WCTRS RESEARCH NEWSLETTER

WORLD CONFERENCE ON TRANSPORT RESEARCH SOCIETY

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In this issue

Report on Special Session C4-S16_SS @ Montreal 2023

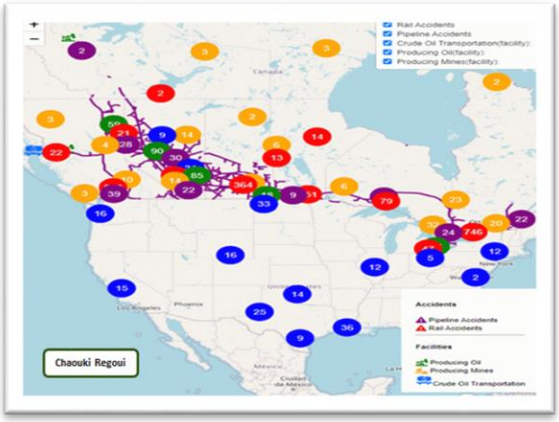
Applying artificial intelligence to improve the safety and resilience of road freight transport: Canadian Prairies and Northern Region

Dr. Chaouki Regoui

The Special Session (C4-S16) was proposed and chaired by the **National Research Council of Canada** (**Dr. Chaouki Regoui, NRC-CNRC, Canada**) with contributions from the Urban Mobility and Transportation Informatics research group (**UMTIG-University of Manitoba, Canada**). It focused on the over-arching theme of applying **Artificial Intelligence (AI) to improve the safety and resilience of road freight transport** in the Canadian prairie provinces and the northern region.

After an introduction about the pertinence of using Artificial Intelligence

techniques to solve challenges related to the research theme, the specificity of road freight transport in the Canadian prairie and northern region was presented. Related use cases and data collection challenges to achieve an adequate use of AI techniques for such problems were discussed (Dr. Chaouki Regoui). This included identifying and addressing the data requirements and tools to evaluate collected data including visualization challenges.



The rationale for exploring various AI techniques to solve the problems of interest is due to the fact that AI allows to build data-driven models that will uncover various factor relationships in scenarios of interest, benefit from historical data available, and simulate complex scenarios that are not otherwise possible to build in an explicit manner. The newly developed algorithms have also the advantage of allowing improvement when new data is made available.

The session continued with an expose of the challenges of freight transportation in the region (either for the Road network, Traffic or Hazards encountered) and detailed the **development of a leading-edge mobile truck traffic and road-weather monitoring facility** created for that purpose (**Dr. Babak Mehran, UMTIG**).

The following presentation focused on the increased frequency and intensity of weather events and the cascading effects on road networks and explored the **impact of disruptive events on road freight** transportation network resilience (**Phani Kumar Patnala, Sina Abolhoseini, UMTIG**) Cost impact on Canada was estimated based on costs of Motor Vehicle Collisions according to different scenarios.

Useful Information and links

1. Publications by SIG A4-Handbook on High-Speed Rail and Quality of Life and Frontiers in High-Speed Rail Development
Both books are free to download.
For details: Click Here

2. Urban Mobility Research in India transport: Selected proceedings from 13th Research Symposium of 15th Urban Mobility India Conference & Expo 2022
For details: Click Here

3. A new Transport Research and Education Network to help ESCAP member States achieve sustainable transport
For details: Click Here

4. Clean Air Asia National Coordinator Advert
Theme: Clean Air Asia is looking for National Coordinators based in selected Asian countries who will support Clean Air Asia's initiative to reduce emissions from the maritime transport sector

