28th Session of the Committee on Sustainable Energy
Accelerating and Deepening the Transition of Sustainable Energy Systems

25-27 September 2019, Geneva
## Weekly overview reminder

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<td>10.00 - 13.00</td>
<td><strong>Opening and administrative matters</strong></td>
<td><strong>Attaining carbon neutrality</strong></td>
<td><strong>Sustainable Resource Management cont.</strong></td>
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|       | --- **Accelerating and deepening the Transition to Sustainable Energy Systems** | a) Modernization of energy infrastructure                                | a) Efficiencies, cities and circular economy
|       | --- Pathways to Sustainable Energy cont.                               | b) Decarbonising electricity                                             | --- 3 Expert Groups
|       | --- Policy dialogue with the Committee                                 | c) Moderated discussion                                                  | --- Gender and energy |
| Lunch | **Energy Transition Toolkits**                                         | **Energy Transition Toolkits**                                           | **Regional outreach and collaboration**                                   |
| 15.00 - 18.00 | **Sustainable Resource Management cont.**                                 | a) Gas pathways to 2050 and RE                                          | --- Future work of the Committee
|       | --- Managing resources                                                 | b) Managing resources                                                    | **3 Expert Groups** |
|       | --- 3 Expert Groups                                                    | --- 3 Expert Groups                                                      |                         |
a) Gas Pathways to 2050 and the Interplay with Renewable Energy

Introductory remarks:
Francisco de la Flor Garcia, Chair, Group of Experts on Gas
Margalita Arabidze, Vice-Chair, Group of Experts on Renewable Energy

Panellists:
Harleen Kaur Sindhu, Renewable Energy Lead, Shell, Kazakhstan
John Williams, Senior Principal, Pöyry Management Consulting, United Kingdom
Daniela Thrän, Deutsches Biomasseforschungszentrum GmbH and Helmholtz Centre for Environmental Research GmbH (UFZ), Germany
Katsiaryna Yafimava, Senior Research Fellow, Oxford Institute for Energy Studies
a) Gas Pathways to 2050 and the Interplay with Renewable Energy

Discussion themes:

• How can the existing gas infrastructure enable the transition to a carbon neutral economy?
• How can the linkages between electricity, renewable energy and gas be optimized?
• Which role for decarbonized gases?
• Are standards needed and how can they facilitate the process?
Adoption of Conclusions and Recommendations

Document ECE/ENERGY/123
b) Managing Resources in a Carbon Constrained World

Moderation: David MacDonald, Chair, Expert Group on Resource Management; Vice-Chair, Committee on Sustainable Energy

- **Alessandra Hool**, Managing Director, ESM Foundation, Switzerland - Facilitating the energy revolution through sustainable access to critical raw materials

- **King Lee**, World Nuclear Association - Essential resources required for nuclear energy for sustainable development: Entry pathways project

- **Roman Michalak**, UNECE - The nexus approach to the sustainable use of natural resources in the UNECE region

- **Mathy Stanislaus**, World Economic Forum - Global Battery Alliance (GBA) – The Global Battery Alliance Roadmap 2030 (via Webex)
b) Managing Resources in a Carbon Constrained World

Discussion themes:

• How can international collaboration through centres of excellence accelerate the implementation of standards for integrated resource management such as UNFC and UNRMS?

• How can new commodity strategies help link domestic resources with energy production?

• How can we encourage effective cross-sectoral collaboration in diverse areas such as forestry, food production, transport, water resources and energy?

• Is public-private participation crucial to address policy challenges related to sourcing of raw materials for energy access and storage?
Adoption of Conclusions and Recommendations

Document ECE/ENERGY/123
Barry Worthington, Chair, Group of Experts on Cleaner Electricity Systems; Vice-Chair, Committee on Sustainable Energy

Raymond C. Pilcher, Chair, Group of Experts on Coal Mine Methane

David MacDonald, Chair, Expert Group on Resource Management; Vice-Chair, Committee on Sustainable Energy
c) Groups of Experts on Cleaner Electricity Systems and Gas and Expert Group on Resource Management: Mandates and work plans

Relevant Documents

ECE/ENERGY/2019/7 – Work plan of Group of Experts on Cleaner Electricity Systems for 2020-2021

ECE/ENERGY/2019/10 – Work plan of Group of Experts on Gas for 2020-2021


ECE/ENERGY/2019/16 – Specifications for application of United Nations Framework Classification for Resources to Wind Energy

ECE/ENERGY/2019/17 – Updated United Nations Framework Classification for Resources - **Overview**
Group of Experts on Cleaner Electricity Systems

Relevant Documents

➢ ECE/ENERGY/2019/7 – Work plan of Group of Experts on Cleaner Electricity Systems for 2020-2021
Group of Experts on Cleaner Electricity Systems

Presentation

Barry Worthington
Chair, Group of Experts on Cleaner Electricity Systems

- Highlights: Implementation of the work plan for 2018-2019
- Future work plan for 2020-2021
- Request for mandate extension until the end of 2021

