



4th International Scientific Conference on Energy and Climate Change



PROMITHEAS – 4

**Kazakhstan path to low-carbon economy:
Integration of Climate Change Policy into
Strategic Planning**

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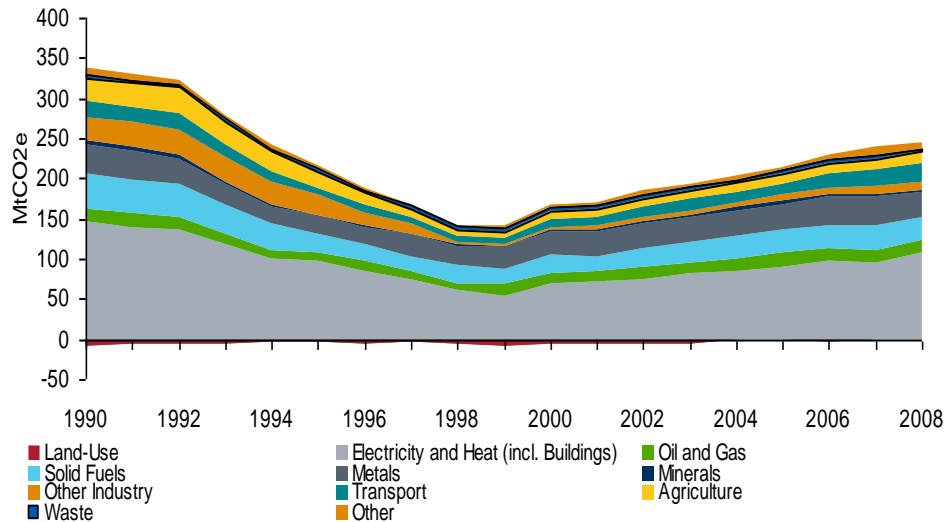


Content

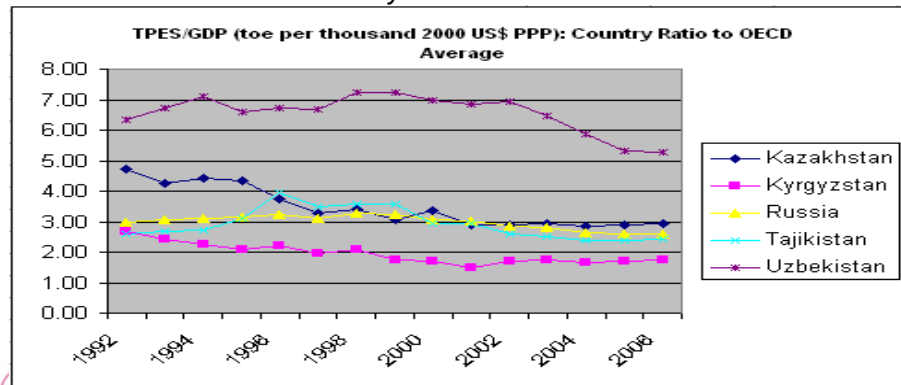
1. Historical Emissions Trends, Energy and Emissions Intensity
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Historical Emissions Trends, Energy and Emissions Intensity



Source: UNFCCC inventory



Source: Clean Technology fund Investment Plan for Kazakhstan, CTF/TFC.5/7

The power and heat sector accounts for the largest share of emissions, with just under 110 MtCO₂e, or around 44 percent of emissions in 2008. Industry as a whole accounted for around 86 MtCO₂e, with the fugitive emissions from solid fuels extraction and metals production being the largest contributors. Fuel use for transportation accounted for another 24 MtCO₂e. The agriculture sector accounted for 15 MtCO₂e, and the waste sector just under 5 MtCO₂e (UNFCCC 2010).

