PARALLEL OPERATION PROCEDURES, CDC FUNCTIONS AND THE NATIONAL GRID CODES

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WORKSHOP
March 11, 2021
REVIEW OF THE NATIONAL GRID CODES AND TRANSMISSION OPERATING PRACTICES

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REVIEW OF THE NATIONAL GRID CODES AND TRANSMISSION OPERATING PRACTICES
INTRODUCTION

• USAID’s Central Asia Regional Electricity Market (CAREM) Activity is a three-year project providing technical assistance and capacity building to CA countries to create technically and economically viable market-based regional power system;

• Major condition that would allow:
  – Evolution of national electricity market;
  – Regional market integration;
  – Integration of renewables - is harmonized national electricity sector regulation.
OBJECTIVES

• The main objective of this review is to provide a comprehensive review of the national electricity sector regulations of Central Asia countries;
• The main outcome of this review is to propose recommendations and identify areas where national electricity sector regulations can be improved to allow increased electricity exchange and trade between and among the Central Asian countries.

Source: ENTSO-E
OBJECTIVES

• Review of existing documents constituting the legal, regulatory and operational frameworks governing the electricity sector in:
  – Kazakhstan;
  – Kyrgyz Republic;
  – Tajikistan;
  – Turkmenistan;
  – Uzbekistan.
METHODOLOGY

• Relevant legislation and regulatory acts (Energy Law, Grid Codes, etc.);
• Relevant regulatory authorities ➔ responsible for enforcing legislation and monitoring of implementation process;
• Organizations operating in the power sector – Understanding their roles and responsibilities;
• Assessment of key topics relevant for facilitating increased cross-border trading and integration of renewables.
METHODOLOGY

• Key topics:
  – Energy sector development strategy;
  – Transmission system planning and development;
  – Connection of transmission system users;
  – Transmission system operation;
  – Ancillary services;
  – Regional cooperation.

Source: ENTSO-E
REVIEW

• The review of relevant regulations and documents was starting point for assessing current state;
• The main idea was to give proposals according to positive practice but tailored to CA region;
• Therefore, beside national regulation, analysis was focused also on regulation and documents governing field of electricity power industry on regional level (e.g. Eurasian Economic Union & The Commonwealth of Independent States).
The Republic of Kazakhstan has a well-structured legislation that regulates the field of electricity in accordance with the global positive practice and standards.

- National Regulatory Authority:
  - Regulatory Authority exists but it is not an independent entity

- Deregulation process (energy sector unbundling):
  - The deregulation process is almost complete. KEGOC is the System Operator of the Unified Power System (UPS) of Kazakhstan.
KAZAKHSTAN

• Grid Code:
  − Grid Code from December 18th, 2014, is currently in use;
  − Connection procedure exists but there are neither specific connection requirements nor a methodology for defining connection requirements;
  − The Grid Code should be harmonized with the CIS technical recommendations;
  − Requirements for metering should be developed;
  − Market operation rules should be established.
KYRGYZ REPUBLIC

• National Regulatory Authority:
  – Regulatory Authority exists, but majority of regulation are approved by the Government;
• Deregulation process (energy sector unbundling):
  – Function of system and market operators are performed by Joint Stock Company “Национальная электрическая сеть Кыргызстана”;
• Network codes:
  – Grid Code ceased to be valid on Jan 1st, 2011 however it seems to remain only relevant document of its kind;
  – Connection procedure exists; however, Chapter 5 of the Grid Code can also be applied;
  – Market Code is a valid by-law, but it is partly based on abolished Grid Code.
KYRGYZ REPUBLIC

• Grid Code:
  – Procedures for system operation are not appropriate for the unhindered function of the electricity market;
  – Types and scope of the ancillary services are not determined;
  – It is not clear if any procedure for monitoring of energy quality exists.

• Market Code:
  – Market operation rules are given in abolished Grid Code.
UZBEKISTAN

• National Regulatory Authority:
  − Independent National Regulatory Authority doesn’t exist;
• Deregulation process (energy sector unbundling):
  − Function of system operator is performed by Joint Stock Company “Национальные электрические сети Узбекистана”;
  − The system operator could not be considered as independent;
  − There is no market operator.
• Network codes:
  − Grid Code as separate technical document doesn’t exist;
  − Connection procedure exists, but only for generating modules;
  − Market Code doesn't exist.
TAJIKISTAN

• National Regulatory Authority:
  − The authorized state body of the Republic of Tajikistan on energy has a function of NRA;
  − The authorized body is determined by the Government of Tajikistan;
  − Some of the regulatory functions have been vested in the Antimonopoly Service under the Government.
TAJIKISTAN

• Deregulation process (energy sector unbundling):
  − The Republic of Tajikistan has an electric industry that is vertically organized and not deregulated;
  − The deregulation process is initiated but has not been completed;
  − The sector is formally unbundled however the power industry is still under the strong management of the national holding company Barqi Tojik.