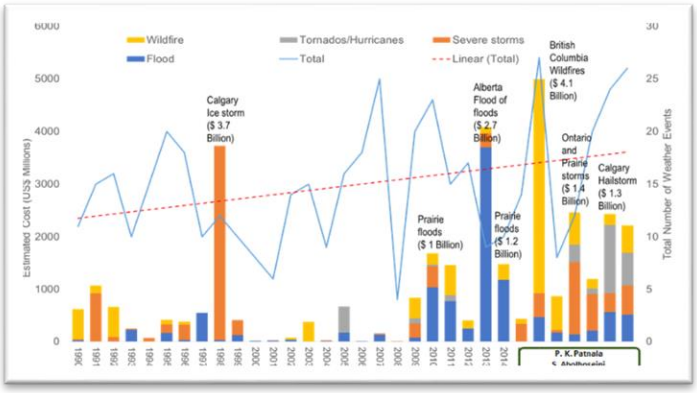
For Details: Click Here

5. 10th International Workshop on Sustainable Road Freight
Theme: Robust decarbonization and resilient logistics: Progress in the last decade and a roadmap to 2035
When: 4th-5th December 2023
Where: Cambridge, UK and online
For Details: Click Here

6. Special Issue of Transportation Research Part A: Policy and Practice on "Pricing and Regulation in Road Transport"
For details: Click Here
Paper submission deadline: ***November 15, 2023***

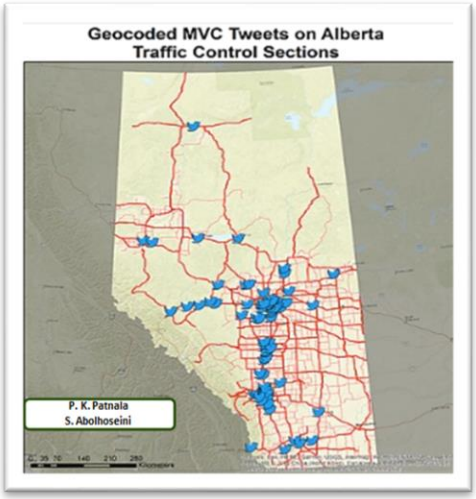
7. Special Issue of Transportation Research Part A: Policy and Practice on "Resilience of Transportation systems under uncertainty"
For details: Click Here
Paper submission deadline: ***November 30, 2023***

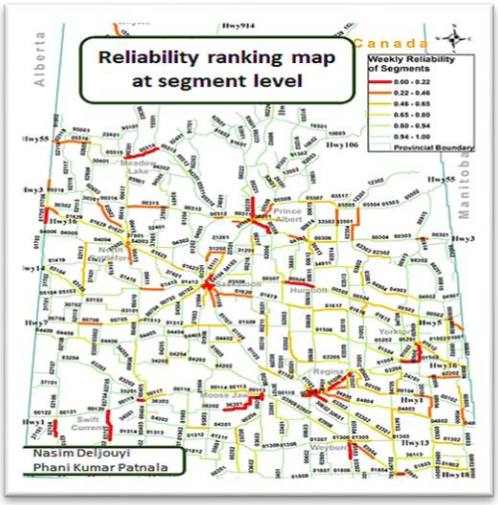
6. Special Issue of Transportation Research Part D: Transport and Environment on "Ecological Effects of Road Transportation"



Base data was collected from social media networks. Next, research into **Identifying high crash risk for road segments** based on reliability models was introduced thus considering the temporal aspect of crash occurrence through reliability theory and enabling a more accurate and comprehensive analysis.

It was based on the **development of network-wide safety performance functions** addressing temporal aspects of crashes (**Nasim Deljouyi, Phani Kumar Patnala, UMTIG)**. Research into **development of hazard-specific truck crash modification factors** for cold-region rural highways concluded the series of presentations (**Rillagoda Yasanthi Navoda, UMTIG**).





It estimated the **impact of different crash contributing factors** (Traffic exposure, inherent vehicle vulnerability, transportation hazards) on truck crash frequency and empirically developed regression models for a specific facility type (intersections/road segments). This allowed to **develop crash modification factors (CMFs)** for the specific region of interest in order to mitigate risks to freight transport trucks and thus improve truck safety.

For details: Click Here
Paper submission deadline:
December 31, 2023

Finally, a thought-provoking discussion ensued and concluded a very interesting session focused on a specific Canadian region with its specific challenges and exploring a multitude of data analysis approaches mainly Artificial Intelligence-related.

