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Related documents: CC 604, Mess. 1383/17
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**DECISION OF THE ENERGY CHARTER CONFERENCE**

**Subject: Approval by correspondence - Recommendations of the In-depth Energy Efficiency Review of the Kyrgyz Republic**

By document CC 604 dated 3 November 2017, the Energy Charter Conference was invited to welcome the report on the In-depth Energy Efficiency Review of the Kyrgyz Republic and endorse its recommendations. As specified by Rule 19 of the Rules of Procedure concerning the adoption of decisions by correspondence, members of the Energy Charter Conference were informed that any delegation that wished to object to this proposal should notify the Secretariat of its position in writing by 22 November 2017.

Having received no objections within the specified time limit, the Conference **welcomed** the report on the In-depth Energy Efficiency Review of the Kyrgyz Republic and **endorsed** the recommendations made to the Government of the Kyrgyz Republic.

Keywords: In-depth review, Energy Efficiency, Kyrgyz Republic

## **IN-DEPTH REVIEW OF THE ENERGY EFFICIENCY POLICY OF KYRGYZ REPUBLIC**

### *Background*

In 2016 the population of the Kyrgyz Republic was about 6 million people with more than 66% living in rural areas. After two major political crises in 2005 and 2010, the affordability and reliability of energy supply remain very sensitive issues. The three largest sectors of the economy are domestic trade, industry and agriculture, though agriculture employs the largest share of the working population (29%).

The GDP of the country significantly depends on foreign sources of revenue such as worker remittances (about 30% of GDP) and export of gold produced by the Kumtor enterprise (about 10% of GDP). The shadow economy is significant, accounting for 40-60% of GDP.

In 2017, Kyrgyzstan was ranked 75<sup>th</sup> out of 190 countries by the World Bank's overall ease of doing business index, down from 73<sup>rd</sup> the previous year, with the main barriers to business being: an unreliable energy supply, lack of electricity system capacity for connection of new consumers, a complicated and non-transparent tax system, inadequate judicial processes and inefficient cross-border trade bureaucracy. The country also has a relatively low rating for other internationally recognized indicators:

- )] Global Competitiveness Index 2016–2017: 111 out of 138 countries, declining from 102<sup>nd</sup> the previous year;
- )] Corruption Perceptions Index 2016: 136 out of 176 countries, declining from 123<sup>rd</sup> the previous year.

Most FDI inflows are related to manufacturing and trade, where the largest share of investments came from Canada and China. The energy sector has not benefited from foreign private sector investment. Poorly designed and executed tariff policy is a primary explanatory factor as tariffs do not achieve full cost recovery and so revenues for repayment of investments are insufficient.

In 2014, the level of the energy intensity of Kyrgyzstan's economy was lower than in Turkmenistan and Uzbekistan, but still higher than in Tajikistan. At the same time, the energy intensity of the country is twice that of the EU average.

### *Energy supply and demand*

In 2014, approximately equal shares of coal, oil and hydro combined to dominate Kyrgyzstan's total primary energy supply (TPES). Over the past decade, domestic coal production and coal consumption increased by six and three times, correspondingly, which resulted in decreased dependency on coal imports. The local production of natural gas is insignificant and most gas is imported. The consumption of natural gas declined by a factor of three during the last ten years mainly due to political reasons associated with reducing gas imports from Uzbekistan. Kyrgyzstan has been largely dependent on

imports of oil products though recently Chinese investment in two new refineries has increased domestic production of gasoline, mazut and diesel significantly.

Despite the fact that the Kyrgyz Republic has significant hydropower potential, the share of hydro in primary energy has decreased since 2005 from 42.7% to 30.1%, whereas the share of coal and oil has significantly increased over the same period. During 2006-2015, domestic electricity generation decreased by 11.5%, whereas consumption of electricity grew by 52%.

In 2014, the residential, transport and industry sectors respectively represented 36%, 26% and 20% of Total Final Consumption (TFC). Of the consuming sectors, the transport sector experienced the highest growth during the last decade because of growth in the country's vehicle fleet.

