Regional Stakeholder Consultations
on Energy Connectivity and Sustainable Energy
12-13 June 2024

Venue: Radisson Hotel Astana
Sary Arka Street 4, Astana

Background:

Enhancing regional energy connectivity and fostering energy trade through cooperation is a critical factor for bolstering the resiliency of the energy system as well as energy security in Central Asia and the Caucasus. An integrated and interconnected energy system that encompasses electricity and gas grids and facilitates the transport and trading of low-carbon and green hydrogen, can enhance the reliability, affordability, and sustainability of energy supply. This integrated approach not only paves the way for deep decarbonization but also facilitates a more efficient integration of scaled renewable energy capacity in the region's existing energy systems, thereby fostering a more robust regional energy ecosystem.

Objective:

This consultation aims to gather expert opinion to inform the implementation of the ESCAP – UNECE Programme on Energy Connectivity in Central Asia and the Caucasus launched in January, 2024. The programme includes three technical projects:

- **Project on energy connectivity for sustainable development** – Enabling renewable energy resource sharing across borders (ECO-REM). The key activity includes development of a subregional roadmap to inform multilateral power trading linked to sustainable cross-border trade of renewable energy resources.

- **Project on Energy Connectivity in Central Asia**. The key activity includes development of scenarios and a roadmap for a regionally interconnected energy system in Central Asia.

- **Project on enhancing energy security and energy system resilience** through energy connectivity. The key activities include technical workshops on building policy design capacity for resilient and connected energy systems in Kazakhstan and Uzbekistan.

- The consultation also includes the presentation of the key findings of **the SDG 7 Roadmap for Kazakhstan** developed under the joint ESCAP-UNECE **project "Strengthening energy policies of Countries with Special Needs to build back better from COVID-19"**.

This 2-day technical workshop will serve as a platform to bring together stakeholders from across the region to discuss their progress and collectively identify the subsequent steps forward.

The meeting will be organized in **English and Russian** with simultaneous interpretation.

Draft Agenda and Programme

12 June 2024

Time (GMT+5)	Agenda item
9:30 - 10:00	Opening remarks: • **Ms. Michaela Friberg-Storey**, UN Resident Coordinator in Kazakhstan • **Mr. Matthew Wittenstein,** Chief of Section of Energy Connectivity, ESCAP (online) • **Mr. Oleg Dzioubinski**, Regional Advisor, Sustainable Energy Division, UNECE
10:00 - 12:00	Session 1: Validation Workshop for the SDG 7 Roadmap for Kazakhstan
12:00 - 13:00	*Lunch*
13:00 - 16:00	Session 2: Development of scenarios and a roadmap for a regionally interconnected energy system in Central Asia
16:00 - 16:30	*Coffee break*
16:30 - 18:00	Session 3: Hydrogen-water nexus in Central Asia

13 June 2024

Time (GMT+5)	Agenda item
9:30 - 12:30	Session 4: Development of a subregional roadmap to inform multilateral power trading linked to sustainable cross-border trade of renewable energy resources
12:30 - 13:30	*Lunch*
13:30 - 16:00	Session 5: Development of tools and fostering multi-stakeholder partnerships for a resilient and interconnected power system in Kazakhstan and Uzbekistan
16:00 - 16:30	Closing remarks
16:30 - 17:30	*Coffee and networking*

Session 1: Validation Workshop for the SDG 7 Roadmap for Kazakhstan

ESCAP and UNECE are implementing jointly the UNDA project "Strengthening energy policies of Countries with Special Needs to build back better from COVID-19" (January 2022-June 2025) for eight beneficiary countries. UNECE is responsible for activities in three of them: Armenia, Kazakhstan, and Uzbekistan. The project is aimed at supporting national obligations in the framework of the SDGs implementation. The main goal of the project is to develop roadmaps to achieve SDG7 "Ensuring access to affordable, reliable, sustainable and modern energy sources for all."

