



GAP ANALYSIS

**BETWEEN THE PERFORMANCE OBJECTIVES SET FORTH IN THE
FRAMEWORK GUIDELINES FOR ENERGY EFFICIENCY STANDARDS
IN BUILDINGS AND CURRENT ENERGY EFFICIENCY STANDARDS
AND THEIR IMPLEMENTATION**

IN THE KYRGYZ REPUBLIC

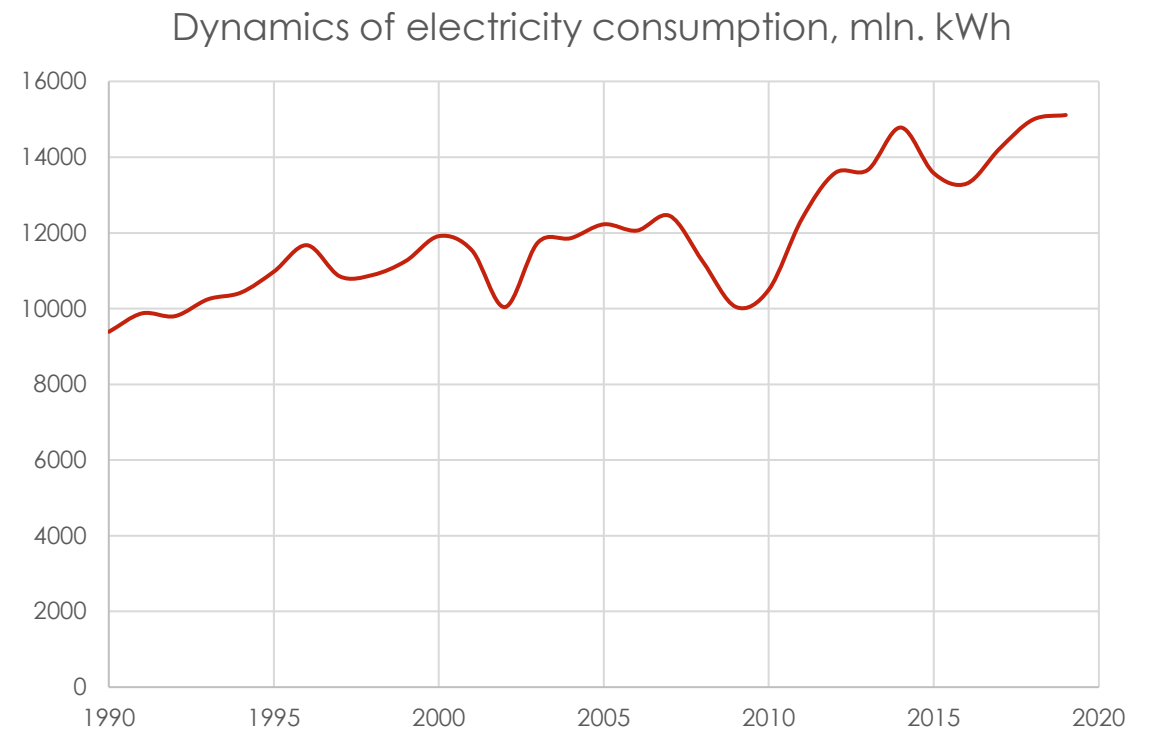
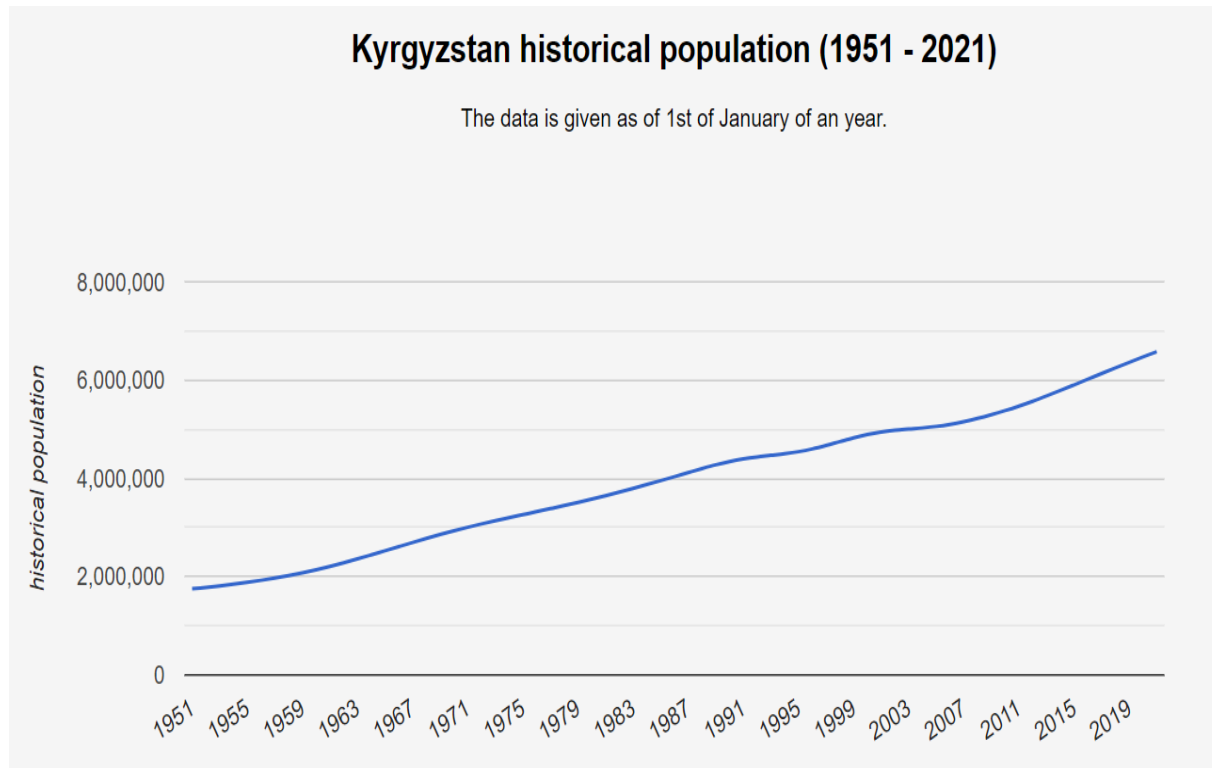
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CURRENT SITUATION