The public sector and households represented more than 70% of the country's electricity demand in 2015. The ageing of assets, the significant growth of energy demand of more than 50% since 2010 and lack of funds for maintaining and developing of the network, have combined to negatively influence service quality and the reliability of electricity supply. The reliability of supply is particularly low during the heating season in winter, when peak electricity demand is three times higher than during summer.

A 10% decrease in heat consumption during the last decade was mainly related to the decreasing energy demand of industrial consumers. In 2015, about 95% of heat energy was consumed by municipal and residential buildings.

#### *Market structure*

In 2016, the government established a new state-owned company, the OJSC "Energy Holding Company" (OJSC "EHC"), which combined all major market actors of the electricity sector into a single company: two electricity producing companies, a transmission system operator, four distribution companies and a heat distribution and supply company. The country essentially returned to the pre-2001 vertically integrated market structure model.

JSC "KyrgyzNefteGaz" is the only upstream natural gas and oil enterprise in the country. Since 2014, JSC "Gazprom Kyrgyzstan" operates the transmission and distribution networks for natural gas. The district heating (DH) sector of Kyrgyzstan is mainly represented by state- and municipally-owned enterprises operating in the capital and other big cities of Kyrgyzstan.

Over the past decade or so there has been shift away from regional cooperation towards energy independence that has resulted in considerable inefficiencies. Future developments under the Eurasian Economic Union and further implementation of the CASA-1000 project could potentially reverse this trend, providing an opportunity to reap the benefits of more coordinated, integrated and competitive energy markets.

#### *Energy pricing policy*

The State Agency for Regulation of the Fuel and Energy Complex under the Government of the Kyrgyz Republic (SARFEC) is the energy regulator of the country. There have been a number of changes related to the status and functions of the regulator during the last decade. Despite the fact that SARFEC is officially responsible for calculating and

setting energy tariffs, the Mid-Term Energy Tariff Policy that aims to achieve cost-reflective electricity and heat tariffs by the end of 2017 have not been implemented. At present, however, energy tariffs achieve partial cost-recovery as follows, according to available estimates: 63%, electricity sector; 60%, natural gas sector; 13-50%, district heating sector.

Kyrgyzstan's consumer energy tariffs, particularly for electricity, are among the lowest in Europe. Only 25% of heat consumption is metered and the billing for consumers without meters is based on calculated values, providing neither price signals for efficient use nor incentives to install meters in order to reduce bills for heating.

From 2014, the SARFEC uses the performance indicator, "maximum level of energy losses (normative losses)", in its methodology to calculate allowed revenues and tariffs of natural monopolists. The distribution companies recognise the importance of the reduction of losses for the improvement of their economic situation, but in many cases companies simply do not have sufficient funds to invest in modernisation of their networks. Tariff design reforms could better align the motivations of the natural monopolists and regulated companies with public policy objectives and customers' requirements, using key performance indicators (KPIs) as a means to measure, reward and penalise performance.

Environmental taxes are not applied to fuels and there exist no tax incentives to encourage the import and production of energy efficient equipment. There does, however, exist a custom duty/tax on imported vehicles that is structured by age and engine capacity.

#### *Energy and energy efficiency policy*

The Fuel and Energy Complex Development Strategy of the Kyrgyz Republic to 2025 provides a fairly sound basis upon which to build. A longer term vision and well-defined target outcomes, to say 2040 or 2050, would help direct shorter term strategies and action plans. These strategies and plans need to incorporate effective evaluation, monitoring and verification (EMV) and must be updated in a timely manner to ensure consistent implementation and progress towards long term objectives.

In general, effective implementation of adopted laws and strategies has been hampered by lack of political will to undertake reforms and weak governance. Particularly problematic has been the lack of progress with implementation of tariff reforms aimed at achieving full cost recovery through cost-reflective tariffs. Electric utilities have consequently suffered severe revenue shortfalls over a prolonged period of time. They have been unable to invest in adequately maintaining existing assets. This, combined with relatively unchecked growth of electricity demand, not helped by subsidised consumer tariffs, has negatively impacted system reliability and the utilities' ability to connect new consumers.

Insufficient cost recovery and cross-subsidisation between different consumer groups and fuels have served to deter private investment in the energy system. The country's ambition to exploit its vast hydropower resources and to become a net exporter have therefore not been realised; instead, the country's position has weakened because of an increase of import and decrease of electricity export since 2014.