• Network codes:
  − Grid Code as separate technical document does not exist;
  − The rules for metering of electric energy delivered to the grid by the electricity producer are not defined.
TAJIKISTAN

• The restructuring plan of energy sector were set in the Action Plan for Financial Recovery of BT announced in April 2019 by the Government (“the Action Plan”). The following steps were agreed and progressed:
  − Completion of BT’s unbundling into generation, transmission and distribution (legal unbundling was completed in 2020);
• Establishment of an energy regulator:
  − The Government adopted in July 2019 a Decree for establishing a tariff setting unit for the power sector within the Anti-Monopoly Service (AMS), which will gradually transition into an independent energy regulator.
TURKMENISTAN

• National Regulatory Authority:
  − Independent National Regulatory Authority doesn’t exist. Function of NRA is performed Cabinet of Ministers of Turkmenistan and the Ministry of Energy of Turkmenistan;

• Deregulation process (energy sector unbundling):
  − Turkmenistan's electric industry is vertically organized and not deregulated;

• Network codes:
  − Grid Code doesn’t exist;
  − The rules for metering of electric energy delivered to the grid by the electricity producer are not defined.
CURRENT STATE

• Analyzed CA countries have varying degree of development of laws and regulations governing the field of electricity power industry and electric power system;
• Unbundling of electricity energy sector is at different stages among CA countries;
• It seems that existing CIS regulation is underutilized;
• Following existing regional regulation could facilitate early stages of Grid Code harmonization process at CA region level;
• However strong regional cooperation should be nurtured.
RECOMMENDATIONS

• IMPROVEMENTS ON THE REGIONAL LEVEL:
  – Regulatory Authority Function;
  – Regional Market and System Operator Function;
  – Regional Security Coordination Center.

• Establishment of these functions at regional level will enable efficient and transparent functioning of the common electricity market.
RECOMMENDATIONS: REGULATORY AUTHORITY FUNCTION:

• Performed by CAREM Council in the early stages of the CAREM development;
• Major roles:
  – Harmonization of the grid codes at the regional level;
  – Strengthening of inter-regional coordination;
  – Backbone during the transition period:
    • Support for the implementation of the CAREM at the governmental and ministerial level of CA countries;
    • Preparation of new international agreements or amendments to the existing;
    • Grid code & market rules administrator and proposer for code and other methodologies, bylaws and technical legislation drafting and/or amending;
    • Implementation process supervisor.
RECOMMENDATIONS:
REGIONAL MARKET AND SYSTEM OPERATOR

• Major roles:
  – Providing guidelines for network code implementation;
  – Support for implementation of Grid Code, Market rules and other regulation at national level;
  – Implementation and operation of regional market.
RECOMMENDATIONS: REGIONAL MARKET AND SYSTEM OPERATOR

• Regional Market Operator
  – Supporting harmonization of national market codes;
  – Harmonization of forward, day-ahead, intra-day and balancing markets;
  – Harmonization of Capacity Allocation and Congestion Management mechanism;
  – Harmonization of balancing market (procurement of services, type of services, balancing responsibilities, accounting, settlement process).
RECOMMENDATIONS: REGIONAL MARKET AND SYSTEM OPERATOR

• Regional System Operator:
  – Coordination of system operation and planning;
  – Development of system operation policies that need to be implemented at national level;
  – Development and maintenance of a communication infrastructure needed for data exchange;
  – Common set of rules for development of grid models that would facilitate integration of national grid models into a regional grid model;
  – Common requirements for ancillary services.
RECOMMENDATIONS: 
REGIONAL SECURITY COORDINATION CENTRE

• Major role:
  – Guarantee secure and unhindered electricity trading at regional level;

• Regional Security Coordination Center:
  – Coordination of operational planning and close to real-time security and stability analysis;
  – Coordination of cross-zonal capacity calculation;
  – Coordination of short-term adequacy forecasts;
  – Coordination of regional system balancing.
RECOMMENDATIONS
NATIONAL LEVEL

• Reorganization of the electric power industry – Not a limiting factor for CAREM establishment
(Unbundling, Strengthening of Regulatory Authorities);

• Improvement of the Law on Energy/Law on Electricity;

• Development of national Network Codes & rules
(Grid Code, Market rules, Connection code, Operation rules etc.).
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