

UN Economic Commission for Europe

Policy Reforms to Promote Energy Efficiency
and Renewable Energy Investments in **Ukraine**

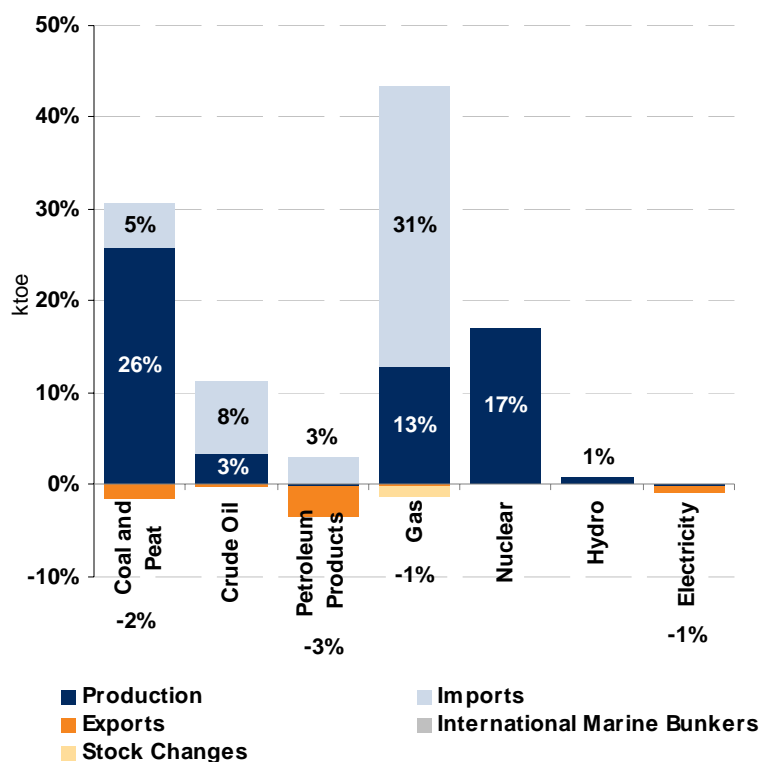
Seminar on Policy Reforms to Promote
Energy Efficiency and Renewable Energy Investments

Geneva, October 7.-8., 2009

Energy Balance of Ukraine

Despite having significant resources of coal and gas, Ukraine is a net importer of energy with an energy dependency of 41%

Energy Balance



Source: IEA 2006

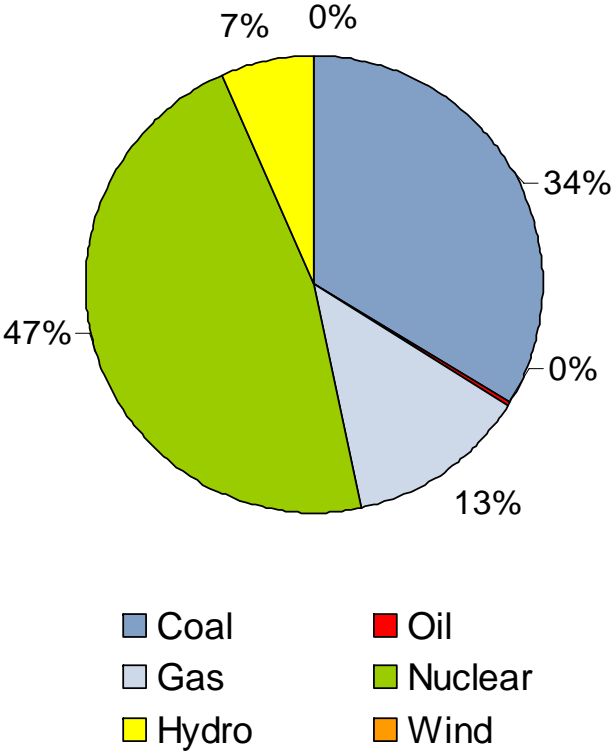
Comments

- 3/4 of the national gas and oil supply in Ukraine are based on imports
- Natural gas is the main source of primary energy, pointing out the strong dependency from imports
- In order to reduce its dependence on imports, Ukraine plans to increase the share of coal in the primary energy supply by 150% until 2030
- 15 nuclear power units provide 17% of the total primary energy of the country
- Hydropower plays a negligible role in the country balance (1%)
- Electricity is balanced (exports account for 1% of the total energy balance)