Agenda Item 5 (c)
Activities:

➢ Assess a future role for thermal power plants in sustainable electricity systems

➢ Increase flexibility in coal-fired electricity generation

➢ Decrease emissions and increase efficiency from new and existing coal-fired power generation using best practices across UNECE region

➢ Assess means for development and deployment of carbon capture, use and storage (CCUS) technology and know-how

➢ Opportunities in combined heat and power (CHP), gasification and coal to develop other technologies or products (such as liquids or chemicals)
➢ Role of fossil fuels in supporting renewable energy deployment
➢ Role of gas and liquefied natural gas (LNG) in electricity generation (with the Group of Experts on Gas)
➢ Innovation in the extraction and use of coal mine methane for electricity production and other uses (with Group of Experts on Coal Mine Methane)

Events (round table/stakeholder dialogue) have been conducted. Reports (room documents) will be presented at EG session on 5-6 November, Geneva.
A. Electricity as driver for achieving deep transformation of the energy system

Deliverables:

• Round table on electricity as driver for achieving deep transformation of the energy system;

• Background document on interplay of technologies, including between flexible clean coal, natural gas and renewables;

• Background document on the alternative electricity market models;

• Background document on lessons learnt on opportunities for development of combined heat and power, gasification and chemical use of coal.
B. Modernization and decarbonisation of electric power system

Deliverables:

• Round table discussion on HELE technologies deployment, development of UNECE emissions and efficiency standards for electric power plants, and options for financing clean energy projects;

• Round table on options for financing CCUS;

• Subject to extra-budgetary funds or in-kind contributions, generic guidelines on minimum efficiency and carbon dioxide reduction standards in the ECE region;

• Subject to extrabudgetary funds or in-kind contributions, generic guidelines for financing clean energy projects.
C. Energy management in smart urban ecosystem

Deliverables:

• Background document on current status and prospects for the development of ICT in support of high-performance buildings and smart, sustainable cities.

• Background document on the impact of E-Mobility on power system design and operation.

• Case studies from UNECE member States on the results achieved through implementation of policies supporting development of E-Mobility and ICT for high-performance buildings and smart, sustainable cities (subject to identification of extra-budgetary funds, in-kind contributions, or willingness of experts to take a leading role).
D. Promote a gender perspective in the work of the Committee on Sustainable Energy and its Groups of Experts

Deliverables:

• Session on “Women and diversity in energy”
• Case study: “The success of women in ‘non-female’ profession”
Group of Experts on Cleaner Electricity Systems

Barry Worthington,
Chair, Group of Experts on Cleaner Electricity Systems

Request for mandate extension until the end of 2021
Group of Experts on Gas

Relevant Documents

➢ ECE/ENERGY/2019/10 – Work plan of the Group of Experts on Gas for 2020-2021
Group of Experts on Gas

Presentation

Francisco de la Flor Garcia
Chair, Group of Experts on Gas

- **Highlights**: Implementation of the work plan for 2018-2019
- **Future work plan for 2020-2021**
- **Request for mandate extension until end of 2021**
Hybrid Energy System

Sector coupling offers strategies to maximize integration of renewables for heating, mobility, industry and needs to start now.

Source: ENTSOG
ENTSOG believes that for the future we need a Hybrid Energy System building on increasingly decarbonized electricity and gas.
Systematic mapping and analysis of interactions between gas and electricity systems

Indirect interactions relate to scenarios assumptions and are translated into demand

Direct interactions relate to scenarios assumptions as well and are translated into generation/conversion capacities, and can be submitted to TYNDPs as projects

Source: study performed by Artelys & sponsored by ENTSOs
Gas Taxonomy

**Product**
- Renewable gases
  - Biogas / Biomethane
  - Renewable hydrogen

**Process**
- Anaerobic digestion / Gasification
- Pyrolysis / Gasification
- Power-to-gas (P2G) / Electrolysis
- Photo catalysis

**Energy Source**
- RES (cf. RED II)
- Electricity from RES
- Natural gas or other hydrocarbons

**Decarbonised gases**
- Synthetic gas
- Hydrogen > 90% decarbonisation

**Low-carbon gases**
- Hydrogen > 60% decarbonisation

**Natural gas**
- Steam methane reforming (SMR)

*Disclaimer: This overview is based on existing processes and known technologies and evidently does not preclude new technological developments.*

Source: Madrid Forum Presentation 6/6/2019 “Align gas terminology Gas industry proposal” by CEDEC
Electricity generation in Spain (2 days)

23-January-2019

29-August-2019

Source REE

* International exchanges not considered
Implementation of Work Plan 2018-2019

Key Highlights

➢ Broad activities on advocating the role of gas in achieving SDGs
➢ Best Practice Guidance for Effective Methane Management in the Oil and Gas Sector – Monitoring, Reporting and Verification (MRV) and Mitigation – published in 2019
➢ Recommendations for improving interactions between natural gas and renewable energy sources
➢ Policy recommendations and advocacy on gas and air quality
➢ Emerging issues: hydrogen and decarbonized gases
➢ Sustainable production and consumption of has: 2019 focus on four pipelines
GEG Work Plan 2020-2021