Dr. Chaouki Regoui, *National Research Council, Canada*

New Journal Introduction @ Montreal 2023: Sustainable Transport and Livability

Prof. Ashish Verma

The 16th World Conference on Transport Research (WCTR) held from July 17th to 21st, 2023, in Montreal marked the introduction of a new journal titled "**Sustainable Transport and Livability**." **Taylor & Francis** will manage the journal, with **WCTRS** serving as an **affiliate society**. The special session dedicated to this journal introduction was moderated by **Prof. Ashish Verma**, Professor of Transportation Systems Engineering, Indian Institute of Science.

During this session, the core objective of the Sustainable Transport and Livability journal was unveiled. It aims to publish research that **deepens the understanding of the intricate links between sustainable transportation and the livability of urban environments**. The journal will encompass policy, planning, design, and engineering interventions that impact these links, focusing on both developed and developing economies. Studies **on cross-disciplinary and interdisciplinary research** will be encouraged.

WCTRS society journals

Transport Policy

Case Studies in Transport Policy

WCTRS book series

For details, visit: link

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Alexa Flood, Global Head of Engineering and Computer Science Journals at Taylor & Francis, provided further insight into the journal's inception. Alexa highlighted the increased focus on the interplay between sustainable transport and quality of life in the post-COVID-19 era. The pandemic has reshaped commuting and daily travel behaviours, prompting the need for transport policies that support sustainability and enhance overall well-being. The journal's origins trace back to July 2020 when Prof. Verma submitted a proposal to Taylor & Francis. Subsequent discussions and meetings spanning 2020-2022 led to finalizing the journal's objectives, scope, editorial board, and the inclusion of WCTRS as an affiliate society.

The editorial board includes **Prof. Ashish Verma** as the **Editor-in-Chief**, **Prof. Meng Li** (Tsinghua University, China), and **Prof. Aseem Kinra** (University of Bremen, Germany) as Associate Editors. The additional editorial board members include **Prof. Greg Marsden**, **Prof. Eva Hienen**, **Prof. Maria Attard**, **Prof. Manoj M.**, **Prof. Rahul T. M.**, **Prof. Shinya Hanaoka**, **Prof. Arnab Jana**, **Prof. Helena Titheridge**, **Prof. Aruna Shivakumar**, **Prof. Susan Shaheen**, **Prof. Ram Pendyala**, **Dr. Tanu Priya Uteng**, **Prof. Kumares C. Sinha**, **Prof. Masanobu Kii**, **Prof. Martin Trepanier**, **Prof. Kazuki Nakamura**, and **Prof. Marianne Vanderschuren**.

Editorial Board Members in Attendance

From left to right: Prof. Aseem Kinra, Prof. Eva Hienen, Prof. Martin Trepanier, Prof. Maria Attard, Prof. Ashish Verma, Prof. Helena Titheridge, Dr. Tanu Priya Uteng

During the session, selected board members shared research relevant to Sustainable Transport and Livability. Prof. Martin discussed the **Chair in Transport Transformation** (CTT), aiming to reduce GHG emissions and externalities in transportation, particularly passenger and freight transport. Dr. Tanu Priya

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Editorial team of WCTRS Research Newsletter

presented research on **resource sharing in residential buildings**, highlighting sustainable consumption through innovative shared mobility and space solutions. Prof. Aseem Kinra emphasized the **vital role of resilience in global supply chain management**, especially considering uncertainties like the COVID-19 pandemic.

Prof. Eva explored the European micro-mobility landscape, discussing projects **CoCoMo** and **ELEVATE**, which investigate the **impacts of shared micro-mobilities and e-micro-mobility** on urban sustainability and inclusiveness. Lastly, Prof. Maria focused on **equity and social sustainability** in Malta's transport policy planning, highlighting the need for collaboration between academics, residents, and stakeholders to promote environmentally friendly and socially acceptable transportation solutions.