Power Generation in Ukraine

The dominant source of electricity generation in Ukraine is nuclear power

Energy Sources for Power Generation



Comments

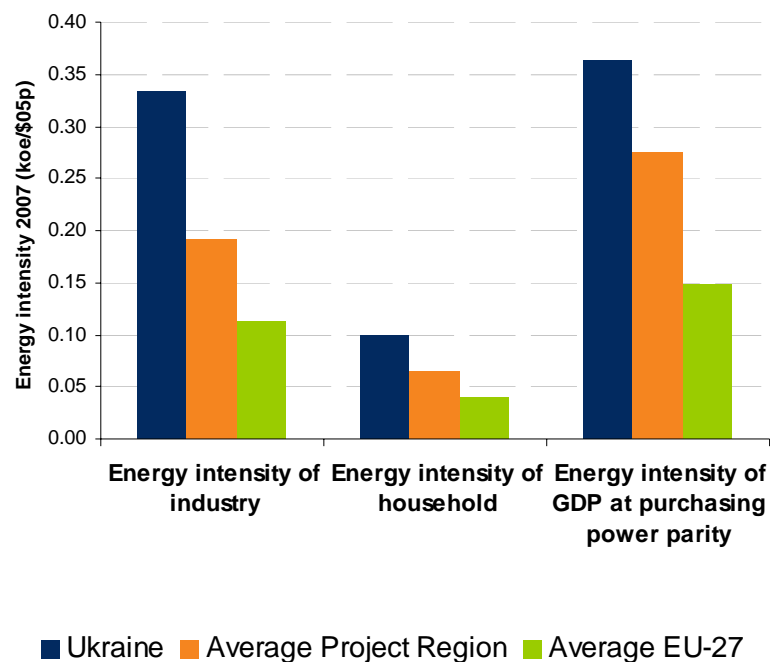
- The electricity generated by 15 nuclear power plants accounts for 47% of the total electricity generation
- Coal and gas plants account for 47% of the electricity generation; plants are in deteriorated conditions
- Hydro power plants with an installed capacity of 4.73 GW generate 7% of the electricity in the country
- New renewable energy sources (wind and small hydro), contributed to less than 0.02% to the total electricity generation
- Transmission capacity is constrained by congestion and requires additional investments