The first and second National Stakeholder Consultation Workshops on the Development of an SDG7 Roadmap for the Republic of Kazakhstan were held respectively on 2 February and 9 November 2023 in Astana. The first workshop presented the National Expert SDG Tool for Energy Planning (NEXSTEP), which supports the development of national SDG 7 roadmaps to provide policymakers with scenarios that estimate the share of different energy resources and identify the technological interventions required; economic analyses to provide insights into feasible interventions; and policy analyses to guide the development of balanced national policies. At the second workshop, key results and findings of the energy and emissions modelling, multiple scenario development, and economic analysis using NEXSTEP were presented and discussed with stakeholders. Following the second workshop, further interaction with Government bodies and other stakeholders allowed more comments and suggestions and expert opinions to ensure that these findings are meaningful and aligned with Kazakhstan's specific context. Based on these inputs, scenarios have been refined and will be presented for validation at this session. Once agreed upon, these scenarios will form the basis for the development of the SDG7 Roadmap.

Time (GMT+5)	**Agenda item**
10:00 - 10:15	Welcome and session introduction • **Mr. Michael Williamson**, Chief of Section, Energy Division, UNESCAP (online) • Representative(s) of Kazakhstan (TBD)
10:15 - 11:15	Data collection and verification process • **Mr. Yernar Bilyalov**, UNECE National Consultant for Kazakhstan Presentation of the modified SDG7 roadmap scenarios for validation with a focus on Technological options and policy measures to achieve SDG7 targets • **Mr. Vitaly Bekker**, UNECE International Consultant and **Mr. Anis Zaman**, Economic Affairs Officer, Energy Division, UNESCAP (online) Experience with SDG7 roadmap scenarios for Kyrgyzstan • **Ms. Tatiana Vedeneva**, President, Center for Renewable Energy and Energy Efficiency Development (CREEED)
11:15 - 11:45	Moderated discussion and Q&A led by **Mr. Oleg Dzioubinski**, Regional Advisor, Sustainable Energy Division, UNECE • Review of the key findings • Comments and recommendations
11:45 - 12:00	Wrap up and next steps • **Mr. Oleg Dzioubinski**, Regional Adviser, Sustainable Energy Division, UNECE

Session 2: Development of scenarios and a roadmap for a regionally interconnected energy system in Central Asia

Background:

UNECE has partnered with the Stockholm Environment Institute (SEI) to conduct scenario modelling and depict the dynamics and pathways for improved energy connectivity across Central Asia. The model is designed to simulate 3 distinct energy connectivity scenarios: i) the initial scenario represents energy self-sufficiency, resulting in minimal inter-regional energy connectivity; ii) the second scenario illustrates regional connectivity exclusively among the five Central Asian member states; iii) the third scenario, integrates both intra-regional energy connectivity among the five central Asian member states as well as integration with the energy systems of third-party countries with whom they are involved with in the trade of energy.

This modelling activity is intended to provide the regional stakeholders with insight into the costs and benefits associated with enhanced energy connectivity in the region. The preliminary results stemming from the modelling exercise scenarios will highlight the energy resources endowments of the Central Asian states, i.e., fossil fuel reserves, along with considerations related to energy supply and demand. Furthermore, the model will depict the dynamics associated with the adoption of low or zero carbon emission energy technologies, including renewables, nuclear power, hydrogen and fossil fuels coupled with Carbon Capture, Utilization and Storage (CCUS). Additionally, the model will cover the expansion and integration of electricity and gas grids, as well as the utilization of energy storage systems. Complimenting the aforementioned energy system interconnection dynamics, the model will elucidate the required consensus policies needed to enable greater energy connectivity across the region as well as the associated costs related to energy systems, focusing particularly on energy generation, transmission, and storage. It will also highlight how these scenarios contribute to or impede national and regional energy objectives.

Objective:

This session aims to gather expert opinion on the preliminary results from the scenario modelling exercise. After the presentation of the preliminary modelling results by the Stockholm Environment Institute (SEI), the floor will be open to the regional stakeholders to engage in a moderated discussion. This interactive session aims to foster collaboration and ensure that diverse perspectives are considered in shaping the future direction of the project and its implications for energy policy and regional energy system development in Central Asia.

