



Economic Commission for Europe
Inland Transport Committee
Working Party on Transport Trends and Economics
**Group of Experts on Assessment of Climate Change
 Impacts and Adaptation for Inland Transport**
Twenty-third session

Geneva, 31 October and 1 November 2022

**Report of the Group of Experts on Assessment of Climate
 Change Impacts and Adaptation for Inland Transport at its
 twenty-third session**
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I. Attendance

1. The Group of Experts on Assessment of Climate Change Impacts and Adaptation for Inland Transport (hereafter called GE.3) held its twenty third session (fifth session under its new mandate) on 31 October and 1 November 2022. The session was chaired by Ms. S. Haensel (Germany) and held as a hybrid meeting with virtual participation through zoom platform and in-person participation.
2. Representatives of the following United Nations Economic Commission for Europe (ECE) member States participated: Armenia, Austria, Canada, Czechia, Denmark, France, Germany, Poland, and Russian Federation.
3. Representation of the following international organizations participated: ISO International Standards Organization, United Nations Conference on Trade and Development (UNCTAD), United Nations Economic and Social Commission for West Asia (ESCWA) and World Association for Waterborne Transport Infrastructure (PIANC).
4. At the invitation of the secretariat, experts from the following organizations participated: Climate Sense, EUROCONTROL, European Investment Bank (EIB), Iran National Inventions and Innovation Team - Sustainable Development Goals Program SDGs - Department of Railway Innovations, PKP Polish Railway Lines (PKP PLK), MSC Mediterranean Shipping Company, ProRail, Swiss Federal Institute of Technology in Zürich, National Centre for Atmospheric Research, Research Applications Laboratory, University of the Aegean and University of Birmingham.

II. Adoption of the agenda (agenda item 1)

Documentation: ECE/TRANS/WP.5/GE.3/45

5. GE.3 adopted its agenda as contained in ECE/TRANS/WP.5/GE.3/45.

III. Initiatives in climate change impact assessment and adaptation for inland transport (agenda item 2)

6. GE.3 continued its discussion on initiatives in climate change impact assessment and adaptation for inland transport with a view to understand if any new approaches, tools and/or methodologies exists or are being developed that could be integrated by GE.3 in its work. In particular GE.3 considered (a) activities undertaken by UNCTAD, (b) PIANC's technical notes on ways to deal with climate changes uncertainties, (c) progress made in the development and implementation of European Copernicus Coastal Flood Awareness System (ECFAS) project, and (d) international Civil Aviation Organisation's guidance on climate risk and adaptation and the work of the European Aviation Climate Change Adaptation Working Group.
7. University of Aegean updated GE.3 with regard to the existing state of knowledge on the evolution of the potential hazards for inland transportation under climate variability and change.
8. GE.3 appreciated the information and contributions made respectively by UNCTAD¹, PIANC, EUROCONTROL and University of Aegean. In the discussion which ensued after

¹ Reports and meeting referred to by UNCTAD can be consulted at: Climate change impacts on seaports: A growing threat to sustainable trade and development | UNCTAD (<https://unctad.org/news/climate-change-impacts-seaports-growing-threat-sustainable-trade-and-development>); Multi-year expert meeting on transport, trade logistics and trade facilitation, eighth session | UNCTAD (<https://unctad.org/meeting/multi-year-expert-meeting-transport-trade-logistics-and-trade-facilitation-eighth-session>); Multi-year expert meeting on transport, trade logistics and trade facilitation, ninth session | UNCTAD (<https://unctad.org/meeting/multi-year-expert-meeting-transport-trade-logistics-and-trade-facilitation-ninth-session>); UNCTAD Policy brief No. 103

the presentations, GE.3: (a) appreciated the consistency in approaches and methodologies for adaptation to climate change across different transport modes, (b) welcomed the availability of menus of key climate vulnerabilities and of adaptation options in the aviation sector, (c) noted challenges with adequate integration of climate change considerations in transport planning and operational processes, (d) acknowledged the importance of early-warning systems for detecting emergencies related to extreme weather events in time for organizing an effective response, and (e) identified material which could be presented in more detail at the next sessions. GE.3 also noted that climate change adaptation, resilience-building and Disaster Risk Reduction (DRR) for ports and other critical transport infrastructure are issues of increasingly strategic economic importance especially in the light of growing hazards, such as extreme sea-levels. In this context, it agreed with the view presented by UNCTAD on the importance of urgent action, including capacity building and finance for developing countries, and the need for supportive legislation, policy and guidance

