WCTRS RESEARCH NEWSLETTER



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September, 2023

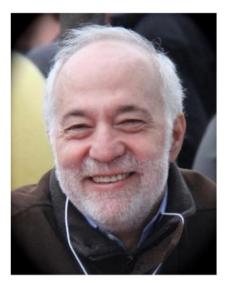
Volume 3, Issue 5

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Keynote at WCTR 2023

Science and Policy for Next-Generation Transportation



Daniel Sperling

Distinguished Blue Planet Prize Professor and Founding Director

Institute of Transportation Studies

University of California, Davis

The world of transportation is undergoing a dramatic transformation, experiencing more technological and system innovations now than any time in the past 70 years. Railroads, electric streetcars, automobiles, trucks, buses, planes, and containerization were earlier revolutions. But there were no significant systems innovations from the mid-1950s onward until about 2010.

Three sets of system innovations—vehicle electrification, automation, and sharing—are all beginning to transform transportation, though at very different rates and very different ways across different regions. Vehicle electrification is furthest along, on track to account for over half of all vehicle sales in the world in the next 15-20 years. Within a few years, a growing proportion of cars and trucks

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

will likely be driverless, though at a much slower rate than electrification. The third revolution—vehicle sharing—is least certain and more diffuse, and more needing of policy intervention, but could be especially impactful in creating more sustainable transportation. Sharing includes bicycle and scooter mobility services, more intensive use of conventional cars and buses, and perhaps most transformational, pooling of automated cars and buses.

All these innovations are disruptive—to travelers, businesses, policymakers, and transport managers. They are especially disruptive because the long absence of system innovations induced a stasis and insularity in most government institutions, rendering them unprepared for the changes now underway.

These system innovations will come to the affluent industrialized regions as well as the Global South, though in very different ways at a very different pace. In the Global South, for instance, electrification will focus more on two and three wheelers and buses, and less on cars.

And some system innovations will be far more socially beneficial than others. For instance, small automated electric planes will primarily benefit the affluent, and personally-owned automated vehicles (as opposed to shared AVs operated as a public mobility service) would result in massive increases in vehicle use—since they would be used as hotels, offices, and recreational hubs—and not significantly aid less affluent travelers.

The challenge for transportation professionals and public institutions—and local researchers—is to steer these innovations toward the public interest, and for transportation researchers to greatly expand their horizons and focus on bringing technical analysis to the expanding transport policy arena. The spee d and details of the electrification transition, like the other transitions, will vary greatly across regions, elevating issues such as environmental justice, labor impacts, the need for mining and processing of critical minerals for batteries, regulation and incentives for electric two wheelers, cars, trucks and buses, motivating electric utilities and local entrepreneurs to invest in renewable electricity grids and expanded distribution systems, and much more.

Likewise, with new demand-responsive services such as bike and scooter sharing, ride-hailing, micro-transit, and automated vehicles, there are new policy issues that must be addressed. Research is needed to support the adoption of policies for these new innovations, and to make sure they are safe, environmentally beneficial, socially equitable, and steered toward the public interest.

I want to emphasize the role of applied transport researchers in helping bring science to policy in this rapidly evolving world. It most cases it means questioning

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. Special Issue of
Transportation Research
Part D: Transport and
Environment on "Emerging
Solutions and Policies for
Transportation
Electrification"

For details: <u>Click Here</u>
Paper submission deadline: **September 30, 2023**

traditional empirical research methods which might be less effective in periods of rapid change. New techniques, new data, and new approaches are needed to account for uncertainties in technology innovation, stronger political priorities such as climate and social justice, imperfect information and markets, conflicting goals, geopolitical tensions, conflicting interests of stakeholders, and imperfect and siloed govt institutions for adopting, administering, and enforcing policies and regulations.

For researchers wanting to inform and influence policy, I say: be bold, curious, and collaborative, and be eager to pursue more cross-disciplinary research, bringing together engineering, economics, policy science, environmental sciences, and management. It also means Interfacing and collaborating across more "sectors" (electricity, mining and minerals, social justice, ...) and reframing challenges. For instance, instead of asking if decarbonization is a good strategy, it would be more useful to ask which policies and strategies are best to accelerate decarbonization. It also means learning how to harness market forces and utilize market economics more fruitfully, and focusing on pathways, sunk costs, and path dependence rather than end states.

Some suggestions to scholarly journals is to require "forward looking" paragraphs in the conclusions and recommendations of papers, paying more attention to external validity, and emphasizing more connection of findings and hypotheses to empirical issues of concern.