Time (GMT+5)	Agenda item
13:00 - 13:15	Setting the scene: Project overview • **Ms. Iva Brkic** and **Ms. Nadejda Khamrakulova**, UNECE
13:15 - 14:00	Presentation of the preliminary modelling results • **Mr. Jason Vesey**, Stockholm Environment Institute
14:15- 15:30	• What are your reactions on the results of the three modelled scenarios: • Scenario 1: Self-sufficiency, resulting in minimal inter-regional energy connectivity • Scenario 2: Regional connectivity exclusively among the five central Asian member states • Scenario 3: Integrating both intra-regional energy connectivity among the five central Asian member states as well as integration with the energy systems of third-party countries with whom they are involved with in the trade of energy. • Are there any gaps? To what extend these scenarios contribute to or impede national and regional energy objectives? Moderated discussion with interventions from the project beneficiary countries and regional international development partners • Ministry of Energy, Kazakhstan

	• **Mr. Mirbek Esengulov,** Chief Specialist, Ministry of Energy of Kyrgyz Republic • **Mr. Khujanazar Aslamshoev,** Adviser, Tajikistan Transmission Company and **Mr. Furugzod Usmonov**, Vice Chair, Group of Experts on Cleaner Electricity Systems • Ministry of Energy, Turkmenistan (TBD) • **Mr. Shukhrat Faizulloev**, Head of Department, Ministry of Energy and **Mr. Bobur Nurmatov**, Chief Specialist, Ministry of Energy, Uzbekistan • **Ms. Dana Yermolyonok**, Senior Policy Advisor, GIZ Kazakhstan • **Mr. Almaz Sauhimov,** Managing Director of Unified Energy System Development, KEGOC • **Mr. Patrick Meyer**, Energy Advisor and **Ms. Lora Kudaibergenova**, Project Management Specialist, USAID • **Mr. Kenzhekhan Abuov**, Senior Project Officer and **Mr. Bekzhan Mukatov**, Consultant, ADB • **Mr. Paata Janelidze,** Project Team Leader, EU SECCA
15:30- 16:00	Shaping the Roadmap on Energy Connectivity • **Mr. Dario Matteini**, UNECE Wrap up • **Ms. Iva Brkic** and **Ms. Nadejda Khamrakulova**, UNECE

Session 3: Hydrogen-water nexus in Central Asia

Background:

Central Asia region has big potential for development of hydrogen economy. In Kazakhstan, the potential of solar and wind can be used for low carbon hydrogen production, and the estimated future hydrogen production potential by 2040 is up to 2.624 Mt per year. Kyrgyzstan has great potential for renewable energy, especially large hydropower and solar energy, and in the long-term, to develop low carbon hydrogen. Tajikistan also has the potential to generate low-carbon hydrogen using hydropower. Turkmenistan has potential in using the desalinated water from Caspian Sea for hydrogen production. Uzbekistan has an estimated potential of 2.09 Mt of hydrogen, and emerges as one of the key frontrunners in the development of the regional hydrogen economy.

At the same time, the Central Asian challenges such as population growth, increasing demand for energy and water coupled with decarbonization (while continuing economic development) require inter-sectoral approach and coordinated policies in governing of hydrogen production and water resources in the region.

Central Asia's water resources are primarily sourced from the Amu Darya and Syr Darya rivers and crucial for agriculture, ecosystems, and local communities. Optimizing water usage while facilitating the growth of hydrogen production is needed to address the challenges and present the new opportunities.

The utilization of nexus approach has the potential to unlock additional opportunities and choices by comprehending the connections between different elements and implementing effective systems for improved coordination. The hydrogen-water nexus in Central Asia represents a critical and evolving intersection of energy and environmental dynamics. The nexus concept highlights the interdependence of water security and hydrogen production. Investments in one of the two sectors have implications on the other. The nexus approach holds particular significance, given its involvement with several cross-border rivers and vital social and economic natural resources.

Objective:

This session will discuss the utilization of nexus approach to i) identify critical bottlenecks in low carbon hydrogen production potential in relation to the water use, and exchange expert opinions on ii) opportunities for applying multi-sectoral decision-making approach in the energy and water sectors for improved coordination.