9. With regard to inadequate integrating climate change considerations in transport planning and operational processes, GE.3 confirmed on the need for availability of transport business cases for climate change adaptation, so that investment decisions are not driven from just transport asset net present value calculations but are value-driven decisions adequately considering the potential losses incurred due to lack of resilience of transport infrastructure and operations to climate change hazards. GE.3 would therefore continue with its effort on developing the business cases. GE.3 also requested PIANC to present its technical note on business cases for adaptation at future meetings and to explore collaboration with the European Aviation Climate Change Adaptation Working Group on business cases for adaptation. GE.3 also pointed out the necessity and explore the possibilities for training and capacity building of transport engineers/professionals with respect to adaptation and climate change issues in order to better integrate climate change considerations in transport planning and operational processes.

10. GE.3 recognized observed interdependencies or interconnectedness between climate change hazards which then may result in cascading failures of transport infrastructure. It agreed to pay attention to such cumulated impacts in its work aimed at analysing climate hazards.

11. GE.3 also recognized the existence of interdependencies between infrastructure managers and other stakeholders, for instance in the water sector, which should be addressed to enable effective adaptation to climate change.

12. GE.3 noted the availability of the European Commission's (EC) technical guidance on the climate proofing on infrastructure and requested the secretariat to invite EC to the next meeting to make a presentation about this guidance.

13. GE.3 took note of the launch of the 2021 State of the Climate in Europe Report taking place on 2 November 2022. GE.3 requested the secretariat to explore possibilities with WMO to have the report presented and discussed at the next meeting.

14. GE.3 also noted the issuance of the report by United Kingdom Parliament Joint Committee titled "Readiness for storms ahead? Critical national infrastructure in an age of climate change", which discusses the risks associated with no action on climate change hazards for critical infrastructure and makes recommendations. GE.3 expressed interest in this report and requested the secretariat to invite its authors to the next session to make a presentation, if possible.

(https://unctad.org/system/files/official-document/presspb2022d11_en.pdf); COP27 Side Event: Promoting resilience and sustainability of transport systems in Landlocked Developing Countries | UNCTAD (<https://unctad.org/meeting/cop27-side-event-promoting-resilience-and-sustainability-transport-systems-landlocked>); COP27 UN-Oceans Side Event: The power of inter-agency cooperation to scale up ocean-climate action: Case studies, challenges and opportunities | UNCTAD (<https://unctad.org/meeting/cop27-un-oceans-side-event-power-inter-agency-cooperation-scale-ocean-climate-action-case>); Cutting transport emissions and adapting to climate change with infrastructure: Insights from building the Trans-European Transport Network. (<https://app.swapcard.com/event/eu-side-events-cop27/planning/UGxhbm5pbmdfMTA1Mjg4Ng==>)

15. Finally, GE.3 commenced a discussion on a possible structure of its future final report. It agreed that the final report should incorporate all the guidance and frameworks which should be successfully produced within the current mandate such as on adaptation pathways, adaptation business cases, stress testing, as well as other appropriate material. The report should also refer the changes to the knowledge on the evolution of the potential hazards for inland transportation under climate variability and change since the previous report and summarize available methodologies for assessing impacts on transport from climate change. It was agreed that a flow chart be incorporated in the report's introductory chapter that would showcase the common steps in the work on transport climate change adaptation and when the different existing methodologies should be applied. This should be done by signposting the material developed within this mandate as well as other valuable material made available by cooperating partners to the common steps. Following this initial discussion, GE.3 requested the chair and vice-chairs supported by the secretariat to prepare an annotated outline for the final report for further discussion at the next session.