The legislative framework and policies for energy efficiency are orientated towards short-term targets. To achieve substantial progress in improving energy efficiency, however,

longer term and clearly defined targets will be needed. Kyrgyzstan's energy efficiency legislation will also need substantial development accompanied with robust implementation mechanisms. As yet, only the legislation pertaining to improvement of energy efficiency in buildings is satisfactory. More comprehensive energy efficiency legislation is urgently needed in order to introduce mechanisms such as minimum energy performance standards (MEPS) and energy labelling schemes for energy-using products (including vehicles), energy service companies (ESCOs) and energy performance contracts, public procurement and energy audits.

Effective implementation of energy efficiency policies and programmes will require strengthening of the existing institutional arrangements and securing a reliable and consistent source of funding. For example, the Government has not yet established or assigned responsibilities for the following as required by the Law on Energy Conservation:

- ) governmental authority responsible for the control and supervision in the area of energy efficiency;
- ) clear assignment of responsibilities on governmental authorities for the implementation of Minimum Energy Performance Requirements and Energy Performance certificates;
- ) establishment of an Energy Conservation Fund.

#### *Water-energy nexus and environmental management*

Kyrgyzstan has in place a legislative framework that provides the basic provisions for the use and management of the country's natural resources. An important environmental challenge for the country relates to the use of the water resources of the Syr Darya Basin and the existence of a strong water-energy nexus. Use of the basin's water resources requires effectively managing trade-offs between sectors and between countries. Poor management to date has resulted in the inefficient use of natural resources, environmental degradation and tension between the riparian countries of the basin. Current trends in energy and water consumption, population growth and climate change impacts suggest that the situation is set to deteriorate.

Greater efficiency in Kyrgyzstan can play a major role in improving the management of the basin's water resources. Energy efficiency is also an energy resource that offers multiple benefits e.g. improved energy security, power reliability and public health; reduced fuel/energy poverty; the wider societal benefits of urban regeneration. As achieving multiple objectives is an important consideration of international donors (e.g. mitigation and adaptation to climate change in particular), prioritising energy efficiency investment is a common-sense strategy.

#### *Finance of energy efficiency*

The Energy Conservation Law (1998) law stipulates creation of an Energy Conservation Fund but this was never created. However, the country's energy system, including energy efficiency, has benefited from international funding sources over the years. Such international support, however, accounts for nearly all public investment, with domestic sources accounting for just 2.5 to 10 % of total investments between 2006 and 2012. Persistent partial recovery of costs by utilities and lack of investment over an extended period of time has resulted in unsustainable deterioration of the country's energy assets.

Full cost recovery and transparent tariff policy are important pre-requisites to attracting private investment. Some public funding is also necessary to leverage private investment.

Stable revenue streams are also needed to support the activities of the public administration in developing and implementing energy efficiency strategies and programs; at present, this is not the case. Public finance could come from various revenue sources including tariff price increases (public benefit charge), environmental taxes (e.g. transport fuels) and donor organisations.

While bilateral and multilateral donors committed \$59.9 million per year to climate actions in Kyrgyzstan, this amount is five times lower than the average for the countries of Eastern Europe, the Caucasus and Central Asia (EECCA). Kyrgyzstan is therefore not fully exploiting its potential to attract international support. While lack of administrative capacity and capability likely explain this to some extent, Kyrgyzstan's inability to introduce reforms repeatedly recommended by the international institutions, such as implementing tariff reform, may also be an important explanatory factor.