Time (GMT+5)	Agenda item
16:30-16:40	Introduction: Overview of UNECE activities • **Ms. Nadejda Khamrakulova**, UNECE
16:40-17:00	Setting the scene: • **Mr. Yuri Melnikov**, Expert, UNECE Hydrogen Task Force • **Ms. Botakoz Suleimenova**, Researcher, Hydrogen Technologies Research Laboratory, KMG Engineering, Kazakhstan
17:00-17:50	Moderated discussion with national and regional stakeholders: **Questions/topics for discussion:** • What potential do you see for the development of hydrogen economy in Central Asia? • How can nexus approach help in optimizing water usage while facilitating the growth of hydrogen production in Central Asia? • How can renewable energy sources such as solar, wind, hydropower, and desalinated water be effectively utilized for low carbon hydrogen production in Central Asia? • What are the key challenges and barriers to developing a hydrogen-water nexus in Central Asia, and how can they be addressed? • How important is inter-sectoral cooperation and coordinated policies in governing hydrogen production and water resources in the region? • What role do you see international partnerships playing in the development of the hydrogen-water nexus in Central Asia? Discussants: • **Mr. Shukhrat Isaev**, Head of Department, Agency for Innovative Development of Uzbekistan • **Mr. Furugzod Usmonov,** Energy Expert, Tajikistan, Vice Chair, Group of Experts on Cleaner Electricity Systems • **Ms. Dina Azhgaliyeva**, Senior Research Fellow, ADB Institute, Japan (online) • **Mr. Paul Bertheau**, Project Manager, HyRECA project • **Mr. Nurbek Yessetov**, Energy Advisor, H2 Diplomacy Office, Kazakhstan • **Ms. Peline Atamer**, Senior Policy Analyst, SIPA-Central Asia, OECD (online)
17:50-18:00	Q&A and wrap up

Session 4: Development of a subregional roadmap to inform multilateral power trading linked to cross-border trade of renewable energy resources

Background:

The member States of the Economic Cooperation Organization (ECO) have diverse energy supply and demand patterns, range from fossil-fuel and hydro-electric rich countries to ones with limited domestic energy resources, and include energy import, export, and transit countries. The ECO member countries have had a long-standing goal to develop a common ECO Regional Electricity Market (ECO-REM). However, despite years of effort, the ECO-REM remains primarily at the discussion stage. To facilitate the development of the ECO-REM initiative and enhance the development of the energy connectivity in the region, United Nations–Economic and Social Commission for Asia and Pacific (ESCAP) Energy Division with the support from China-ESCAP Cooperation Programme (CECP) have initiated a project "Energy connectivity for sustainable development – Enabling renewable energy resource sharing across borders". The ultimate goal of this project is to deliver a set of targeted, actionable recommendations for policy and regulatory reforms that would enable the establishment of multilateral, multidirectional power trading where there is existing cross-border electricity transmission infrastructure.[1]

Objective:

This session aims to present a draft roadmap with actionable recommendations for policy and regulatory reforms and to launch a peer review to gather expert opinion on the draft document and further project implementation.

13th June Time (GMT+5)	**Agenda item**
9:30-9:45	*Opening remarks:* • **Ms. Anna Lobanova,** Energy Connectivity Specialist, Energy Division, ESCAP **Mr. Fuad Farzalibeyov,** Director of Energy, Minerals and Environment, Secretariat of the Economic Cooperation Organization (ECO)
9:45-10:05	*Roadmap presentation* • **Ms. Victoria Koksharova**, Consultant, ESCAP • **Mr. Fariz Mammadov**, Consultant, ESCAP
10:05-12:30 with a coffee break	Moderated discussion with regional stakeholders: • Existing bilateral and multilateral electricity collaboration initiatives, developing and implement intergovernmental agreements in ECO member states; • Potential mutual benefits of increased cross-border power trade linked to renewable energy resources. • Main regulatory, economic, technical and political barriers/challenges to potential expansion of existing regional electricity connectivity initiatives/projects; • Discussion and creation of market rules for cross-border electricity trade; • Balancing security, efficiency and sustainability in cross-border power trade • Proposed roadmap for ECO-REM, and its potential options for its implementation; • Potential options to include non-ECO countries in cross-border power trading. • **Mr. Kamran Huseynov,** Deputy Director, Azerbaijan Renewable Energy Agency

[1] https://unece.org/sites/default/files/2024-02/Brief%20projects%20description_connectivity.pdf

	• **Mr. Mohammad Hossein Zendehdel,** Director of Cross-Border Electricity Exchange Office, Iran Grid Management Co. (IGMC) • Ministry of Energy, Kazakhstan (TBC) • **Ms. Gulnara Hasenova,** Deputy Director Regulatory Department, Ministry of Energy, Kyrgyzstan • **Mr. Shah Jahan Mirza**, Managing Director Private Power and Infrastructure Board, Ministry of Energy, Pakistan • **Mr. Parviz Yakhyaev,** Head of the International Department, Ministry of Energy and Water Resources, Tajikistan • Ministry of Energy, Turkmenistan (TBC) • **Ms. Halime Semerci-Kuşçu,** Head of Department, Ministry of Energy and Natural Resources, Türkiye • **Mr. Shukhrat Faizulloev**, Head of Department, Ministry of Energy, Uzbekistan Moderator: **Ms. Anna Lobanova**, Energy Connectivity Specialist, Energy Division, ESCAP