IV. Climate change and transport assets data (agenda item 3)

16. GE.3 noted the fact that more time was necessary for the development of maps presenting projections depicting the future changes for the indices agreed at the twenty-second session and appreciated the effort required to prepare the maps. GE.3 requested that initial maps are presented at the next sessions.

17. GE.3 considered then a presentation from Germany on detection and risk assessment of heavy rainfall events. It recognized the fact that not every heavy rainfall event would lead to impact or damage and that analysis should incorporate geographic, demographic or topographic factors to better assess future risks. GE.3 agreed to take this into account in its work on analysing climate change hazards, in particular when assessing climate projections.

18. Concerning the climate hazard such as windstorms, GE.3 agreed to research further on windstorms. It agreed to experiment with projections for windstorms based on wind gust speed index at the threshold of 17 m/s. Recognizing then the risk to transport operations of various modes from changing winds, GE.3 requested interested experts to explore this topic further and make proposals at the next sessions. In particular, the evolution of wind directions and the combined impact of wind with other climate events, like droughts or heavy snowfall, and the development of a catalogue of windstorms impacts to check the relevance of the chosen thresholds could be further explored.

19. Finally, GE.3 welcomed the work done by the secretariat in incorporating various transport networks in Geographic Information System environment, in particular the development of the International Transport Infrastructure Observatory which presents the networks defined in the United Nations infrastructure agreements administered by the Economic Commissions of Europe, Euro-Asian Transport Links corridors, and networks from cooperating partners such as United Nations Economic and Social Commission for Western Asia and the corridors agreed within the Economic Cooperation Organization.

V. National and sub-national projects on climate change impact assessment and transport asset adaptation needs (agenda item 4)

20. Experts from France and the secretariat made presentations on methodologies and data availability for assessing transport networks criticality. Poland presented updates related to its work on transport adaptation and in particular the elaboration of the Polish guide on climate proofing for beneficiaries or investors in infrastructure, whose application is mandatory for projects funded by the European Union. Canada and Germany presented on lessons learned from the 2021 extreme weather events which occurred in the Canadian province of British Columbia and the Western part of Germany.

21. GE.3 appreciated the informative presentations. With regard to criticality, GE.3 agreed to start working on developing a guide for assessing transport asset criticality,

especially to present the different types of approaches to criticality and provide guidance to choose the most relevant approach based on the goal of the assessment, data and time available. GE.3 called upon interested experts to join intersessional work to further discuss on criticality and develop an annotated outline for the guide for consideration at the next session.

22. GE.3 also noted the lessons learned by Canada and Germany. It again stressed the importance of early warning for effective response, of the platforms for a greater interconnectedness during emergency situations and of common competence centers serving as interdisciplinary panels for evaluating the circumstances faced. It also noted the fact that building back after disasters may miss the notion of building back better or more resilient if guidelines or knowledge resources to do so are not readily available. In this regard it noted the availability of supporting material in Canada that helps in building back better. It can be consulted at: <https://www2.gov.bc.ca/gov/content/transportation/transportation-environment/climate-action/adaptation> and the Resilient Highway Design guide at: <https://www.egbc.ca/getmedia/b60921fc-a820-41be-868f-02f0d3d92892/EGBC-BCMOTI-Climate-Resilient-Design-Highway-V2-0.pdf.aspx>.

23. GE.3 requested then experts to present at the next sessions on further national and sub-national projects on climate change impact assessment and transport asset adaptation needs.

VI. Database on adaptation measures (agenda item 5)

24. At the previous session, GE.3 had requested the secretariat and a group of volunteers to engage in the intersessional work to research on adaptation pathways in transport and, as far as possible, to collect examples on adaptation pathways developed for transport as well as prepare for a targeted discussion at the next session. The University of Birmingham on behalf of the group of volunteers presented Informal document (2022) No. 2, which contains a proposal for developing guidance on adaptation pathways in the transport sector. The decision of the group of volunteers to develop such a guidance was driven by the finding that only few examples of use of adaptation pathways in the transport sector exist.