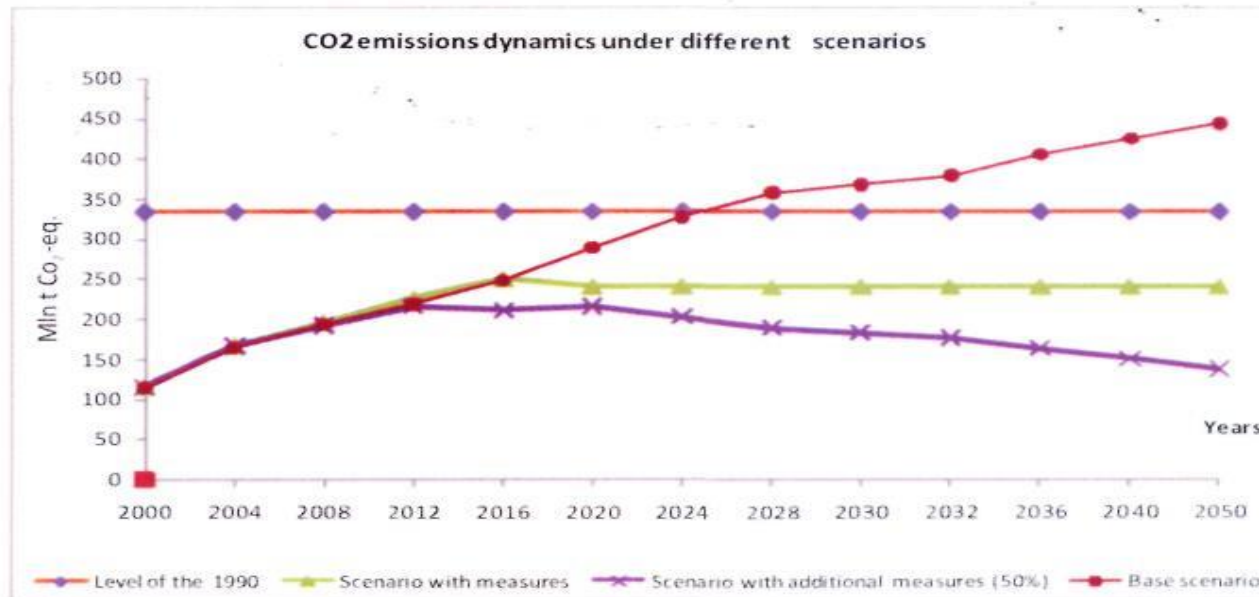
In 2008 the energy intensity of Kazakhstan, in per GDP terms, has been 0.54 toe/ 1,000 US\$ GDP, emissions per GDP - 1,838 tCO₂e/1,000 US\$ of GDP emissions intensity -15,6 tCO₂e/capita

Policy drivers : EE- a new focus

- As a party to Annex-1, not to Annex B, announced its voluntary decision to reduce GHG emissions by 15% by 2020 and -25% by 2050
- Concept on "Moving to a low-carbon development path", Green growth bridge Initiative, MEP(2011)
- Comprehensive Plan to improve Energy Efficiency for 2012-2015, MINT(2011)
- Action Plan for sustainable development (NAMA, development start 2011)



LCD Concept: three scenarios (Markal)



Base scenario	Emissions reduction measures not included; using cheap energy (coal mostly 70%)	Coal and gas are the main fuels used. Reconstruction of existing facilities and new coal plants are built according to strategic plans 2020-2030. Emissions in 2050 exceeds the 1990 level 32%.
Scenario with measures	Commitments to cut GHG emissions down to 15% by 2020 and 25% by 2050 towards 1990 level. More efficient technologies are used for power plants instead of reconstruction of existing ones	Wind energy since 2016 becomes competitive to coal. Hydro are used to full extent. Wind energy raise to 4GW, gas and nuclear plants since 2020- up to 7 GW. Emissions 2050 are below 1990 level 25%.
Scenario with additional measures	limitations of emissions 50% reduction by 2050	It is feasible only if stricter efficiency standards and thermal protection of buildings will be in place. From 2020 to 2025 the energy of Kazakhstan shifts from coal to gas and nuclear energy (to 10 Gw) and wind energy (to 8 GW) by 2050 along with cleaner technologies such as gas, and bio-fuel. Te model simulations suggest that transition commitments are feasible.



The strategic/methodological approach for LCD planning

Include issues of LCD into existing strategies and plans (Complex plan on EE and plan on RES development)

Key points:

- definition of emissions reduction potential in different sectors of economy;
- identify barriers to energy efficiency improvement;
- identify quantity of reduction of measures suggested in GOK plan;
- specify scenarios for LCD and provide cost -benefits analysis of measures;
- ranking on priorities of specified measures in sectors of economy and then integration to the total emissions reduction based on short, mid and long term;
- identify financial resources for plan's implementation, taking into consideration options on self supporting and for external(international) support;
- include projects (programs) if available and policy interventions to transit to LCD;
- assume monitoring and verification requirements.



EE barriers & Key areas for EE improvements in industry

- Old equipment;
- Old heating systems;
- Regulatory hurdle, poor legislation support;
- Insufficient information and motivation;
- Financial restrictions;
- Lack of awareness;
- The landlord tenant problem;
- The risk syndrome.

1. Low cost measures: simple control and energy management awareness campaigns. (5-10% of total energy usage)

2. Medium cost measures: provision of more advanced controls, the retrofitting of variable frequency drives, waste heat recovery projects, and the use of high efficiency lighting (10-15%).

3. Higher cost projects: installation of on-site CHP schemes, renewable energy projects such as geothermal heat pumps and the substitution of old process plant for new more efficient ones (20-40%) of total energy usage)

Conclusions

- Any governmental action plan to improve energy efficiency should consider ways to remove barriers associated with improving energy efficiency in Kazakhstan;
- Implementation of energy efficient measures brings co-benefits and ancillary benefits;
- Concurrent with maximizing efficiency of primary conversion is a drive to greatly improve the efficiency of use by improving processes, reducing loss and wastage;
- Sub sectors for implementing potential energy efficiency projects have been identified: power generation, transmission, distribution, district heating and buildings.



THANK YOU FOR ATTENTION!