Draft Conclusions and Recommendations arising from the nineteenth session of the Group of Experts on Cleaner Electricity Systems[[1]](#footnote-2)

**Draft for discussion**

**version 25 September 2023**

**[Agenda item 1: Adoption of the agenda]**

**Agenda item 2: Opening remarks**

1. A Vice-Chair of the Group of Experts on Cleaner Electricity Systems (the Group of Experts) delivered opening remarks summarizing the progress achieved during the intersessional period. The Group of Experts noted particularly the progress in addressing, jointly with other subsidiary bodies of the Committee on Sustainable Energy, the aspects of:

(a) Improving electricity system resilience, including through deployment of energy storage options and increasing energy connectivity;

(b) Changing patterns of energy end uses, including integration of electric mobility and other smart assets at the grid edge, impacting reliability of the energy system;

(c) Cybersecurity of digitalized energy systems.

**Agenda item 3: Elections of officers**

2. The Group of Experts elected [to be updated] as Vice-Chairs with effect from the close of the nineteenth session for two years until the close of the twenty-first session. Members elected to the Bureau at the eighteenth session in 2022, will continue their service until the end of the twentieth session.

3. The Bureau of the Group of Experts comprises: [to be updated]

4. The Chair of the Group of Experts is *ex officio* Vice-Chair of the Committee on Sustainable Energy.

**Agenda item 4: Activities and priorities of the Committee on Sustainable Energy and matters for consideration by the Group of Experts**

5. The secretariat provided an overview of recent activities of the Committee on Sustainable Energy following its thirty-second session, 13-15 September 2023, as well as decisions taken by the parent bodies related to the work of the Group of the Experts.

6. [to be updated]

7. The Group of Experts reconfirmed its intention to lead and/or to contribute, within its scope of expertise and in line with the United Nations Economic Commission for Europe Platform on Resilient Energy Systems Work Plan (ECE/ENERGY/2023/11), to activities related to:

(a) Sustainable resource management and access to critical raw materials to help countries understand what resources they have available;

(b) Low-, zero- and negative-carbon technology interplay;

(c) Just Transition; and

(d) Urban planning and modelling of decentralized energy systems.

**Agenda item 5: Plenary session**

*Documentation:* ECE/ENERGY/2023/11 – United Nations Economic Commission for Europe Platform on Resilient Energy Systems Work Plan

8. The Group of Experts discussed and identified a set of aspects found crucial for reliable, resilient, and secure energy systems in the ECE region.

9. Such a set of aspects will align with the input made by the Committee on Sustainable Energy at its thirty-second session. In particular, work on resiliency will address aspects of improving electricity system resilience, including through deployment of energy storage options and increasing energy connectivity; assessing the impacts of changing patterns of energy end uses (including integration of e-mobility and other smart assets at the grid edge) on reliability of the energy system, unlocking the potential of energy system efficiency through digitalization including issues related to cybersecurity and data analytics including the use of Artificial Intelligence.

10. The Group of Experts:

(a) Requested the Bureau, with support from the secretariat, to consider and formulate activities that would further support efforts to increase the resiliency of the energy systems in the ECE region.

(b) Noted that the expanded scope of activities requires extrabudgetary funding and in-kind contributions from stakeholders, and called upon member States and other interested Parties to consider providing such support necessary for delivering on newly defined tasks.

**Agenda item 6: Achieving net-zero emissions power systems**

*Documentation:* ECE/ENERGY/GE.5/2023/5 – Transitioning to net-zero emissions power systems – common principles for reliability of supply

11. [to be updated]

12. The Group of Experts:

(a) Observed that ambitious climate mitigation and adaptation policies, advocating for rapid development and implementation of low-carbon power production options, oftentimes pose a challenge to the power generation sector of member States, which in many cases do not have sufficient capacity for such quick and profound transformation.

(b) Discussed the matters and challenges related to integration of renewables, distributed energy resources, energy storage, energy efficiency and conservation, role of energy end-users, and optimization of grid operations in the context of the electrification trend that requires a massive increase in the scale of the electricity grid.

(c) Noted that in certain member States retention of key fossil generation assets for some period might be necessary to ensure reliability of supply and provide a more to lessen the expected hardships, in particular those related to loss of employment, of transition by spreading its effects over time and thus allowing the process to be conducted in more gradual and equitable manner through job preservation. Even though those assets are likely to be generating much less energy (and concomitant carbon emissions), they will still be providing high-value reliability services.

(d) Acknowledging the investment requirement for the attainment of Sustainable Development Goal 7 and other Goals in relation to energy, recommended to continue exploring and assessing market mechanisms and financing conditions that could contribute to the transformation of the electricity systems toward the net-zero aspirations.

(e) Observed that international standards governing grid support performance of inverter-based resources (solar photovoltaics, wind, battery energy storage, etc.), as well as modelling for their behaviour as they continue to grow on the electricity grid, are essential. Called, therefore, on the member States for the development of common international standards for the reliable operation of inverter-based resources.

**Agenda item 7: Reliability and cyber resiliency of smart integrated energy systems**

*Documentation:* ECE/ENERGY/GE.6/2023/3-ECE/ENERGY/GE.5/2023/3 – Key considerations and solutions to ensure cyber resiliency in the smart integrated energy systems

ECE/ENERGY/GE.6/2023/4-ECE/ENERGY/GE.5/2023/4 – Improving efficiency and reliability of energy systems by means of big data analytics

13. The Group of Experts explored the contribution of digitalization to the reliability of energy systems, making them more connected and efficient. The focus was on cyber resiliency in smart integrated energy systems.

