate the total number of papers included in this issue of Procedia. The largest delegations came from Topic Areas C, H, G, F, and I.

Topic Area A "Transport Modes: General" (Thierry Vanelslander) covers research issues related to a single mode and not addressed in other topic areas. In particular it provides a focus for the work of the WCTRS Special Interest Groups on Air, Maritime, Rail, and Road (Urban and Intercity) Transport.

A1: Air Transport and Airports (Chikage Miyoshi and Martin Dresner, **7** papers)

A2: Maritime Transport and Ports (Enrico Musso and Thierry Vanelslander, **1** papers)

A3: Rail Transport (John Preston, Yung-Cheng (Rex) Lai, and Marin Marinov, **6** papers)

A4: Road Transport - General (Gopal Patil, **2** papers)

Topic Area B "Freight Transport and Logistics" (Johan Woxenius and Mike Browne) includes freight carried by all modes of transport with a strong focus on the way in which freight modes are integrated – in particular the importance of intermodal transport and the relationship between freight transport and logistics management. Themes concerned with spatial aspects at many different levels are also included – from global freight and logistics networks to the challenges of urban freight and city logistics. The contribution of freight modelling to decision-making and policy development, the application of ITS and the growing importance of humanitarian logistics are also part of the topic area. Environmental issues and the theme of sustainability are now of major relevance to many fields of freight transport and logistics.

B1: Logistics and Freight Transport Operations (Gunnar Stefansson and Maja Piecyk, **6** papers)

B2: Humanitarian Logistics in Disasters (Eiichi Taniguchi, Russell G. Thompson, and Ali G. Qureshi, **3** papers)

B3: Intermodal Freight Transport (Ralf Elbert and Jason Monios, **1** paper)

B4: Urban Goods Movement (Michael Browne and Anne Goodchild, **9** papers)

B5: Freight Transport Modeling (Hanno Friedrich and Lori Tavasszy, **7** papers)

Topic Area C "Traffic Management, Operations, and Safety" (Zong Tian) is concerned with interurban highways as well as with urban roads, including traffic theory and modelling, traffic control and management, transport network analysis, information and communication technologies for traffic systems and infrastructure management. Safety analysis and policy is comprehensively addressed in this topic area both in relation to traffic safety and as an important issue for all modes and intermodal transport. Public transport management, operations and control is covered as a part of this topic area. Regarding developing and emerging countries, there was a close cooperation with Session Track H3.

C1: Traffic Theory and Modelling (Qiang Meng and Xiobo Qu Senior, **20** papers)

C2: Urban Transport Operations (Zong Tian and Keshuang Tang, **8** papers)

C3: Intelligent Transport Systems (Ashish Bhaskar and Edward Chung, **11** papers)

C4: Traffic Safety Analysis and Policy (Wael Alhajayseen and Geetam Tiwari, **21** papers)

Topic Area D "Activity and Transport Demand" (Bhargab Maitra) dealt with understanding and modelling how people make choices regarding their activities and travel plans and how these interact with the transport system. It dealt with theoretical constructs, behavioral assumptions,

and methodologies for the analysis, representation, inference and modelling of the way travelers behave and the interrelationships of this behavior with their activities and the transport system. This subject area included all topics related to the analysis of travel demand and behavior and their interactions with time use, and the environment.

D1: Data Collection and Processing Methods (Patrick Bonnel, **6** papers)

D2: Travel Behaviour and Choice Modeling (Chandra Bhat, **6** papers)

D3: Applications of Travel Behaviour Analysis and Demand Modeling Approaches (Bhargab Maitra, **13** papers)

D4: ICT, Activities, Time Use and Travel Demand (Eran Ben-Elia, **1** papers)

Topic Area E "Transport Economics and Finance" (Georgina Santos) deals with key aspects of evaluation, pricing, financing, and economic regulation. Under this topic, the private and social costs and benefits of transport systems (infrastructure and services) were appraised, based on consistent economic criteria. It also helped to understand the roles of each level of government, and develop policy and regulatory proposals, including the issues of pricing, private and public finance and investment choices. This area was concerned with all modes of transport and all types of demand and supply settings.

E1: Transport System Analysis and Economic Evaluation (Füsun Ülengin and Özay Özaydin, **7** papers)

E2: Transport Pricing and Economic Regulation (Marco Ponti, Georgina Santos, and Charles Raux, **3** papers)

Topic Area F "Transport, Land Use, and Sustainability" (Haixiao Pan and Masanobu Kii) is concerned with land use and environmental issues due to the interaction with transport and vice versa. It included integrated land use and transport policy and planning; modelling of land use, transport and environmental interactions with decision support systems; community livability, local environmental impacts, and the use of non-motorized modes of travel in the developed world; and sustainability and environmental ethics.

F1: Transport and Spatial Development (Masanobu Kii and Rolf Moeckel, **9** papers)

F2: Transport, Climate Change, and Clean Air (Patrick Jochem and Wei-Shiuen Ng, **14** papers)

F3: Smart Transport, Smart City, and Quality of Life (Ye Li, **4** papers)

F4: Livability and Non-Motorized Transport (Eva Heinen, **8** papers)

Topic Area G "Transport Planning and Policy" (Stephen Ison and Maria Attard) covers the institutional processes of developing and implementing transport plans and policies at local, regional and national levels. It included consideration of institutional structures, stakeholder

involvement, decision-making processes, objective setting, problem identification, strategic option generation, the application of predictive models and appraisal methods to policy assessment, identification and resolution of barriers, implementation and policy transfer addressing also transport policies for tourism and mass events and emerging policy issues. Public transport planning and policy was part of this topic area.