The "Sustainable Transport and Livability" journal represents a significant step forward in studying the linkage between transportation and urban livability. The journal's focus on interdisciplinary research and the experiences shared during the session underscores the importance of addressing the related research themes in the context of evolving societal needs.

For a more detailed report: **Click here**

Prof. Ashish Verma, ***Indian Institute of Science Bangalore, India. Chair, SIG H2.***

Report on Special Session L-S2_SS @ Montreal 2023: The role of logistics industrial clusters in Transport Logistics

Prof. Martin Trépanier

With the increasing complexity of logistics in the City, it becomes more and more difficult to coordinate the efforts of all players to have a more sustainable and efficient way to operate. Through the world, we now see the **creation of industrial clusters** that are aimed at regrouping these players, namely: port authorities,

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airports, railway companies, logistic providers, port terminal operators, ground carriers, shippers, government officials, city officials, university researchers, etc.

The special session hosted two important players in this field: **Mathieu Charbonneau**, head of CargoM – The Montreal Metropolitan Logistics and Transportation Cluster, and **Bernard Piette**, head of Logistics in Wallonia, the Innovation Cluster dedicated to the Transport, Logistics and Mobility sector in Wallonia. They both informed the audience about the mission of industrial clusters, which are independent bodies that are funded by the companies and the government to enhance the partnership between them for the common good.

They emphasized the fact that even though they regroup commercial competitors, **the clusters are real sites of discussion amongst actors**, aimed to enhance the place of logistics as an important economic activity and to serve as a lobby platform to help to make it more efficient. In particular, the clusters address, through committees and working groups, questions such as **workforce shortage in the industry, road congestion that hampers trucking operations, relations with citizens around installations, communications and public relations**, and interactions with governments over regulation, financing, and infrastructure. During the discussion with the audience, there was an exchange of ideas related to logistics challenges in Brazil, where the presence of an industrial cluster could facilitate the planning of a new train line to serve the food industries.

Prof. Martin Trépanier, ***Polytechnique Montréal, Canada. Chair, Local Organizing Committee, WCTR 2023.***

SIG B3- Freight Transport Operations and Intermodality Special Session @ Montréal 2023

How to build and maintain the right kind of infrastructure for intermodal freight transport? - Evaluating the impact of geopolitical developments and climate change

Prof. Prof. Ralf Elbert

The demand for transportation is at an all-time high. In this context, freight transport is especially affected. A contradictory picture is emerging: an increased demand for transport requires more traffic, but at the same, time these transports should be as climate-neutral as possible and adhere to schedules and result in no delays. These demands are requested to be met regardless of what happens in the world. However, transportation and supply chains are not immune to external influences and disruptions and are required to adapt to continue.
to function.

With this in mind, **Ralf Elbert**, **Jason Monios** and **Gunnar Stefansson**, the Chairs of the WCTRS' Special Interest Group B3 "**Freight Transport Operations and Intermodality**" and **Jolene Hayes**, the Chair of the **TRB's "Intermodal Freight Transport Committee**" **AT045** organized a special session at the WCTR2023 in Montréal, Canada. This special session looked at **intermodal freight transport, the challenges of climate change and geopolitical developments on freight transport** in general as well as the **need for resilient supply chains**. It consolidated the findings of the joint session on climate change and the role that freight transport can play to avoid emissions which the two groups hosted the at WCTRS Virtual Meet 2022.

This special session hosted North American experts who extended the findings from the previous year to include new perspectives on intermodal transport. **Jean-Paul Rodrigue** from Hofstra University passionately spoke about the **footprint of container terminals, their geometry, location, size and configuration**, which had

not been investigated yet. He stated that the **terminal footprint remained a crucial consideration** linked to their role and operational performance, including their commercial insertion in maritime and inland networks. **Rodrigue** pointed out that despite the ubiquitous standardization brought by containerization, there were **substantial variations in the footprint of container terminals** supporting global trade, production, and distribution networks.