## **RECOMMENDATIONS**

### **General recommendations**

1. Explore and adopt enforceable policies and measures to deliver energy efficiency improvements so the energy system can be developed at least cost. The energy policy of the Government should be understandable, inspiring and attract as much stakeholder support as possible. The Government could establish a vision statement for the country's strategic energy policy that elevates energy efficiency as a top priority. The statement should make clear that efficiency is a country priority as it holds the key to least cost energy system development and achieving affordable tariffs that enable cost recovery. The Government should communicate the vision widely through Government's strategic documents and communications using various types of media and different media organisations.
2. Establish long-term strategic energy efficiency targets, milestones and a clear baseline to enable evaluation of progress. The targets should be specific, measurable, attainable, realistic and time bound and should be developed by the Research Institute on Energy and Economy under the SCIES KR in close collaboration with international donor organisations. The Government should establish a monitoring and reporting framework to track and evaluate progress.
3. Establish a transparent and efficient institutional framework for the implementation of energy efficiency policy of the country. A nominated authority should have a clear mandate and responsibility for achievement of the energy efficiency targets and coordination of activities with other governmental institutions. This authority must have the necessary powers, capacity, capability and resources in order to be effective. Clarity on roles and responsibilities of all governmental institutions that are able to contribute to delivering energy efficiency should be clarified by law.
4. Establish stable revenue streams for the activities of the lead energy efficiency institution and for an Energy Efficiency and Renewable Energy Investment Fund

- to be used to finance the implementation of energy efficiency programmes and projects in both private and public sectors. The revenue streams could come from tariff increases (public benefit charge), environmental taxes (e.g. transport fuels) and donor organisations.
5. Enhance the independence, powers and resources of the State Agency for Regulation of the Fuel and Energy Complex under the Government of the Kyrgyz Republic (SARFEC) in order that it can better achieve the Government's energy policy objectives.
  6. Ensure regulatory frameworks and governance arrangements enable a least cost and integrated approach for energy system planning and development, fully incorporating energy efficiency on both the supply side and demand side. Requirements to adopt this approach should apply to governmental authorities and regulated energy companies/utilities involved in decision-making related to energy system planning and energy sector investment.
  7. Improvement of the Law on Energy Conservation adopted in 1998 should be prioritised and developed in line with international best practice. The law should: enshrine the provisions of the new EE institutional framework e.g. roles and responsibilities including nominated authority for energy efficiency implementation; require development of a national action plan for energy efficiency (e.g. the EU template for National Energy Efficiency Action Plans (NEEAP)); require application of the least cost planning principle.
  8. Energy efficiency should be at the heart of the Country's Energy strategy to gain consumer acceptance of higher tariffs to achieve full cost recovery. This strategy should include many of the recommendations proposed by this review.
  9. Scale up and enhance existing public communications in order to:
    - ) gain the public's acceptance of the country's need to invest and ensure full cost recovery of energy tariffs - but at the same time explain how energy efficiency helps minimise total system costs such that tariffs can be lower than they would otherwise be;
    - ) explain that while energy efficiency is often cheaper than supply-side alternatives, it still needs organised upfront investment; and
    - ) advise people and organisations on the various steps they can take to reduce their demand and so reduce their energy bills, including information on the Government's energy efficiency programmes and financial support that consumers might be able to benefit from.
  10. Consider possibilities to organise formal consumer engagement and representation in development of energy policy and tariff regulation. Such consumer representation should be independent of Government and industry and also equipped with appropriate expertise and sufficient capacity to participate in Government consultation processes and to communicate effectively via various media channels. For the people of the Kyrgyz Republic, this should serve to: increase their understanding of the energy challenges and their role in achieving cost-effective energy system development in the best interests of the country; build their trust in the institutional and market actors engaged in the development and business of the energy sector; increase their constructive participation in

developing and implementing solutions. Consultation processes should be open to all stakeholders including international organisations and donors.