grows of population of around 2% a year

grows of energy consumption

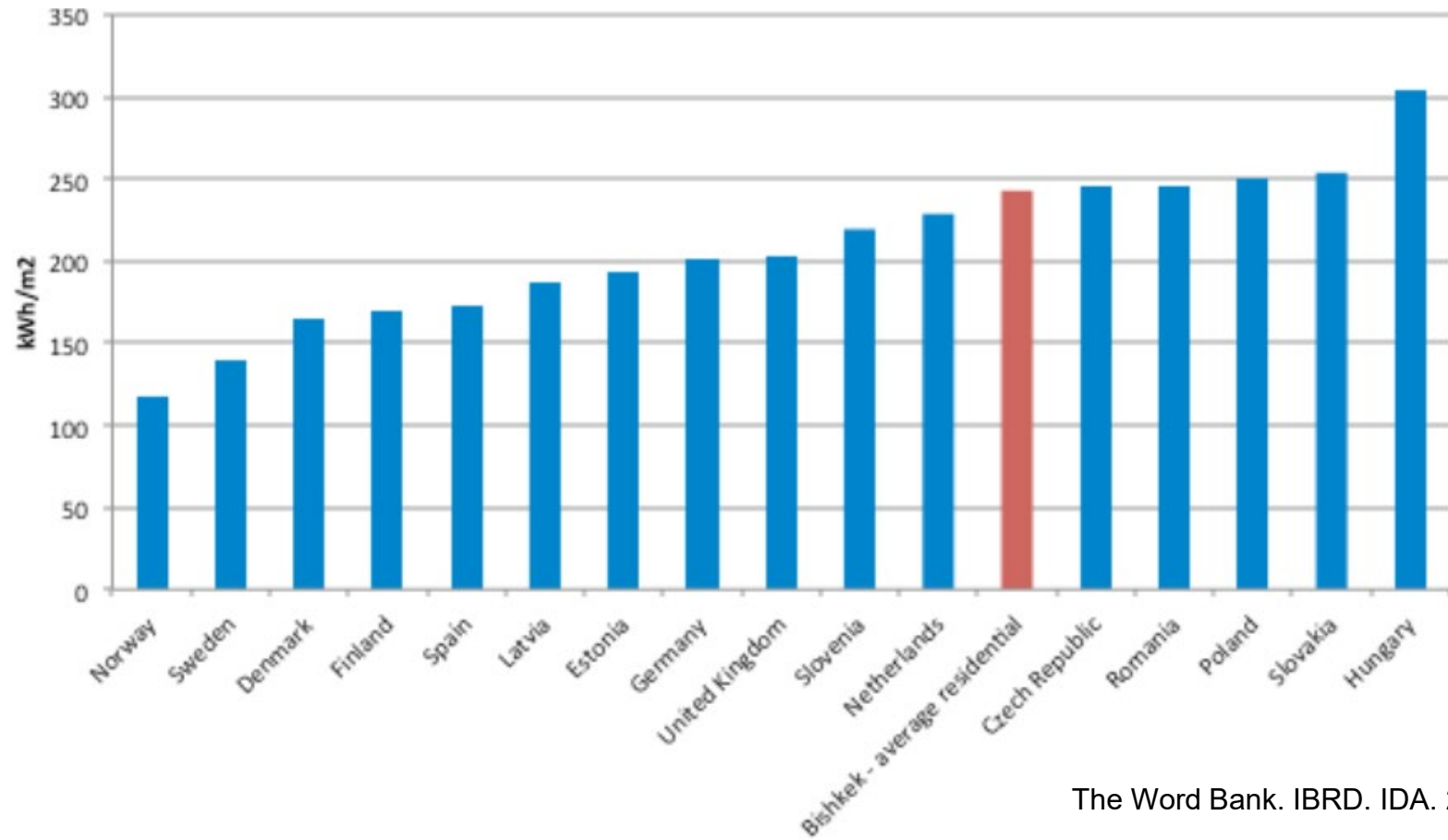


LOW ENERGY PRICES

Prices for main energy sources for residential consumers				
Item	Unit	Som	kWh	Som/kWh
Hot water	1 Gcal	981,76	1162,80	0,84
Heat	1 Gcal	1134,76	1162,80	0,98
Natural gas	m ³	18,06	9,30	1,94
Coal	1 t	4304,00	3600,00	1,20
Electricity less 700 kWh	1 kWh	0,77	1,00	0,77
Electricity over 700 kWh	1kWh	2,16	1,00	2,16
Prices for main energy sources for commercial (nonresidential) consumers				
Item	Unit	Som	kWh	Som/kWh
Hot water	1 Gcal	1965,10	1162,80	1,69
Heat	1 Gcal	1695,10	1162,80	1,46
Natural gas	m ³	18,06	9,30	1,94
Coal	1 t	4304,00	3600,00	1,20
Electricity	1 kWh	2,24	1,00	2,24

Average heat demand in Bishkek exceeds much the aim stated in Framework Guidelines

Average Heat Demand in Multi-Apartment Buildings in Different Countries and Bishkek, Adjusted to Reflect Bishkek Heating Degree Days



The World Bank. IBRD. IDA. 2015

$$0,03 \text{ USD} \times 250 \text{ kWh/m}^2 = 7.5 \text{ USD/m}^2 \text{ year}$$

THERE IS ACTIVITY ON ENERGY EFFICIENCY MEASURES INTRODUCTION

- International organizations working in the field: ADB, EBRD (KyrSEFF), GIZ, UNDP, WB.
- Public foundations working in the field: BIOM, CAMP Ala-Too, CEEBA, CREEED, UNISON
- Dozens of private companies (suppliers of goods, materials, service providers)