Julia Amaral from Rensselaer Polytechnic Institute spoke about the **impacts of time of travel on the emissions produced by port-related traffic**, using archival GPS data – the results of joint research with co-authors **Jose Holguin-Veras** and **Carlos Rivera-Gonzalez**. Using a unique GPS dataset of freight vehicles operating in the New York City and the Albany metropolitan areas, they **assessed the potential impact of demand management strategies**, such as extended gate hours and reservation systems, which seek to change the time of travel to/from the port in terms of fuel consumption, emissions, and operational costs.

The session also welcomed TRB member **Eric Shen**, Founder and CEO of Shen and Associates, LLC from California, USA, who shared his experience about how to **move goods cheaper and faster via alternative routes**. Having previously served as Chief Engineer for the Southern California Alameda Corridor East (ACE) Project, and worked for the U.S. Department of Transportation and the Port of Long Beach (CA), Eric Shen was able to draw from vast professional experience. He elaborated on what changes to the process for developing freight infrastructure could be considered by federal, state and local entities to complete 2 projects with greater certainty and how to **enhance goods movement through gateway regions** while **addressing sustainability, equity, and environmental impact**.

Prof. Ralf Elbert, University of Darmstadt, Germany. Chair, SIG B3.

E2 Special Session @ Montréal 2023: The role of policy in achieving future sustainable transport

Dr. Georgina Santos

The E2 Special Session (E2-S4_SS) was co-sponsored with DTE (https://dte.network). The title was "**The role of policy in achieving future sustainable transport**", and it was chaired by **Georgina Santos**. There were four engaging speakers, and the discussion was interesting, even heated at times! **David Bunch**, from UC Davis, opened the session with a **comprehensive account of policies in California** to increase the share of zero emission vehicles. His talk "**100% ZEV Sales by 2035? Policies to promote ZEV choice by consumers in California**" took us on a time journey across the years and sparked some inquisitive questions. The bottom line we took away was that California has always been ambitious in its emission reduction targets, although these have seldom been fully reached. The current programs, however, include targets for manufacturers, incentives for consumers, and a budget for recharging infrastructure, as well as outreach and education activities.

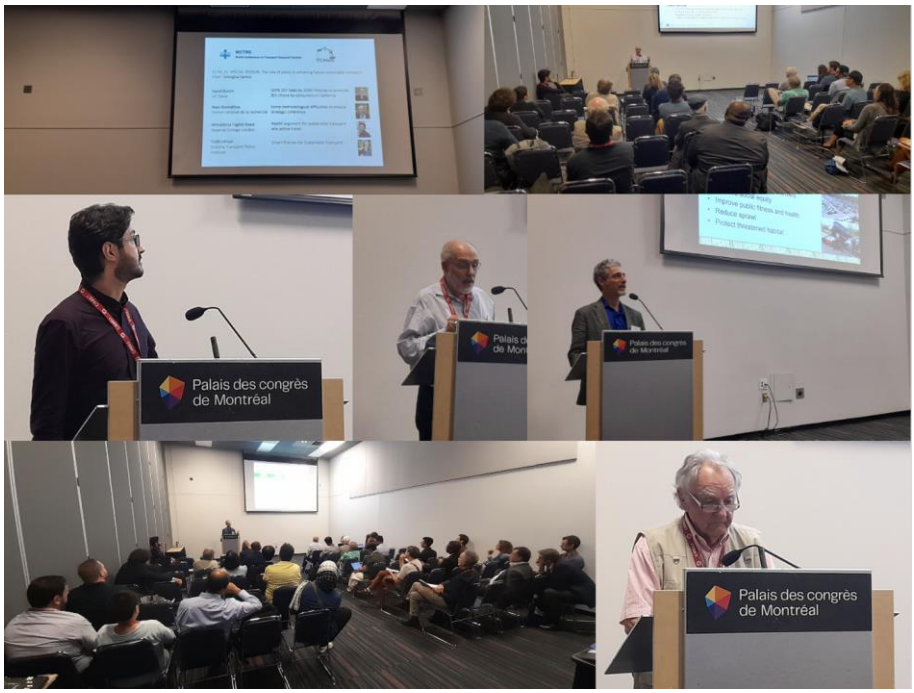
The second presentation was delivered by **Alain Bonnafous**, from the Centre National de la Recherche. His talk "**Some methodological difficulties to ensure strategic coherence**" also triggered questions and discussion, especially in the areas of the shadow price of CO2, valuation methods, technological options, the financing of the energy transition, and the mistakes that governments can sometimes make when trying to decarbonize transport.