In closing, I note that when industries and technologies are rapidly transforming, we need more robust, forward-looking research. more up-to-date datasets, more sensitivity to the incidence of costs and benefits, and more empirical sophistication in interpreting changes in behaviors, investments, and policies. As Albert Einstein is reputed to have said: "We cannot solve our problems with the same thinking [and, I would add, institutions and research] we used when we created them.".

Daniel Sperling, Distinguished Blue Planet Prize Professor and Founding Director, Institute of Transportation Studies, University of California, Davis, USA

Transport Policy Prize 2023

Patrick M. Bösch, Felix Becker, Henrik Becker, Kay W. Axhausen

"Bösch, P.M., F. Becker, H. Becker and K.W. Axhausen (2018) Cost-based analysis of autonomous mobility services, Transport Policy, 64, 76-91"

The paper "Cost-based analysis of autonomous mobility services" by Bösch et al. (2018) is a comprehensive analysis of the cost structures of different autonomous mobility service (AMS) models in Switzerland, as is its follow-on international analysis (Becker et al, 2020). We consider three main types of AMS modes: public transportation, shared fleets, and private vehicles. We observe that public transportation is only economically competitive in dense urban areas where demand can be bundled into larger units on major corridors. In contrast, shared fleets and private vehicles are more efficient in low-density areas. However, we also identify that shared fleets may not be the most efficient alternative, as they can have high costs for vehicle cleaning and maintenance, even before considering their less efficient use of space. Additionally, we find that a substantial share of vehicles may remain in private possession and be used intensively due to their low variable costs. The estimated absolute level costs/PKm will be 1/3 lower than today. The drop is likely to cause large induced-demand effects.

The area of AMS has moved significantly since the publication of our paper in 2018. There have been significant advances in autonomous driving technology and growing interest in public and private sectors. This is substantiated by an increasing number of AMS pilots around the world.

One of the most notable developments is the operation of Waymo's driverless robotaxis in Phoenix since 2018. Waymo is a company that has been developing autonomous driving technology for over a decade. In 2020, Waymo implemented a commercial pilot program for its driverless robotaxis in Phoenix. The program has been successful, and Waymo is now expanding it to other US cities, with further players such as GM-backed Cruise entering the market for commercial operations of driverless taxis.

Another notable development is the launch of autonomous public transport (APT) projects in several cities. These projects are still in their early stages, but they have the potential to revolutionize the way we travel.

WCTRS society journals



Transport Policy



<u>Case Studies in Transport</u> <u>Policy</u>

WCTRS book series
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Email to us at



If we would start our analysis today, we would add issues, which have become more prominent since then:

- There is now a greater focus on the greenhouse-gas impact of AMS. We would include GHG life-cycle-analysis estimates today.
- There is a growing interest in using AMS to improve equity in transportation. We would raise the issue of how the use of AMS for marginalized populations and peripheral areas would change the AV taxi and bus cost structures.
- The initial trials provide hints of the likely safety record of AMS. We would need to include those into suitable estimates for cost-benefit-analysis.

Overall, the area of AMS is rapidly evolving and there is a lot of potential for this technology to revolutionize the way we travel. The paper "Cost-based analysis of autonomous mobility services" provides a valuable foundation for understanding the cost structures of different AMS models, and we are excited to see who will update and expand (and some point verify) our analysis.

References:

- Becker, H., F. Becker, R. Abe, S. Bekhor, P.F. Belgiawan, J. Compostella, E. Frazzoli, L.M. Fulton, D. Guggisberg Bicudo, K. Murthy Gurumurthy, D.A. Hensher, J.W. Joubert, K.M. Kockelman, L. Kröger, S. Le Vine, J. Malik, K. Marczuk, R. Ashari Nasution, J. Rich, A. Papu Carrone, D. Shen, Y. Shiftan, A. Tirachini, Y.Z. Wong, M. Zhang, P.M. Bösch and K.W. Axhausen (2020) Impact of vehicle automation and electric propulsion on production costs for mobility services worldwide, Transportation Research Part A: Policy and Practice, 138, 105–126.
- 2. Bösch, P.M., F. Becker, H. Becker and K.W. Axhausen (2018) Cost-based analysis of autonomous mobility services, Transport Policy, 64, 76–91.

Battle of giants at WCTR2023!