NUMBER OF NATIONAL DOCUMENTS

Strategies, policies (including tariff policy), decrees

- *Energy Efficiency in Buildings Law 137*, Dated 26 July 2011
- *Law on Energy Conservation 88*, Dated 7 July 1998
- *Law on Energy 56*, Dated 30 October 1996

- SNiP 23-01:2013, “Building Heat Engineering (Thermal Protection of Buildings)”
- SP 23-101-2013, “Design of Thermal Protection of Buildings”

LEGISLATIVE AND REGULATORY GAPS:

- Limited implementation of the Law on Energy Performance of Buildings due to incomplete secondary legislation.
- Lack of instruments and responsible entities/staff for monitoring the implementation of and enforcement of current energy savings legislation and programs.
- Public procurement regulations do not specify energy performance and quality criteria for equipment and materials.
- Outdated construction design standards (SNIps) that do not cover all aspects of energy efficiency. There is a mismatch between the international and local norms. There are contradictions between different international documents.

INSTITUTIONAL GAPS:

- General lack of institutional focus and commitment to save energy, especially energy different from heat.
- Poor institutional memory due to high staff fluctuation and general lack of staff, as well as insufficient follow-up of failure to comply with commitments and acts.
- Weak inter-ministerial cooperation and coordination on energy efficiency targets, initiatives, projects and instruments.
- Limited communication and exchange between governmental agencies, NGOs and market players with regard to equipment and financing.
- Weak donor coordination on energy efficiency (the same in the other fields).
- Governmental strategies and institutions have lack of implementing mechanisms and agencies/specialists. There is also lack of expertise, and weak scientific support.
- Lack of dedicated investment programs for energy renovation within the budgetary organizations.
- Restrictive regulation preventing access to retained energy cost savings, for example to exploit cost savings for energy efficiency investments and reward employee engagement.
- System of certification of quality of goods exists but is not effective– it does not provide the control of quality and does not guaranty the quality.

ECONOMIC GAPS:

- Low financial profitability of EE investments (high payback period) at current energy prices and by neglecting economic costs;
- Lack of customized financial products for EE;
- Absence of ESCO and other possible services;
- Poor applicability of commercial financing (loans) due to high interest rates and long payback periods.

CAPACITY GAPS:

- Limited awareness and understanding of energy efficiency opportunities, solutions, and benefits among public sector decision makers leading to lack of incentives to promote energy efficiency;
- Lack of information on EE of different types: general information (introductory), specific information (norms, standards, manuals);
- Limited access to existing information (documents, norms, methods local and international);
- No focus on other aspects of energy efficiency, except heat conservation;
- Low level of responsibility, including social responsibility;
- Insufficient utilization and promotion of results of past and ongoing EE demonstration projects and maintenance of these projects;
- Weak domestic market capacity and experience (e.g. energy auditors, design institutes, construction companies);
- Missing guidelines, instruments and specific capacities for conducting energy audits and energy performance certification by trained and qualified experts;
- Lack of a domestic laboratory for certification of materials and equipment to confirm their EE performance;
- Lack of consultants working in the area of energy efficiency. Weak scientific and educational potential;
- No reliable reference point – absence of the center of expertise.

MARKET GAPS:

- Weak and fragmented market capacities for energy service caused by low demand;
- Limited presence of equipment and service providers in rural areas/regions;
- Low quality of installation services due to missing requirements and expertise for procurement, installation and supervision of contractors;
- Weak product quality which affects the market, and reducing demand;
- Low market capacity.