To stir things up, the third speaker, **Ahmadreza Faghih Imani**, from Imperial College London, presented active travel as one of the most important tools for sustainable transport, with his talk "**Health argument for sustainable transport: why active travel**", causing what seemed to be heart-felt remarks from attendees, as there was almost no disagreement in that active travel reduces CO2 and pollutant emissions but most importantly, has unparalleled health benefits. The quantitative evidence

presented by Ahmadreza, which included his own work but also work from colleagues and students, was almost overwhelming.

Finally, the fourth speaker, **Todd Litman**, delivered his "**Smart Policies for Sustainable Transport**" address, which generated a very animated discussion. He presented a strategic analysis and a case for transportation planning reforms. The session only came to an end because it was time to stop and go for a tea-break. It could have continued for hours otherwise!

These are some photos of the session:



Dr. Georgina Santos, ***Cardiff University, UK. Chair, SIG E2***

World Sustainable Transport Day
November 26, 2023

November 26, 2023, has been designated as **World Sustainable Transport Day** by the **United Nations**. Endorsed by **the UN Group of Friends for Sustainable Transport**, **Global Supply Chain Classroom (GSCC)** will co-organize the following events from **July to November** to celebrate World Sustainable Transport Day.

1. **<u>Global Sustainability Supply Chain Student Competition</u>**

   The **Global Sustainability Supply Chain Student Competition** is an event that invites **postgraduate and undergraduate students** from universities around the

world to develop innovative solutions to **real-world challenges facing global supply chains**. Notably, the competition has received official endorsement from the UN Group of Friends for Sustainable Transport.

When: Registration for the competition is currently underway and will continue until **September 29, 2023**. The competition will commence on **October 1, 2023**, and will progress in three distinct rounds.

2. **Faculty Seminar - Incorporating Sustainability into Supply Chain Management Education in a Global Context**

Topics:

- Adopting a **cross-disciplinary approach** to enhance supply chain sustainability education.
- Current status, challenges, and best practices of incorporating **sustainability into supply chain management curriculum** – perspectives from developed and developing countries.

Deliverable:

- Following the seminars; an international expert group will produce a **set of recommendations** to be presented to the UN Group of Friends for Sustainable Transport and the **Principles for Responsible Management Education** of the UN Global Compact.

When: 1st session - July 20 2023, (recordings are available for registered WCTR members)

3. **Global Class Tour - How supply chain sustainability is taught in different countries**

Content:

- Faculty advisors for the student teams participating in the Global Sustainability Student Supply Chain Competition will be invited to **observe classes offered by leading professors** in this field from around the world to learn how they **incorporate experiential learning**, such as the global student competition, into their supply chain class to teach supply chain sustainability.
- Participants will be able to **observe classes taught** by leading professors.

When: September 2023

4. **Student Event - How global giants build sustainable global supply networks**

Content:

- The program focuses on the **sustainability practices** of **global corporate giants** with vast supplier networks.
- It is aimed at providing students with a **holistic view of suppliers' impact** on a global business's overall sustainability performance.
- The program **exposes students to leading practices** employed throughout a **global supply network**, and how businesses work with their suppliers to promote sustainable practices.

When: August – September 2023

GSCC is offering complimentary registration to WCTR members for many of these events. Please contact GSCC at info@supplychainsdg.org or visit www.supplychainsdg.org for more information.