Source: IEA 2006

Energy Intensity in Ukraine

The energy intensity of Ukraine is among the highest in the project region

Energy Intensity



Source: Enerdata 2007

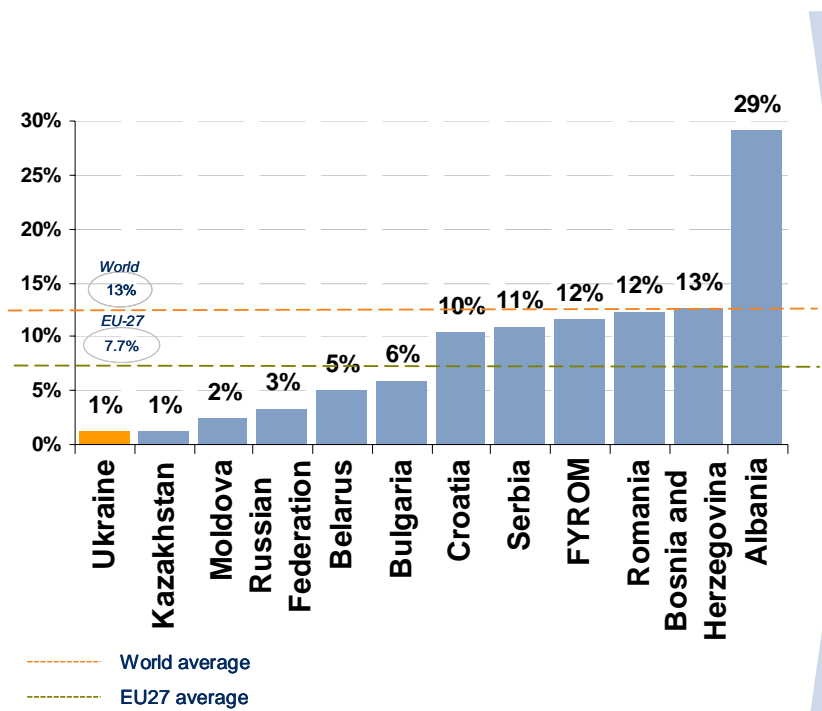
Comments

- Although the energy intensity decreased by 45% since 1997, it is significantly higher than the project region average and over twice as high as EU-27
- The energy intensities of the industrial and household sector are also significantly high
- Factors that contributed to this high level are:
 - Slow restructuring of energy intensive industries
 - Low tariffs in heat and power sector
 - Cross-subsidization of households by industrial consumers
 - Low efficiency of power generation and losses from electricity and heat grid

Renewable Energy Sources in Ukraine

Ukraine has the lowest share of renewable energy sources within the project region

Renewable Energy Sources



Comments

- RES have a share of 1.2% of total primary energy and 7% of electricity
- 2/3 of this share derive from large hydro power, while the rest is provided mainly by combustible renewables and waste
- Wind and small hydro have a negligible impact in the power generation of the country
- Some geothermal resources are used primarily for heat supply
- There is large untapped potential for biomass, wind and solar energy; however, the current target of 10% electricity production from RES by 2010 is quite optimistic

Source: IEA 2006

Barriers for Investments in EE and RES in Ukraine

Barriers for investments in Ukraine arise not only from the energy sector but also from the economic environment and notably from dependence from foreign economies

**Legal,
institutional
and
administrative
barriers**

- The legal framework in the energy sector is complex, fragmented, outdated or non-existing (e.g. for RES)
- The main focus of the Ukrainian Energy Strategy until 2030 lies in the development of coal and nuclear power
- Heat tariffs applied by the municipalities are not cost-covering, hindering infrastructural investments

**Economic and
financial
barriers**

- Lack of transparency regarding state funds for energy conservation and energy saving measures
- Difficult access to funding from banks
- Present difficult economic situation in the country

**Lack of
awareness,
human
capacities and
professional
skills**

- ESCO services are currently not high in demand, indicating a low awareness in the private business and public administration sector
- Low awareness in the banking sector

Successful Policy Reforms in Ukraine

One example of a successful policy reform in Ukraine is the establishment of feed-in-tariffs for renewables and the modification of the Land Code

UKRAINIAN LAW 601/2008 INTRODUCES THE NEW FEED-IN TARIFFS AND MODIFIES THE LAND CODE IN ORDER TO GRANT PREFERENTIAL LAND PURCHASE PRICES FOR RES PLANTS

Policy Instrument

Law Nr. 601 “On Amendments to Some Ukrainian Laws on Green Tariff Establishment” of September 25, 2008