Session 5: Development of tools and fostering multi-stakeholder partnerships for a resilient and interconnected power systems-in Kazakhstan and Uzbekistan

Background:

As part of a wider UN Development Account (UNDA) Project, UNECE and UNESCAP have joined forces with UNECLAC, UNESCWA and UNECA, to help member States increase their policy design capacity to enhance energy security and energy system resilience through energy connectivity. This project enhances global collaboration and policy support for designing resilient energy systems by establishing a global stakeholder network, developing policy guidance, disseminating knowledge, and fostering multi-stakeholder partnerships. Kazakhstan and Uzbekistan are two out of five beneficiary countries in Asia and the Pacific, Latin America and the Caribbean, and Europe and Central Asia that this project will assess and look into improving capacity-building and knowledge-sharing on how to leverage connectivity as a tool to help design and build resilient energy systems.

Central Asia is a diverse region rich in natural resources and with vast potential to develop large scale renewable energy projects. However, despite a positive trend and increasing renewable energy capacity, the region still heavily depends on fossil fuels. Coal and natural gas still dominate regional electricity generation mix and will continue meeting increasing regional energy demand in a foreseeable future. There is a need to scale and integrate additional renewable energy capacity into the current energy systems effectively to improve the overall resiliency of the energy systems.

The regional energy system in Central Asia is connected largely as a legacy of Soviet-era planning and investments. However, despite the existing infrastructure in place, the current system is not ready for integration of large-scale renewable energy capacity and real-time power trading. Significant investments are needed to enhance the reliability and sustainability of the regional electricity and gas grid. In addition, the countries in the region are prone to develop their national strategies in isolation failing to take into account the economic and environmental benefits of regional cooperation.

Objective:

This session aims to share the preliminary findings from the energy system stocktaking analysis in Kazakhstan and Uzbekistan and gather expert opinion from national and regional stakeholders on Kazakhstan and Uzbekistan's potential to build a resilient energy system and its role in contributing to the regional energy connectivity and system resilience as well as a discussion on strategic plans and current measures for the development of multilateral power trade and connectivity projects.

Time (GMT+5)	Agenda item
13:30 - 14:00	Setting the scene: Project overview and methodology for national stocktaking analysis for resilient and interconnected energy systems • **Ms. Iva Brkic**, UNECE, **Ms. Nadejda Khamrakulova**, UNECE and **Ms. Anna Lobanova,** ESCAP
14:00- 15:45	Moderated discussion with national and regional stakeholders **Questions / topics for discussion:** • What are the perceived challenges and potential benefits from the development of connectivity projects? • How do Kazakhstan and Uzbekistan government agencies, civil society groups, and other stakeholders currently collaborate on power system development? • The Green Power Corridor Framework has six building blocks: social acceptance, institutional framework, infrastructure backbone, political accord, regulatory framework, and enabling financing. Which building blocks are relevant to energy security and resilience in Kazakhstan/Uzbekistan? • What are existing strategic plans and current measures for the development of cross-border power system connectivity, including grid infrastructure development and power trade? <u>Discussants:</u> • Ministry of Energy, Kazakhstan • **Mr. Shukhrat Faizulloev**, Head of Department, Ministry of Energy and **Mr. Bobur Nurmatov**, Chief Specialist, Ministry of Energy, Uzbekistan • **Mr. Almaz Sauhimov,** Managing Director of Unified Energy System Development, KEGOC • **Mr. Bakhtiyor Shamsiev**, Head of Power Systems' Regimes Department, CDC Energia • **Mr. Nizomiddin Rahmanov**, Energy Expert, Uzbekistan • **Mr. Kenzhekhan Abuov**, Senior Project Officer and **Mr. Bekzhan Mukatov**, Consultant, ADB • **Ms. Dana Yermolyonok**, Senior Policy Advisor, GIZ Kazakhstan
15:45- 16:00	Wrap up and next steps