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In a departure from the conventional conference structure, an Oxford style debate sparked an engaging and dynamic discussion at the WCTR 2023 in Montreal. The debate featured Benoit Montreuil, Michael Browne, Jose Holguin Veras, and Jean Paul Rodrigue, with Matthew Roorda moderating the event in collaboration with Sushant Sharma. At the heart of the debate was the proposition that "The Physical Internet vision is realistic." What set this debate apart was its ability to inject vibrancy into conversations. By adopting a duel-like approach, it captivated both the attention and active participation of the audience. The outcome witnessed a victory for the team defending the proposition, Benoit Montreuil and Michael Browne, who won by a narrow but significant margin. This event was sponsored by WCTRS SIG B5 (Freight Transport Modelling).









Prof. Lóri Tavasszy, Delft University of Technology (TU Delft), Netherlands. Scientific Committee Chair, WCTRS

Report on Session B4-S6_SS: Integration of Passenger and Freight First-Last Mile Towards More Sustainable and Desirable Mobility and Logistics



Prof. Silvio Nocera

The integration of passenger and freight transport is seen as a promising -and underexplored- solution to improve the efficiency and sustainability of short-distance transport in urban and rural areas. The special session B4-S6_SS

"Integration of passenger and freight first-last mile towards more sustainable and desirable mobility and logistics" aimed at presenting some initiatives undertaken by different scholars to identify undergoing research lines and gaps.

At the beginning of the session, Silvio Nocera (IUAV University of Venice, Italy) presented the outcomes of a special issue recently promoted by the journal Transportation Research Part A: Policy and Practice, highlighting the complimentary approaches that have been adopted by scholars who submitted their contribution to the journal. Silvio stressed on the fact that a multi-stakeholder approach is required where policymakers, industry players, researchers, and civil society work together to reshape regulations and norms. Collaboration among these actors is essential for creating a supportive environment that allows real-case initiatives to become operational and successful. This might involve pilot projects, policy advocacy, and capacity-building efforts to ensure that the regulatory framework evolves to accommodate integrated transport systems.

Starting from the perspective of freight operators, Lóri Tavasszy (TU Delft, the Netherlands) presented the role of hyperconnection to provide a more functional service. This involves creating a network that allows for smoother transitions between different modes of transport, reducing delays, increasing convenience, and improving overall transportation systems. The idea behind hyperconnection is to blur the lines between various transportation modes, by streamlining the connections between them. Lóri introduced the Dutch case study in the Hague, which is still in its initial phase, to make his point.

Julia Coutinho Amaral and José Holguin-Veras (Rensselaer Polytechnic Institute, NY, USA) stressed the importance of modelling the network, by identifying the optimal stops and routes. This task is different from the solutions adopted for passenger-only and freight-only transport. As such, it requires ad-hoc mathematical formulations. Some aspects derived from their work on park-and-ride and road-rail network models helped understanding the nature of the problem.

Valerio Gatta (University of Roma Tre, Italy) highlighted the pivotal role of customers in the success of the initiative (both for the freight and passenger components). Particularly, he dwelled on the role of ad-hoc behavioural analyses to test the validity of the proposed scheme. These analyses help assess how real-world users might respond to the new scheme, identifying potential challenges, user preferences, and areas for improvement.

In the last speech of the session, **Edoardo Marcucci (Molde University College, Norway)** introduced a planning process that foresees **the participation of different**

actors (including customers) from the beginning as a key for the success of the initiative. He claimed that these analyses ensure that the **scheme meets user needs**, is operationally feasible, and can effectively deliver the intended benefits.

The lively final discussion acknowledged the **importance of continuing research** activities on integrated passenger-freight transport. This recognition reflects not only an understanding of the potential benefits and challenges associated with such integration, but also a **commitment to creating more efficient**, **sustainable**, and **user-centric transportation systems**. Such collaborative effort can lead to the development of **well-informed strategies** that maximize the **benefits of integrated passenger-freight transport** while minimizing potential drawbacks.



Presentation of the special issue promoted by Transportation Research Part A on integrated passenger-freight transport

Prof. Silvio Nocera, Università IUAV di Venezia, Italy. Chair, SIG A2.

Montreal 2023 Special Session: Innovative technologies and analytical methods for transportation Logistics



Prof. Xiaopeng Li

Transportation systems are experiencing unprecedented transformations due to the advent of new vehicle technologies (e.g., autonomous vehicles, electric vehicles), and advances in sensing and information technologies and big data techniques. At the same time, the transportation sector is facing increasing pressure to meet sustainability goals, from cutting greenhouse gas emissions to creating equitable access to mobility. As a result, analyzing, operating and planning transportation systems are becoming far more complex than in the past. In this special session, we broadly discuss the **innovative technologies applied to transportation modes and methodologies proposed to handle complex transportation problems**, resulting from the applications of the technologies. As such, this session includes four very inspiring presentations:

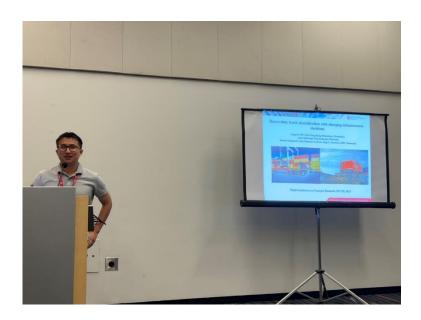
"Smart Technologies for all Transportation Modes: Applications and Case Study", presented by Prof. Said M. Easa from Toronto Metropolitan University;



"Analyzing the Impacts of Intersection Treatments and Traffic Characteristics on Bicyclist Safety: Development of Data-Driven Guidance on the Application of Bike Boxes, Mixing Zones, and Bicycle Signals", presented by Prof. Edward Smaglik from Northern Arizona University;



"Heavy-duty Truck Electrification with Charging Infrastructure Decisions", presented by Dr. Lingxiao Wu from The Hong Kong Polytechnic University;



"Routing Optimization with Vehicle-Customer Coordination", presented by Dr. Kai Wang from Tsinghua University.



Prof. Xiaopeng Li, University of Wisconsin-Madison, USA.

SIG A2 - Maritime Transport and Ports Activities @ Montréal 2023



Prof. Thierry Vanelslander

At WCTR 2023 Montréal, SIGA2 featured 10 regular and 5 special sessions, totalling 60 very interesting and relevant presentations on key issues in the domains of maritime transport, ports and their hinterlands. Core topics included 'classics' such as maritime planning and routing, port macro impacts, port strategies, and port hinterland connections. Furthermore, the emerging topic of digitalisation featured in two regular sessions concerning respectively maritime transportation and ports, and also in one special session.

Next, the **greening topic** featured in one regular port greening session, and one special session. Finally, **COVID** still got attention with a **special session**, as did the **topic of geopolitics**. The selected and positively reviewed papers will now be submitted to a selection of three scientific journals (**Case Studies on Transport Policy; Sustainability; Journal of Maritime Affairs**) and one book on port greening (with **Palgrave**).

Prof. Thierry Vanelslander, *University of Antwerp, Belgium. Chair, SIG A2.*

SIG A3 - Rail Transport Activities @ Montréal 2023



Prof. John Preston

SIG A3 (Rail Transport) was active at the Montreal conference, hosting four standard sessions, one special session and a SIG Business Meeting. Some 20 papers were scheduled for the standard sessions. In the event, 16 papers were presented, although for four of these, due to visa difficulties, the lead author was absent. The special session featured UIC-funded research on the impacts of Covid on railways undertaken by the University of Birmingham, presented by Joe Preece, as well as presentations by John Preston and Yung-Chen Lai. It is proposed that the presentations to the special session and the webinar the previous year will form the basis of a book chapter (Research Handbook on Transport and COVID-19 to be edited by Junyi Zhang, Yoshitsugu Hayashi et al.).

At the SIG Business Meeting, it was proposed to have **online working group meetings every 6 months** and have online workshops/webinars in both 2024 and 2025. A suggested topic for 2024 (and beyond) might be: **Can digitisation save the railway industry?** It was agreed that better coordination with other SIGs should be pursued, notably A4 (High Speed Rail) but it was also noted that at Montreal there were **dedicated sessions on Rail Economics and on Rail and Urban Development**.

The Universities of Southampton and Portsmouth held a special session at the Montreal Conference on Mobility as a Service in a multi-city context in conjunction with SIG G3 (Urban Transport Planning and Policy). This highlighted research being undertaken on the Solent Future Transport Zone and included presentations by (from left to right in the photo below) Chris Bayliss (Portsmouth), Rich McIlroy, John Preston, Alan Wong (all Southampton) and Jisun Kim (Aston University, but previously Southampton).



From left to right: Chris Bayliss, Rich McIlroy, John Preston, Alan Wong, Jisun Kim

Prof. John Preston, University of Southampton, UK. Chair, SIG A3.

SIG G1 (Governance and Decision-Making) Special Session @ Montreal 2023

Governing Hype



Prof. Greg Marsden

The **Governing Hype Special Session** was organised by **SIG G1 (Governance and Decision-Making)** and addressed how we work through understanding how much attention to pay to the governance of new initiatives and technologies which may, in reality, have small impacts today. **Professor Brian Caulfield** from Trinity College

Dublin talked about the introduction of EVs in Ireland and the mismatch between the proposed adoption curves and what could be delivered in reality. **Dr Kate Pangbourne** from the University of Leeds discussed her work on Mobility as Service in a rural setting and the difficulties in mobilising collaboration relative to the scale of outcomes.

