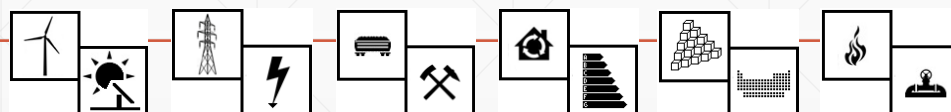


Modernization of the Energy Sector

a pathway towards low-carbon energy and green economy



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Palais des Nations
Geneva
14 June 2019

There are six expert groups that convene under the Committee on Sustainable Energy

Group of Experts on Cleaner Electricity Systems (CES)

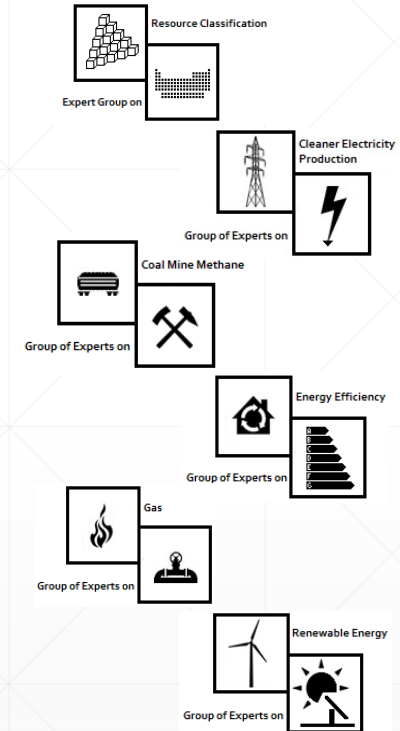
Group of Experts on Coal Mine Methane (CMM)

Group of Experts on Energy Efficiency (GEEE)

Group of Experts on Gas (GEG)

Group of Experts on Renewable Energy (GERE)

Expert Group on Resource Management (EGRM)



Modernization of the energy sector—a pathway towards low-carbon energy and green economy

- Modernization of the energy sector is inevitable—can be accomplished efficiently and cost-effectively
 - UNECE proposes to develop a tool set to help member states plan the transition to a lower-carbon energy sector and green economy
 - The initial tool will be a plan that will lead to greening the economy through modernization of mining and energy sectors
 - Upon request of a member state and specific industrial site operator, Expert Groups, will develop case-specific recommendations aiming for:
 - Increasing cost-effectiveness and productivity of the site, and thus improving its competitiveness and diminishing relative resource use;
 - Decreasing emissions and other site-related environmental damage;
 - Maintaining, to the greatest extent possible, the current employment level;
 - Diversifying, where possible, the mode of production and resource base.
 - In final stage the UNECE will produce a robust and flexible business model that can be replicated
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Modernization of energy infrastructure at industrial complexes centered on fossil energy production sites

- These sites are located in many ECE member countries
 - Many began as simpler operations focused on extraction of fossil fuels to provide energy for extraction of raw materials and manufacturing
 - Through time, additional industries were added to utilize the available resources: local labor, cheap energy, raw materials, transportation infrastructure, etc.
 - These sites remain as important elements of the economy but can be significant sources of water and air pollution, are not efficient energy consumers: associated energy infrastructure requires modernization
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Example: Temirtau, Karaganda Region Kazakhstan

- Temirtau is largely owned and operated by JSC ArcelorMittal
 - Largest integrated mining and metallurgical complex in Kazakhstan
 - Products from the complex:
 - Zinc
 - Aluminum
 - Iron ore and coal concentrates
 - Sinter (pre-smelting mix iron ore fines, coke fines and flux (lime stone)
 - Coke
 - Steel—slabs, long sheets, electric-welded pipe, and other related flat and long rolled products
 - Blast furnace and coke-chemical production
 - Polyester
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History of Temirtau (Iron Mountain)

- 1933 – conduit was built to transport water from the Nura River to Karaganda coalfield
- 1939 – the Nura River was dammed to supply water until 1961
- 1942-- First power facility produced electricity in Karaganda basin
- 1944 – First steel produced Kazakh Steel Mill
- 1960 – Blast furnace produced first pig iron
- Complex grew around coal mines and steel mills. The coal is supplied to seven coke ovens and four blast furnaces

The town and industrial complex continued to grow and by 2001, the mill employed 27,000 people and provides essential services to 160,000 people.

The ownership of the complex changed through the last two decades and ArcelorMittal is the present owner producing over 4 Mt of steel annually



Where can the Expert Groups Assist?

- Help explore ways to provide improvements to energy fuels extraction and production systems
 - Methane emissions are substantial– capture and use of CMM and AMM could be greatly increased with modern high capacity drilling systems, utilization could be power generation and/or CHP
 - Modernization of energy production
 - Renewable energy– standalone or could be combined with CMM and AMM to levelize and green electricity production
 - Energy efficiency– many of the production facilities are old and are not energy efficient
 - Project outcomes will become part of an innovation-led, socially and environmentally responsible national energy strategy
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Proposed Mode of Operation

Framework of collaboration:

- Not an additional Task Force
- One Expert Group will lead fact finding and lay groundwork with assistance of the Secretariat and other Groups join its efforts
- Reports to and engages the Committee on Sustainable Energy for support and advice

▪ Plan:

- STAGE 1: Find interested member state and determine what resonates with targeted recipients
 - Determine states'/business'/industry's needs
 - STAGE 2: Define the “project”—multiple elements
 - Develop project description and assess added value of planned work for the targeted recipients and likelihood of replication
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Proposed Mode of Operation (2)

- STAGE 3: Identify source of pre-project finance
 - Needed for experts to travel to host country site for fact-finding and further development of project plan
 - Host country will provide assistance and in-kind contributions
 - STAGE 4: Produce a pre-feasibility report that includes preliminary business model(s) that can be used for the transformative process
 - STAGE 5: Provide the report to host country and use to seek financing for restructuring targeted energy systems
 - STAGE 6: Used tools developed during first project to replicate success at other sites
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Check List of Considerations for future planning

- Develop a tailored proposed project information package for circulation among stakeholders based on information and data regarding the current situation at the host site
 - Engage the host country government and key industry hosts to help with coordination and planning
 - Determine and list stakeholders that will have active roles in the project
 - Discuss financial commitments required in the early planning stage of the project and how the larger project will be funded. Can it be a private public partnership and include support from a multilateral bank?
 - Coordinate and plan a meeting with representatives of the stakeholder groups. These group may include Ministry of Investment and Development, Ministry of Energy, other ministries or government agencies, other industry owner/operators, local and regional governments.
 - Review Kazakhstan's carbon emissions reduction commitments expressed in its National Determined Contributions and explore ways for the proposed project to optimize its impact on meeting Paris accord requirements.
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