Key Highlights

➢ ECE/ENERGY/2019/10 – Work plan of GEG for 2020-2021
➢ Very ambitious – need XB funding
➢ Alignment to 2030 Agenda through continued activity: the role of gas in attaining Sustainable Development Goals
➢ Dissemination of (just published) Best Practice Guidance for Methane Management in the Oil and Gas Sector
➢ Renewable energy and gas: synergies and low-carbon gases (biogas, biomethane and hydrogen)
➢ Gas and gas infrastructure as the backbone of a low-carbon electricity and energy system
➢ Impact of gas on improving urban air quality
➢ Use of gas in transportation – challenges and opportunities
Expert Group on Resource Management

Relevant Documents

➢ ECE/ENERGY/2019/11 – Work plan of EGRM for 2020-2021
➢ ECE/ENERGY/2019/15 – Specifications for application of UNFC to Solar Energy
➢ ECE/ENERGY/2019/16 – Specifications for application of UNFC to Wind Energy
➢ ECE/ENERGY/2019/17 – Updated UNFC – An Overview
Expert Group on Resource Management

Presentation

David MacDonald
Chair, EGRM

- **Highlights:** Key pillar of UNECE’s nexus activity on “Sustainable use of natural resources”
- **UNFC and UNRMS** offer a new transformative model for sustainable management of energy and mineral resources, raw materials & critical raw materials, secondary resources including “wastes”
- **Enthusiastic interest** in/adoption of UNFC & UNRMS as global standard for integrated natural resource management by many countries
EGRM Update

New name: Expert Group on Resource Management
Over 20 active Task Forces involving 250+ active members
Broadened application of UNFC: ECOSOC Decision 2004/233 needs updating
Urgent need for XB funding: support range of activities, growing interest to apply UNFC nationally, regional initiatives, UNRMS development
EGRM requested to meet over 10 sessions annually (5 days)
Extension of mandate for 5 years to end-2024

Visit: https://www.unece.org/energy/se/reserves.html
Implementation of Work Plan 2018-2019

Key Highlights

➢ **UNFC Solar Energy** Specifications finalized
➢ **UNFC Wind Energy** Specifications finalized
➢ **UNFC Update 2019**
➢ More extensive revision of UNFC needed
➢ Case studies and pilot projects
➢ Increased training & capacity-building
➢ “UNFC for Europe” supported by European Commission and “UNFC for Africa” supported by African Union Commission significant progress
EGRM Work Plan 2020-2021

Key Highlights

➢ ECE/ENERGY/2019/11 – Work plan of EGRM for 2020-2021
➢ Very ambitious – need XB funding
➢ Alignment to 2030 Agenda: UNFC revision & UNRMS development
➢ Support for professional users
➢ UNFC & UNRMS guidelines + best practices for delivery of SDGs and support to Food-Water-Energy Nexus
➢ Groundwater, hydro & marine energy
➢ Global network of Centres of Excellence
➢ Digitilise UNFC, webinars
➢ Gender, Young UNFC
UNFC-related Projects

Visit: https://www.unece.org/index.php?id=51848

- Integrated energy and water resource management in support of sustainable development in South-East Europe & Central Asia
- Beneficiaries: Bosnia & Herzegovina, Serbia, Kazakhstan, Kyrgyzstan
- Funded by UN Development Account
- Trainings: data collection related to sustainable energy and water resources management and monitoring and UNFC application, Geneva, 29-30 April and Nur-Sultan, Kazakhstan, 19-20 June
- Focus on use of mineral and energy reserve statistics in broader context of environmental-economic accounting
- Project completion: December 2021
UNFC-related Projects

- Improving national capacities of Central Asian countries to harmonize and implement an internationally applicable system of classification and sustainable management of energy & mineral resources
- Funded by Russian Federation
- UNFC Central Asia Workshop, Geneva, 30 April (during UNECE Resource Management Week 2019)
- Final Workshop: Increasing investment potential of BRICS and Central Asian countries through UNFC and UNRMS, Tyumen, Russian Federation, 17 September)
- Project completion: 30 September 2019

Visit: https://www.unece.org/index.php?id=51848
EGRM requests of the Committee

- Update ECOSOC Decision 2004/233 with new name (UNFC) and broader scope covering renewable energy, etc.
- Note the success of delivering work plan for 2018-2019
- Extension of mandate for 5 years to end-2024 and approval of the workplan for 2020-2021
- EGRM requested to meet over 10 sessions annually (5 days)
- Centre on Sustainable Resource Management
- UNFC Specifications for Solar and Wind
- Simplification and update of UNFC language
- Recommend expansion of collaboration across energy subprogramme
- Recommend cooperation with WEF Global Battery Alliance
Adoption of Conclusions and Recommendations

Document ECE/ENERGY/123