14. The Group of Experts:

(x) Expressed appreciation for the close and fruitful collaboration with the Group of Experts on Energy Efficiency and its Task Force on Digitalization in Energy on advancing the digitalization of electricity systems and took note of two documents developed in close collaboration between the two Groups of Experts: (i) ECE/ENERGY/GE.6/2023/3-ECE/ENERGY/GE.5/2023/3 – Key considerations and solutions to ensure cyber resiliency in the smart integrated energy systems; (ii) ECE/ENERGY/GE.6/2023/4-ECE/ENERGY/GE.5/2023/4 – Improving efficiency and reliability of energy systems by means of big data analytics.

(a) Discussed considerations and solutions to ensure cyber resiliency in smart and digitally integrated energy systems. Supporting the discussion, the Group of Experts noted the work of the Task Force on Digitalization in Energy, namely the document Key considerations and solutions to ensure cyber resiliency in the smart integrated energy systems (ECE/ENERGY/GE.6/2023/3-ECE/ENERGY/GE.5/2023/3). Acknowledging that cybersecurity is a challenge for critical infrastructure like energy systems, recommendations to mitigate cybersecurity risks were noted. It was noted that best practices exist for operators of critical infrastructure and contribute to a more cyber-resilient system.

(b) Discussed framework, considerations, and recommendations on how to ensure security of the energy system through cyber and physical integration into planning, design, and operational practices.

(c) Encouraged continued cooperation with the Group of Experts on Energy Efficiency and its Task Force on Digitalization in Energy and proposed to join forces to further explore the contribution of digitalization to a more reliable, resilient and cleaner energy system, to expand outreach through the organization of, and active participation in seminars, technical conferences and other events and to further collaborate with industry groups and other UN regions. The Group of Experts will seek to complement content in cybersecurity and artificial intelligence use.

(d) Agreed, in line with its mandate, to initiate an in depth work on electricity system resilience, as well as on the importance of transmission and distribution grid modernization and digitalization to mitigate the impacts of climate change. The Group of Experts agreed to also look at the role of electrification of the transportation sector, its impact on the electricity system, and at technology compatibility issues.

**Agenda item 8: Exploring pathways for a balanced integration of electric mobility into power systems**

15. The Group of Experts:

(a) Reconfirmed that e-mobility will have as much impact on the design and operation of the electric grid as it will have on transportation systems themselves. Electric loads will grow significantly, and therefore location and operation of Electrical Vehicles (EV) chargers (private or public) need to be integrated with grid and resource planning.

(b) Recognized, in keeping with the observations made at the ECE Working Party on Transport Trends and Economics (WP.5) at its 36th session, that facilitating progress in electric mobility calls for the establishment of a dedicated informal task force focusing on coordinating efforts related to developments of EVs and their charging infrastructure both within ECE secretariat and beyond, in collaboration with other concerned institutions. Expressed readiness to work in close consultation with WP.5 and subsidiary bodies of the Committee on Sustainable Energy, notably the Group of Experts on Energy Efficiency, on the development of draft terms of reference for such a task force.

(c) Agreed to continue explore opportunities for securing in-kind contributions and extrabudgetary funding including from partner organizations for specific projects, notably focused on activities related to (i) consideration on the degree of integration of e-mobility into electricity systems and its impact on design and operations, (ii) charging management and (iii) workshops and seminars to better understand issues and share findings.

**Agenda item 9: Implementation of the Work Plan of the Group of Experts on Cleaner Electricity Systems for 2024-2025**

*Documentation:* ECE/ENERGY/2023/9 – Work Plan of the Group of Experts on Cleaner Electricity Systems for 2024-2025

16. The Vice-Chair provided an update on the progress in implementation of the Work Plan of the Group of Experts for 2022-2023 (ECE/ENERGY/2021/8). The main thematic areas that formed the basis for the Group of Experts’ work in the 2022-2023 period include: (A) Electricity as a driver for achieving deep transformation of the energy system; (B) Technology interplay under a carbon neutral energy system; (C) Modernization and decarbonization of electric power systems in ECE subregions; (D) Digitalizing electricity systems.

17. The Group of Experts:

(a) Took note of the results achieved in the course of implementation of the Work Plan of the Group of Experts for 2022-2023.

(b) Welcomed approval by the Committee on Sustainable Energy at its thirty-second session (13-15 September 2023) of the Work Plan of the Group of Experts for 2024-2025 (ECE/ENERGY/2023/9), which contains the following four sections: (A) Improving electricity system resiliency as an enabler for transformation of the energy system; (B) Supporting the creation of favourable power market design and financing conditions for the transformation of the electricity systems; (C) Assessing the contribution of digitalization to designing cleaner electricity systems; (D) Exploring the impact of e-mobility integration on the electric system design and operation. The work plan identifies clear deliverables and timeline.

(c) Recognized that collaboration across the subsidiary bodies of the Committee on Sustainable Energy, the other ECE subprogrammes, and engagement of relevant external groups is key to ensure timely and quality deliverables.

(d) Deemed securing extrabudgetary resources critical for attainment of the objectives set forward in the Work Plan for 2024-2025, and encouraged the Bureau to make efforts to explore funding opportunities through extrabudgetary projects.

**[Agenda item 10: Any other business]**

18. [to be updated].

**Agenda item 11: Dates of the next meeting**

19. The twentieth session of the Group of Experts is scheduled to take place in Geneva on 16 and 17 September 2024.

**Agenda item 12: Adoption of conclusions and recommendations**

20. The Group of Experts adopted the conclusions and recommendations arising from the nineteenth session.

**Agenda item 13: Adoption of the report and close of the meeting**

21. The meeting report was adopted subject to any necessary editing and formatting.

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1. The draft conclusions and recommendations will be reviewed by the Group of Experts after each agenda item and updated as needed. [↑](#footnote-ref-2)