### **Recommendations: Power Sector**

11. Allocate priority attention to efficiency measures that have the highest potential to contribute to least cost development and performance improvement of the electricity system, with particular attention to reliability. Reducing energy losses and reducing electricity peak demand should be prioritised. To realise these objectives, a range of regulatory reform opportunities should be explored e.g. utility regulation, system planning, tariff policy and design of EE/DSM interventions.
12. Develop and adopt a new medium-term electricity and heat tariff policy that will envisage gradual achievement of tariffs reflecting all costs related to generation, transmission, distribution and supply. The additional financial resources resulting from increases to the energy tariffs should be used by the utilities to modernise networks and reduce losses. Relative to 2014 a reduction of losses in electricity networks to the average level in Europe and Central Asia has the potential to almost eliminate the power deficit and reduce the financial deficit of the power system significantly.
13. SARFEC should take a stronger role in the improvement of the design and implementation of the country's tariff policy. A key objective should be to ensure tariff policy drives energy efficiency improvements throughout the energy system i.e. generation, transmission, distribution, consumption. This implies that the methodology for calculation of allowed revenues should be designed to ensure regulated companies are motivated to deliver efficiency improvements and that tariffs incentivise energy efficient behaviour of consumers. Specifically:
  - a. Improve the methodology relating to calculation of allowed revenues for regulated energy companies:
    - i. Authorities and utilities involved in decision-making relating to power system planning, investment and system operation should be required to apply a least cost approach, with full consideration of energy efficiency and demand-side management (DSM).
    - ii. Provide more incentives and more ambitious requirements to reduce energy losses. The requirements should be accompanied with sufficient funds allocated in the companies' allowed revenues;
    - iii. The allowed revenues of transmission and distribution companies should be decoupled from energy sales with a revenue adjustment mechanism (Decoupling regulation) so that companies do not have any incentives to increase energy sales. On the contrary, they could be required and incentivised to deliver energy efficiency improvements on the demand side. These improvements could be delivered through procurement tenders or utility energy efficiency programmes.

- iv. Introduction of more Performance Indicators (KPIs) that will deliver consumer benefits, including through energy efficiency and DSM, and help connect the actions of regulated utilities more strongly to consumers' interests e.g. reliability, demand-side management, customer service.
  - v. The regulator could take steps to link DSM actions to export revenues e.g. rewarding utilities implementing DSM using share of export revenues.
- b. Improve the electricity tariffs menu in order to achieve full cost recovery and to encourage energy efficient consumption, while protecting low-income consumers by ensuring their minimum energy needs are affordable:
- i. Inclining blocks should be redesigned in order to achieve full cost recovery, with better targeting of low-income consumers. Minimum/basic energy needs must be defined, and a distinction could be established for winter and summer.
  - ii. Prioritise direct and targeted EE interventions for vulnerable consumers in order to improve energy efficiency in their homes and reduce their energy bills;
  - iii. To enable consumers' acceptance of tariff increases, the latter should be linked to consumer-focused utility performance where service quality, energy efficiency/DSM and cost efficiency are prioritised. This linkage should be visible to consumers, enabled by a clear vision statement and narrative as suggested above in Recommendation 1. This should be supported by the collection, analysis and publication of data relating to utilities' performance and the reduction of the number of outages.
14. Increase transparency of expenditure on the energy sector, including accounts of regulated utilities, in line with best international practice in order to reduce cross-subsidies, establish and maintain consumer/public confidence and ensure the energy efficiency vision of the Government is realised.
15. Translate lessons learned from the implementation of pilot projects in to policy/regulatory action. For example, the utilisation of smart meters to deliver least cost reliability (Severelectro).

### **Recommendations: Industry**

- 16. Require or strongly encourage take up of international standards for conducting of energy audits and for establishment and application of energy management systems e.g. ISO50001;
- 17. Develop a certification/accreditation scheme for energy auditors. The scheme should be implemented and supervised by the governmental authority responsible for the implementation of the Government's EE policy (see recommendation 3 above).

18. Consider establishing incentive schemes that would motivate industrial enterprises to implement recommended measures of the energy audits.
19. Explore strategies to help establish ESCO schemes that can deliver large-scale EE improvements including:
  - a. nominate an authority to support ESCO establishment;
  - b. implement tariff reforms;
  - c. facilitate easy access to low cost finance;
  - d. create demand and revenue streams for ESCO services to supplement energy prices e.g. utility mandate; public procurement requirements;
  - e. adoption of a model Energy Performance Contract for public organisations;
  - f. review and amend public finance rules to ensure authorities are incentivised and not disincentivised to invest in energy efficiency improvements.
20. Facilitate business opportunities to deliver energy efficient products and services e.g. tax incentives for importing or producing EE equipment such as LED lamps, efficient motors, solar thermal collectors etc.