Responsible Institution

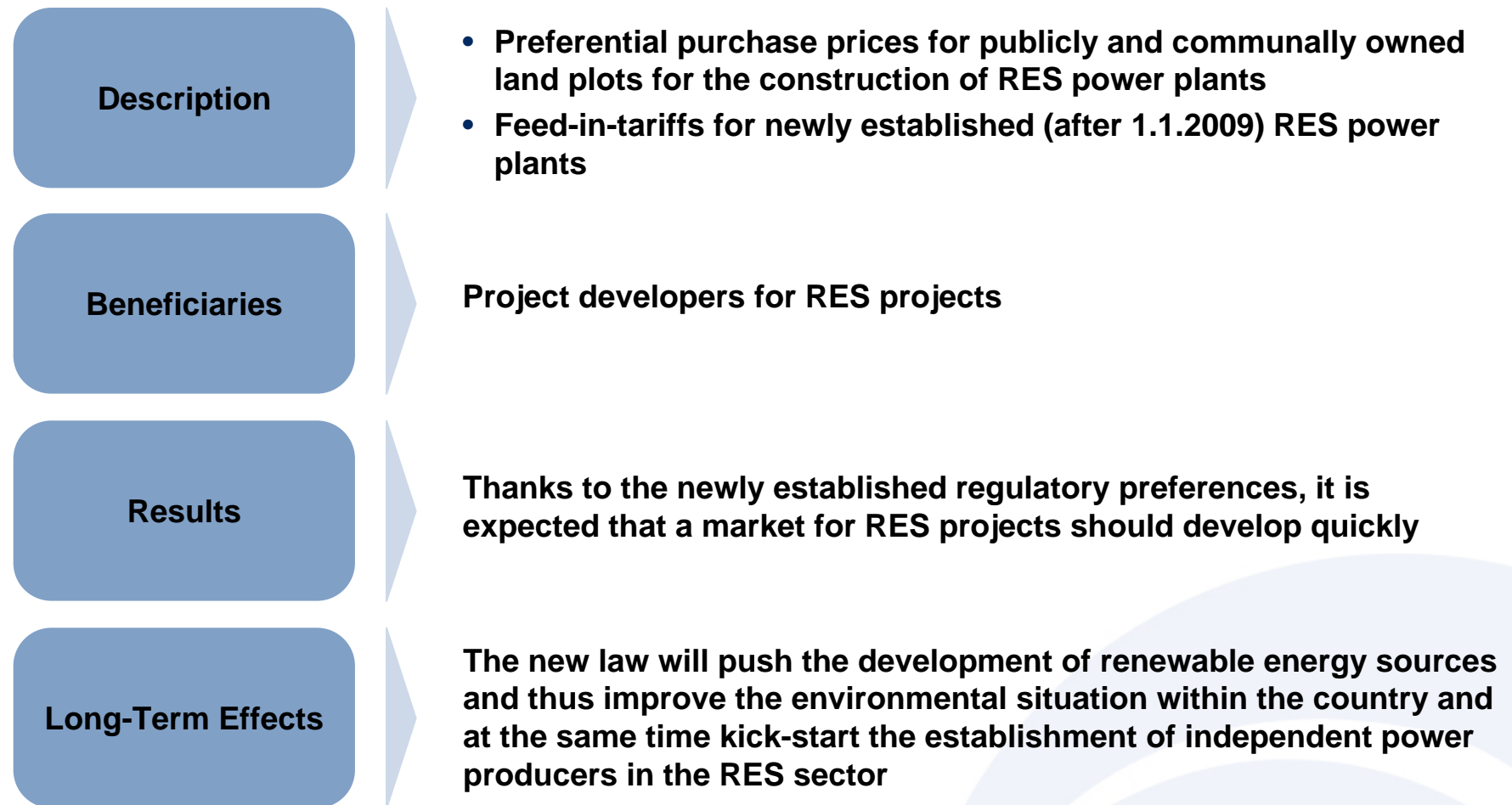
National Electricity Regulation Commission of Ukraine

Implementation Timeframe

Feed-in-tariffs are valid from 2009-2030

Feed-in-tariff for renewable energy sources and the modification of the Land Code in Ukraine

The adoption of the feed-in-tariff and the modification of the land code will enable Ukraine to push the development of renewable energy sources



Recommendations to overcome barriers for investments in EE and RES in Ukraine

The establishment of transparent public tendering procedures and fiscal incentives is recommended to allow realization of the available RES potential of Ukraine

Legal, institutional and administrative barriers

- **Monitoring of policy implementation**
- **National energy efficiency and renewable energy action plan**
- **Establishment of national renewable energy agency**
- **Least-cost investment plan for district heating**

Economic and financial barriers

- **Energy tariff reform**
- **Financial incentives for renewable heating**

Lack of awareness, human capacities and professional skills

- **National education, training and public awareness program**
- **Capacity building on financial renewable and energy efficiency investments**