25. GE.3 welcomed the work carried out by the group of volunteers and invited them to develop the guidance on the basis of an outline presented in the Informal document (2022) No.2 with the aim to present a draft of the guidance at the next session. GE.3 also requested the group of volunteers to pay attention in the guidance to an exhaustive elaboration on the point of thresholds, including the notion of acceptable level of risk, so that this point, which is key to the concept of the adaption pathways, can be well understood by the future users of the guidance. Attention should be also paid to presenting non-technical along the technical adaptation measures in the guidance. The guide should showcase or signpost examples of both non-technical and technical adaptation measures both in the methodology guidelines and in the section including the case studies, which is to be prepared at a later stage.

VII. Guidelines for integrating climate change considerations in planning and operational processes (agenda item 6)

26. The Russian Federation briefly presented the outcomes of a conference held in Moscow on 15 and 16 November 2021 whose aim was to raise awareness on the importance of adaptation of transport systems to climate change in countries of Eastern Europe, Caucasus and Central Asia.

27. Armenia presented its work on climate change covering both improvements to the climate change mitigation policies as well as, to lesser extent, the adaption policies.

28. The Chair updated GE.3 on the contribution to the Transport Research Arena (TRA) 2022 Conference in Lisbon dedicated to European research and technology on transport and mobility. GE.3 work would be presented at the conference in a so-called poster session.

29. The secretariat and France informed on preparations undertaken and a partnership set up for the organization of the workshop for the Mediterranean countries on the issues of ensuring more resilient transport systems to climate change hazards. The workshop to be hosted by France, in the headquarters of the South region in Marseille, and organized jointly by France, ECE and ESCWA, and possibly with support of the Centre for Transportation Studies for the Western Mediterranean, and to be held in spring 2023 (late April or early May) would aim at engaging all Mediterranean countries to benefit from knowledge sharing on adaptation of transport to climate change and extreme weather events. The workshop is planned as a practical event during which selected risks to the transport network crossing the Mediterranean countries would be jointly analyzed.

30. GE.3 discussed then a proposal from the intersessional group of volunteers on the development of a framework for transport system stress test to climate change hazard. Informal document (2022) No. 1, as introduced by the secretariat, presents the annotated outline for the framework. GE.3 welcomed the outline and requested that the framework is developed and that its draft is presented at the next session. GE.3 further requested that the framework clarifies when it is recommended to perform a transport asset stress test and explain the difference in methodology between stress tests and vulnerability assessments.

31. Finally, the secretariat presented the reworked surveys on impacts of climate/weather related events on transport infrastructure (road and rail), through which information on losses due to extreme weather events can be established so that possible business cases for adaptation could be elaborated. The secretariat thanked Jaspers for its support in this work.

32. The secretariat also reported on the already made and planned dissemination of the survey and on the deadline for responses set for the end of March 2023.

33. GE.3 welcomed the efforts made in preparing and disseminating the survey and expressed its hope that enough stakeholders would engage in the survey for GE.3 to be able to pursue the work on business cases for adaptation.

VIII. Appointment of a Vice-Chair (agenda item 7)

34. GE.3 appointed Ms. Teodora Popescu (France) to serve as its Vice-Chair, along Mr Jerzy Kleniewski (Poland) for the remaining period of the mandate.

IX. Other business (agenda item 8)

35. The secretariat informed GE.3 about its ongoing fundraising efforts to support GE.3's activities.

X. Date and place of next meeting (agenda item 9)

36. The secretariat informed GE.3 about the scheduled date for twenty-fourth session on 9 and 10 March 2023 in Geneva.

37. The secretariat also informed that the next session be organized as in-person meeting as holding of hybrid meetings as of 1 January 2023 would be charged against extrabudgetary funding earmarked for organisation of such meetings.

XI. Summary of main decisions (agenda item 10)

38. The secretariat summarized the decisions taken by GE.3. The full report of the session, prepared by the secretariat in consultation with the Chair and Vice-Chairs, would be shared electronically after the session for adoption.