### **Recommendations: Building Sector**

21. Continue improving and implementing the existing legislative framework for energy efficiency in buildings. Barriers to implementation of the MEPR and EPC scheme need to be addressed.
22. The EPC scheme should be implemented and supervised by the governmental authority responsible for the implementation of the Government's energy efficiency policy.
23. Require local authorities to develop and implement action plans for conducting energy audits of public buildings and for implementing measures identified by the audits. Public organisations could be required to use ESCO model. The Government could require local authorities to report on implementation progress and facilitate the exchange of best practice and learning.
24. Review and amend public finance rules to ensure governmental authorities are incentivised and not disincentivised to invest in energy efficiency improvements in buildings.
25. Design the Energy Performance Certification (EPC) scheme in a way so it enables collection of data for metrics necessary to assess the current level of energy efficiency in buildings, to monitor progress and to support decision-making processes.
26. Continue to improve the awareness of consumers about their historical energy consumption and promote no-cost or low-cost measures to reduce energy bills. The Government could oblige the distribution companies to provide consumers with easy access to information about their past consumption up to a 3-year period. Information about no-cost and low-cost measures to save energy in buildings, could be improved based on international best practices and promoted nationwide.

### **Recommendations: Lighting and energy using products**

27. Prioritise introduction of minimum energy performance Standards (MEPS) for energy related products and apply import restrictions. Complement MEPs with labelling schemes, purchase incentives (e.g. tax relief) and mechanisms to create demand for efficient products (e.g. utility mandate; public procurement requirements) in order to transform product markets. Establish priorities based on the economic potential and taking full account of the multiple benefits of energy efficiency, including its contribution to reliability of the energy system.
28. Introduce incentive mechanisms for local authorities to improve energy efficiency and reduce energy bills.
29. Explore the potential of using ESCO schemes that can deliver large-scale replacement of inefficient lighting with LEDs for state/municipal buildings and street-lighting.
30. Introduce minimum energy efficiency criteria in public procurement rules for governmental and local authorities as well as state-owned companies.
31. Continue to improve consumers' awareness of low-cost measures to reduce energy bills, i.e. reduction of bills as a result of changing incandescent lamps with LEDs and purchasing A+++ household appliances.

### **Recommendations: District Heating Sector**

32. Develop the DH system cost effectively, aligned with achievement of public policy objectives (see recommendation 13 above). The additional financial resources received from the increase heat tariffs should be used to modernise DH networks, install energy meters and reduce losses.
33. Translate lessons learned from the implementation of pilot projects in the DH sector into policy/regulatory action. For example, based on the results of the renovation of "Gagarin" boiler-house utilisation of solar thermal collectors while modernising the DH system and substituting old HOBs (Bishkekteploset), the Government may developed a standardised methodology and require all DH companies to carry-out a cost-benefit analysis with respect to the following:
  - i. potential for utilisation of high-efficiency cogeneration plants;
  - ii. potential for utilisation of solar thermal collectors;
  - iii. potential for supplying hot water during 12 months of the year.
34. Alongside implementing tariff policy, require regulated companies to install heat meters and approve inclusion of costs in allowed revenues. Incentives could also be introduced to motivate consumers to install energy meters (consumer tariff reforms would contribute to this objective). As a priority, develop a programme targeting the installation of heat meters for all boiler houses and buildings.

## **Recommendations: Transport**

35. Introduce policy packages to restrict the import of energy inefficient vehicles, promote the sale of more efficient vehicles and promote more efficient use of vehicles. This could involve setting minimum standards for imports of used cars and linking fiscal measures to fuel economy, fuel use or polluting emissions. Consumer information provision requirements should also be part of any policy package (e.g. labelling; maintenance guidance).
36. Any revenues collected from taxes on cars, diesel, petrol or other fuels causing negative environmental impacts can be labelled as 'environmental' and channelled to investment in efficient, low emission public transport or to the Fund on Energy Efficiency so that the public can be reassured taxes are being reinvested for their benefit, assisting with political acceptance of taxes.
37. Improve the quality of urban planning, including transport infrastructure and traffic management, by implementing the following measures:
  - a. Improve the comfort, efficiency, accessibility and affordability of the existing public transport system;
  - b. Increase parking fees in areas with a high concentration of cars and resultant air pollution and congestion issues;
  - c. Develop bicycle and public transport lanes when designing, constructing or renovating roads.