Recommendations to overcome barriers for investments in EE and RES in Ukraine

Legal, institutional and administrative barriers (1/3)

Monitoring of policy implementation

- **The legal framework promoting energy efficiency and renewable energy in the Ukraine is complex and partly fragmented and outdated.**
- **To overcome this barrier, the Ministry of Fuel and Energy should assign one new or existing authority or agency for the overall control and responsibility for regular monitoring of energy efficiency and renewable energy policy implementation. The monitoring should identify and evaluate several policy measures and incentives schemes promoting or hindering the implementation of sustainable energy projects and draw justifiable conclusions on how to improve the regulatory framework in the Ukraine.**

Recommendations to overcome barriers for investments in EE and RES in Ukraine

Legal, institutional and administrative barriers (2/3)

National energy efficiency and renewable energy action plan

- **The Ukrainian Energy Strategy until 2030 has rather ambitious energy efficiency and renewable energy targets. However, in absence of an implementation plan, it is not clear how these targets are going to be reached.**
- **Thus, the elaboration and implementation of national programs or action plans with clear timelines and responsibilities, backed up by national and local energy agencies with adequate human and financial resources are prerequisite for the successful implementation of the Energy Strategy of Ukraine for the period until 2030 and the Comprehensive State Energy Conservation Program till 2010. Therefore, the implementation of a National Energy Efficiency and Renewable Energy Action Plan is highly recommended.**
- **Those Action Plans should contain indicative overall and intermediate targets, a description and ex-post evaluation of existing measures, a description of planned measures, an ex-ante evaluation of the expected contribution of each measures as well as a timetable for implementation, monitoring and re-port of the program.**

Recommendations to overcome barriers for investments in EE and RES in Ukraine

Legal, institutional and administrative barriers (3/3)

Establishment of national renewable energy agency

- **Lack of a dedicated agency or institution in charge renewable energy hampers the extensive growth of renewable energy in the Ukraine.**
- **The establishment of a National Renewable Energy Agency responsible for elaboration, implementation and monitoring of renewable energy policy is highly recommended. It shall service to facilitate and promote cooperation between the Ministries, local authorities and the National Agency for Efficient Use of Energy Sources, which as its institutional priorities in the promotion of energy efficiency. Allocation of adequate funding is a prerequisite for the agencies to be active.**

Least-cost investment plan for district heating

- **Due largely to the lack of maintenance and capital repairs in recent years, district heating systems in Ukraine are plagued by inefficiency and excessive distribution losses.**
- **A least-cost investment plan for district heating should be developed regularly and become the basis for development and refurbishment of the heating sector in the Ukraine. The least-cost investment plan should evaluate costs and benefits of different energy efficiency measures such as optimization of heat supply systems, heat load redistribution, loss reduction, balancing centralized and de-centralized heating, cogeneration and metering.**

Recommendations to overcome barriers for investments in EE and RES in Ukraine

Economic and financial barriers (1/2)

Energy tariff reform

- **Insufficient market structures and incomplete market opening in combination with regulated prices on the wholesale market and below-market tariffs for end customers hinder the realization of energy efficiency and renewable energy projects.**
- **A tariff reform including the introduction of different tariff structures and charges which specifically encourage investments in energy efficiency and renewable energy projects is highly recommended. To ensure that low-income consumers, which are not able to absorb the price increases, are compensated, the tariff reforms should be coupled with targeted subsidies.**

Recommendations to overcome barriers for investments in EE and RES in Ukraine

Economic and financial barriers (2/2)

Financial incentives for renewable heating

- **Lack of a dedicated funding scheme for renewable heating is an economic barrier to the creation of a domestic market. The establishment of a public fund supporting heat generation from renewable energy sources is recommended.**
- **Funding should support the investments in small and large scale renewable heating systems (solar, biomass, geothermal). The fund shall be open to private business, municipalities and households. The support of accompanying measures such as energy audits and the installation of metering devices is highly recommended.**
- **The key areas of support and key sectors should be selected based on the available energy savings and greenhouse gas reduction potential as well as the cost-benefit ratio to be evaluated.**
- **This fund should be managed by a new or existing authority or agency to be nominated on a national level. Co-funding by international institutions such as the United Nations Economic Commission for Europe (UNECE), the European Bank for Reconstruction and Development (EBRD) or World Bank is an option which should be considered.**