G1: Governance and Decision-making Processes (Greg Marsden and Louise Reardon, **6** papers)

G2: National and Regional Transport Planning and Policy (Guenter Emberger, **7** papers)

G3: Urban Transport Planning and Policy (Stephen Ison and Maria Attard, **16** papers)

G4: Cultural and Social Issues in Transport (Karen Lucas, **8** papers)

G5: Disaster Resilience in Transport (Huapu Lu and Ashish Verma, **1** papers)

G6: Transport and Health (Haneen Khreis, **1** papers)

Topic Area H "Transport in Developing and Emerging Countries" (Meng Li and Binyam Reja) dealt with the unique challenges developing countries face in planning, financing, developing, maintaining and operating their transport infrastructure and services, especially with issues related to institutional governance, sustainable financing, rapid urbanization, rural-urban integration and regional disparities, and environmental sustainability.

H1: Transport Policy, Planning, and Financing in Developing Countries (Shinya Hanaoka, **11** papers)

H2: Infrastructure Operation and Traffic Management in Developing Countries (Keping Li and Ashish Verma, **13** papers)

H3: Urban Transport in Developing Countries (Kazuaki Miyamoto and Varameth Vichiensan, **26** papers)

Topic Area I "Infrastructure Design and Maintenance" (Krishna Rao) deals with the geometric and structural design of fixed facilities of transportation systems such as highways, railways, airports and seaports. Topics relating to the characteristics of materials that go into making these fixed facilities are also included in this topic area. This topic area also includes monitoring, performance evaluation and decision support systems for maintenance, repair and rehabilitation and financing of the transportation infrastructure facilities. This topic area has been introduced for the first time at the occasion of the 15th WCTR conference.

I1: Highway Design and Materials (Krishna Rao, **17** papers)

I2: Infrastructure Management (Krishna Rao, **14** papers)

4. The Reviewing Process for WCTR 2019 Mumbai

For WCTR 2019 the two-stage process of abstract and full-length papers was discontinued; authors were asked to submit directly full-length papers. There were two types of submissions: review track and non-review track. The deadline for submitting to review track papers was 15 August 2018 and that of non-review track was 16 November 2018. The number of papers submitted under the review track was 784. These papers were reviewed by Topic Area Managers and Session Track Organizers and were graded as A, B, C, and D. Many researchers contributed to the review process, without which the process could not have been completed successfully. We appreciate the contribution of the WCTRS Scientific committee and other reviewers and thank them for their support.

The papers graded as A, B, or C were considered in the conference program. The papers graded as D were transferred to non-review track. Additionally, there were 514 papers submitted under non-review track. The paper graded as D in review track and those submitted under non-review track were subjected to a short-scan by session track organizers to decide whether they can be included in the final conference program or not. For a few papers there was no registration even after extending the registration deadline. Those papers were removed from the final program. Finally, 839 papers were included in the conference program out of which 677 were scheduled for oral presentation and 162 for poster presentation.

The papers in non-review track (including the D grade papers in review track) were not considered for publication. Other papers (A, B, C graded) were eligible for publication in this Procedia, provided they were presented at the conference. A and B graded papers were considered for special issues in various journals with suitable additional reviews; a few papers are also included in this Procedia. Finally, this Transport Research Procedia has 293 papers that were presented in the conference.

5. Key Research Findings and Outlook

The papers presented at WCTR 2019 Mumbai and specifically those included in these Selected Proceedings are providing valuable knowledge and advances in transport research. The key findings of the conference and future research needs have been summarized and presented in the Closing Session of WCTR 2019 Mumbai by the Topic Area Managers and WCTR-Y Chair. The slides of that presentation are available for download at the Society's website (www.wctrs-society.com).

Looking at these key findings and all the papers presented at WCTR 2019 Mumbai, we can summarize the main lines of discussion as follows. Firstly, new technologies remain a leading driver of rapid change in mobility. New services are visibly emerging in the platform economy, though their impacts are still early to measure and difficult to predict, as it is unclear which

business models will survive. Research is increasingly dedicated to the technologies surrounding the use of big data and artificial intelligence. Secondly, there is a marked spreading of previously very regionally focused topics to worldwide coverage. These topics include specific areas in freight transport like sustainable logistics and intermodal transport, but also the comprehensive treatment of land use and transport for mega-cities; and the global scale of surface transportation through high speed rail and trans-continental rail container services. Thirdly, the analysis of policies is broadening in terms of topics covered and methodologies used. Environmental and ethical aspects are becoming integrated in transport research worldwide and implemented via e.g. human health effects and social impacts; still the approach to sustainability studies is too often too narrow. Methodologically, diversity is increasing not only through data driven modelling, creating a whole new evidence base which is not necessarily aligned to theories. Also we find an increasing use of immersive and participative methods like serious gaming. The above developments call for new attention to the area of governance arrangements for transport policy between government and the wider public, and revitalization of the processes of evidence-based policy making.

We wish to thank the 67 members of the WCTRS Scientific Committee, in their various volunteer roles; the hundreds of anonymous reviewers of papers and the many attendees of the 2019 conference, for creating a most successful 15th edition of the WCTR. We are proud to present these selected proceedings of the conference and also invite the reader to locate the various journal special issues that have resulted from the Mumbai 2019 gathering. The 2022 WCTR will be held in Montreal, Canada. We look forward to this next milestone of the continuing inclusive dialogue between transport researchers worldwide.