STRATEGIC RECOMMENDATIONS

- At the highest governmental level, to determine the need for development and implementation of measures to improve energy efficiency as a necessary and urgent mechanism for development of the country.
- Assign the governmental entity (presumably, the Ministry of Energy and Industry) responsible for the policy and coordination of activity in the field.
- Establish an entity responsible for international collaboration and certification of materials, goods, solutions, equipment, and suppliers.
- Identify key areas of energy conservation and publicize them.
- Identify prospective funding sources.
- Increase capacity with skilled specialists and empower the RES and Energy Efficiency Department of the Ministry of Energy and Industry. At the first stage, there is a great need for effort to be done to build a sustainable institutional system. The help of donors could be extremely valuable in this process.
- Make critical analysis of existing local documents related to energy and energy efficiency (including the National Sustainable Development Strategy for 2018-2040, Concept of Green Economy in the Kyrgyz Republic "Kyrgyzstan is a country of green economy", Green Economy Development Program for the period 2019-2023, Development program for the Kyrgyz Republic for the period 2018-2022 "Unity, Trust, Creation", Concept for the development of the fuel and energy complex of the Kyrgyz Republic until 2030, Master Plan for energy sector of the Kyrgyz Republic up to year 2040), review them and adjust in accordance with the principles set forth in the Framework Guidelines.
- Develop institutional structure responsible for the EE, mainly from the existing organizations, outline additional structural elements. Split the responsibilities (research, education, economy, technical implementation, legalization, norms, etc.) and fix the links between the institutions, provide with funds.
- Develop/adopt a Program on EE aiming at net-zero consumption, which is focused on the conservation and rational use of all energy resources, not only on heat conservation, highlighting other benefits of energy conservation like climate change mitigation and more visible for the people result - impact on air quality. Among others, it should be aimed to freshwater and hot water conservation, energy efficiency equipment and technologies, energy efficiency in lighting, ventilation and air cooling, as well as use of RES.

STRATEGIC RECOMMENDATIONS

- Provide a detailed description of the Program on EE, in particular:
- Review existing, and develop new legal norms and technical requirements (building codes, rules, standards, etc.) in accordance with the program and international standards.
- Provide ecological, health, industrial and fire safety of the approved and developed technical solutions and materials.
- Review the Law on Public Procurement to consider EE performance and lifecycle costs;
- Provide access to financial savings to the heads of budgetary organizations to give a bonuses to stuff involved and responsible for energy efficiency;
- Implement the tariff and social assistance reforms;
- Introduce incentives for entities and private sector that introduce renewable energy and increase energy efficiency, establish competitions with significant prizes;
- Develop and keep updated the roster of EE measures and technologies with detalization:
 - Develop/adopt manuals on implementation;
 - Assess the feasibility of each measure (and keep updated). Create a database, catalogues of approved materials, equipment, solutions, and suppliers.
 - Assess the potential profits (including economic feasibility) of introduction ESCO or determine (monitor and promote) conditions that ESCO becomes functional.
 - Disseminate the reliable information – create an online platform as well as a consulting structure for live communication and interaction. The universal tool, like software product, can be used to allow performing calculations of energy savings and profitability.
 - Popularize the Program, develop long term awareness program and start implementation of the awareness program.
 - Popularize successful results and good practices, including involvement of educational institutions not only for information but also for research and education.
 - Correct the program, as necessary.
 - Provide continuous monitoring of the situation, as well as the necessary updates.

TECHNICAL RECOMMENDATIONS

- For individual family houses currently using coal stoves, the option with the lowest levelized cost of heat supply (LCHS) is the use of more efficient and cleaner coal stove. One of the possible solutions could be use of pyrolysis ovens/boilers. Gas stoves could become economically viable options as gas becomes available and affordable for use in individual family houses with more widespread access to gas networks.
- For individual family houses currently using electric boilers and radiators, switching to gas-fired heaters and boilers or electric heat pumps would be more economically viable. This assumes that the house is connected to the gas network. If gas is not yet available, heat pumps still make much more efficient use of electricity for heat production, and therefore have much lower operating costs, though their capital costs are higher than the capital costs of electric radiators. But introduction of heat pumps should be very limited at the first stage only to change traditional electric heating in order not to make an extra load for the electric network.
- For apartments with centralized heating the main focus should be made on:
 - efficiency of boilers and pipeline networks;
 - promotion of individual heat meters and transition to consumption-based billing;
 - (automatic) balancing of the heating systems (with weather compensation) and technical means of individual regulation of the amount of heat supplied to apartments;
- In any building, it is necessary to promote introduction of heat recuperators, renewables as well as solutions for heat control and automation.



THANK YOU!