Finally, Anthony Perl (Simon Fraser University) used the example of hydrogen buses for the Winter Olympics in Vancouver which have been withdrawn, leaving a legacy of highway expansion rather than sustainability. The debate noted the importance of understanding the longer-term ramifications of governance adaptations that are made in order to accommodate new technologies. Overall, however, much more attention should be paid to the wider issues which transport is supposed to address and greater scrutiny given to the extent to which innovations offer a solution to these. There is finite capacity in the system to effect change and therefore how this is divided between the new and the existing system matters.

Prof. Greg Marsden, University of Leeds, UK. Chair, SIG G1

Call for Papers and Posters European Aviation Conference (EAC)-2023, Luxemburg 29th November - 1st December 2023

The European Aviation Conference (EAC) is delighted to invite academics, aviation practitioners, policymakers, and other stakeholders to submit contributions for the research activities at the 2023 European Aviation Conference: Research posters to be presented on the first two days and the dedicated Research Day (aka AMEC) on 1st December.

The European Aviation Conference (EAC) serves as a platform for diverse, high-quality research in air transport economics, transportation management and fields related fields in aviation. The Research Day shares the same overarching theme and is planned to be held on the last day of the EAC. Participation in the 2023 European Aviation Research Day is open to all researchers and practitioners.

Main topics of interest for submission include (but are not limited to):

- Air Cargo
- Aviation Policy
- Airline and airport economics and management
- Sustainable aviation
- Economic regulation
- AirTraffic Management

- Emerging business models in aviation
- The scope for drones

All topics within the aviation economics and management areas are welcome. Proposals from **researchers at all levels**, **especially PhD students**, are encouraged to submit their work. Selected presentations will be assigned a discussant (a fellow researcher) to provide comprehensive feedback to each other, promote research ties across universities and provide a platform for researchers to excel.

Important information for Abstracts and Papers:

All contributions will be subject to peer review. Full papers will be considered for publication in the **Journal of Air Transport Studies (JATS)** and the **Journal of Air Transport Research Society** upon invitation. Past papers presented at EAC were published in the **Journal of Air Transport Management (JATM)**. The Virtual Special Issue Call will be announced closer to the conference date.

At least one author (presenter) must register.

The **structured abstract (200-300 words)** should include the following:

- Indication whether you are submitting a poster or a presentation
- Purpose of the research
- Design, methodology or approach
- Research (expected) findings
- Originality/contribution to the literature
- Relevant references (two to five references)

PhD students must state the name of supervisor(s), home and co-institution, and stage of PhD research to allocate a discussant specialised in the research field. Due to time constraints, the organisers may allocate them in a parallel session.

Submission: Please submit your abstract <u>here</u> specifying your stream (paper or poster - please use it as one of your keywords).

Important Deadlines:

Submission of Abstracts: 15th September 2023

Notification of Acceptance: 1st October 2023 (on a rolling basis)

Submission of Full Papers: 15th November 2023
 Submission of Presentation slides: 25th November 2023

Registration:

Registration will be through the Ticketing Registration Page

Please note presenters must register by 15th October 2023 to be included in the final agenda and take advantage of the early bird fee.

Cancellation & Refund Policies:

Full refund is allowed for cancellations received **on or before 15th October 2023** after deducting other related fees incurred in connection with such refunds, including costs of foreign exchange conversion. There will be **no refund after 15th October 2023**.

Liability:

The local organiser reserves the right to make changes, where deemed necessary, with or without prior notice to the parties concerned. By registering for the conference, you automatically agree to the Terms & Conditions to use all registration data given in this form for computerised conference handling, including the conference media distribution and news.

Organisers:

- Prof. Benny Mantin, the Luxembourg Centre for Logistics and Supply Chain Management (LCL), University of Luxembourg (local host)
- Dr Marina Efthymiou, Dublin City University (DCU) Business School, Ireland
- Dr Wolfgang Grimme, German Aerospace Center (DLR), Germany
- Prof. Andreas Papatheodorou, University of the Aegean and Hellenic Aviation Society, Greece.
- Dr Ane Elixabete Ripoll-Zarraga, Universitat Autònoma de Barcelona (UAB), Barcelona.
- The German Aviation Research Society (GARS) www.garsonline.de

More details: www.eac-conference.com

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. Global Sustainability Supply Chain Student Competition

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. <u>Faculty Seminar - Incorporating Sustainability into Supply Chain Management</u> 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.

WCTRS RESEARCH NEWSLETTER

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