Recommendations to overcome barriers for investments in EE and RES in Ukraine

Lack of awareness, human capacities and professional skills (1/2)

National education, training and public awareness program

- **Lack of awareness has been identified to be one of the main bottlenecks for the enhanced development energy efficiency and renewable energy projects in Ukraine.**
- **To overcome this barrier and to create a positive image for investments in sustainable energy, the Ukrainian government with participation of the National Agency for Efficient Use of Energy Sources and the recommended National Renewable Energy Agency, shall develop suitable information, awareness-raising, guidance or training programs in order to inform about the benefits and practicalities of developing and using energy from renewable sources and energy efficiency measures. Activities could comprise advertising campaigns, information dissemination on energy labels and standards, advice on behavioral practices and financing opportunities, information dissemination through energy auditors, and capacity building for project developers, architects, installers etc.**
- **Given the lack of information and awareness in private companies, the implementation of a training program for energy auditors in accordance with the Slovenian Energy Auditing Program (EAP) is highly recommended.**

Recommendations to overcome barriers for investments in EE and RES in Ukraine

Lack of awareness, human capacities and professional skills (2/2)

Capacity building on financing renewable and energy efficiency investments

- **Lack of awareness has been identified to be one of the main bottlenecks for the enhanced development energy efficiency and renewable energy projects in Ukraine.**
- **To overcome this barrier and to create a positive image for investments in sustainable energy, the Ukrainian government with participation of the National Agency for Efficient Use of Energy Sources and the recommended National Renewable Energy Agency, shall develop suitable information, awareness-raising, guidance or training programs in order to inform about the benefits and practicalities of developing and using energy from renewable sources and energy efficiency measures. Activities could comprise advertising campaigns, information dissemination on energy labels and standards, advice on behavioral practices and financing opportunities, information dissemination through energy auditors, and capacity building for project developers, architects, installers etc.**
- **Given the lack of information and awareness in private companies, the implementation of a training program for energy auditors in accordance with the Slovenian Energy Auditing Program (EAP) is highly recommended.**

Conclusions

Several institutional and economic barriers hinder the development of EE and RES projects in Ukraine; however, recent policy reforms for RES might provide attractive incentives for project developers

- **Ukraine has a comparatively high energy import dependency, mainly based on natural gas imports from the Russian Federation**
- **The share of domestic coal, which already contributes 34% to the total electricity generation is expected to increase in the long-term in order to reduce the import dependency from gas**
- **Ukraine has a high energy intensity level**
- **Complex regulatory framework and lack of financing possibilities hinder the development of EE and RES projects**
- **However, the newly established regulatory preferences for land purchase and electricity sales from RES might push the development of a market for RES projects**
- **The establishment of transparent public tendering procedures and fiscal incentives is recommended to allow realization of the available RES potential of Ukraine**

Pöyry Energy Consulting

Claudio Waldburger

Managing Director

Phone: +41 (0) 44 288 90 84

Claudio.Waldburger@poyry.com

Dr. Francesca Paoletti

Senior Consultant

Phone: +41 (0) 44 288 90 86

Francesca.Paoletti@poyry.com

Pöyry Energy Consulting (Schweiz) AG

Hardturmstrasse 185

CH-8005 Zurich

Switzerland

The background of the slide features a close-up, artistic photograph of a sailboat's rigging. A small, glowing globe of the Earth is positioned where a rope or wire crosses over a metal pulley or sheave. The lighting is dramatic, with strong highlights and deep shadows, creating a sense of depth and texture. The overall color palette is dominated by dark blues, greys, and greens. At the bottom of the slide, the word "PÖYRY" is written in a large, bold, sans-serif font. The letters are light grey or white, with a slight transparency, allowing the background image to be seen through them. The "Ö" has a distinctive double-dot mark above it.