Trends in Energy Efficiency Policies

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The main principles of Energy Policy

- **ensuring sustainable development of energy sector, following the trends of economic development;**
- **development of regional cooperation;**
- **maximal use of energy efficient technologies in the energy sector as well as in the other branches of economy.**

The only domestically produced primary energy in Armenia is electricity from the hydroelectric plants and the single nuclear power plant with the share about 30% of the total volume of the electricity produced from the primary energy resources.

Law of the RA “On Energy Saving and Renewable Energy”

The goals of the law:

- ensuring energy independence of the Republic of Armenia;
- creation of new productions and organization of services supporting the development of energy efficiency and renewable energy;
- decrease of anthropogenic impact on the environment and public health.

National Program on Energy Efficiency

- Industry - consuming 40% of primary energy:power sector, mining, chemical and construction materials;
- Transport – 24% of all types of primary energy,
- Residential sector – 15% of all types of primary energy,
- Agriculture – 4% of all types of fuel-energy resources.

National Energy Efficiency Action Plan for Implementation of National Energy Efficiency and Renewable Energy

The main purpose for adoption of the Action Plan on Energy Efficiency- assistance to further formation of state policy on energy efficiency and development of concrete steps for realization of the policy.

The first National Energy Efficiency Action Plan by 2011-2013

Implementation of a regular national ”Energy Statistic” (with annual updates).

The first National Energy Efficiency Action Plan by 2011-2013

Implementation of an institutional setting for energy efficiency.

The first National Energy Efficiency Action Plan by 2011-2013

Information campaigns,
training and education
in the area of Energy Efficiency
improvements.

The first National Energy Efficiency Action Plan by 2011-2013

Public Procurement for Energy Efficiency.

The first National Energy Efficiency Action Plan by 2011-2013

Improvement of energy efficiency regulatory framework.

Input of standards on quality and revision for conformity of energy characteristics of the main construction materials.

- In 2009-2010 the UNDP-GEF Project initiated translation and adaptation of 9 standards (ISO and EN) on energy efficiency and energy consumption in residential and public buildings.
- The Concept of Program of harmonization of current urban construction norms with European standards was adopted in 2010.

Experimental energy audit and certification were performed for five multi-apartment buildings connected to the district heating supply networks in 2008-2009. Bottlenecks for certification of multi-apartment buildings have been investigated.

UNDP-GEF Project “Improving energy efficiency in buildings” 2010-2015

Activities foreseen by the project:

- Elaboration/adaptation and application of new EE building standards and norms. Introduction of energy certificates for buildings.
- Promotion of use of new EE/ES materials and appliances (testing and certification)
- Training, seminars and raising of awareness on Integrated Building Design Approach (IBDA)
- Pilot project for demonstration of integrated design of buildings

UNDP/GEF Project “Armenia –Improving Energy Efficiency of Municipal Heating and Hot Water Supply” recommended to focus energy labeling on household electric appliances and gas-consuming heating devices with a big energy-saving potential, that cover a wide segment of a market.

RECOMMENDED LIST FOR STARTING THE LABELLING ENERGY-CONSUMING APPLIANCES

List of energy-consuming equipment subject to labeling:

Electric appliances:

•Household refrigerators, freezers and combination of both

•Air-conditioners

•Household washing machines

Gas appliances:

•Household gas-fired boilers

•Gas space heaters (convectors)

DESIGN OF ENERGY LABEL, ENERGY CLASSES, INFORMATION PLACED ON LABLES

- **Design of labels, energy classes and other information in accordance with the requirements of EC Directives.**
- **Energy tests based on standards securing implementation of EC Directive requirements are arried out by local laboratories. It'sals opossible to have the result softest soflaboratories accredited in EU.**

Example: Refrigerator energy label

DESIGN OF ENERGY LABEL, ENERGY CLASSES, INFORMATION PLACED ON LABLES

- **A label was designed by the Project and agreed with the Ministry of Energy and Natural Resources**
- **Principle of indication of energy classes –a "star rating" (from one to four stars)**
- **Information on the label –name of manufacturer, model of appliance, energy class (number of stars), nominal heat outpu efficiency factors.**

Example: Household gas boiler energy label

- **Energy tests –in accordance with relevant CEN standards**

Hydro energy

Existing HPPs in Armenia

- Sevan-Hrazdan HPPs Cascade: 556MW / 2320 million kWh
- Vorotan HPPs Cascade: 404MW / 1157 million kWh
- Dzora HPP: 25MW / 90 million kWh

- Meghri HPP: 140MW / 800 million kWh
- Shnogh HPP: 75MW / 300 million kWh
- Loriberd HPP: 66MW / 200 million kWh

- 101 Existing SHPPs: 130 MW / 410 million kWh
- 74 SHPPs under construction: 140 MW / 531 million kWh
- 108 foreseen SHPPs:134 MW /

Wind Energy

The first wind power plant in Armenia and in TransCaucasus Wind Power Plant:

2,6 MW / 5 million kWh

Wind Energy Resource Atlas of Armenia (NREL)

Justified total potential is 490 MW / 1.28 billon kWh

Solar Energy

- The average annual amount of solar energy flow per square meter of horizontal surface is about 1720 kWh/m^2
  (the average European is 1000 kWh/m^2)

- Deployment of PV industry technologies at the national level.

  Attractive factor for investors: existence of raw materials and infrastructure to set up industry that can include the whole technological chain

Geothermal Energy

Geothermal energy sources

- Projects under the development:

- Jermaghbyur: 20-25 atmosphere pressure 250°C/2500-3000 meter in depth/25 MW

- Gridzor and Qarqar: geological and geophysical explorations

- Investigation of other perspective sites

Biogas

Solid Waste Landfill Gas Capture and Power Generation CDM Project in Yerevan- 56000 t CO2 emissions/1,4 MW

- Bioethanol

The study on "Assessment of Bioethanol Production, Potential Utilization and Perspectives in Armenia" 30000 tonne yearly

Thank you for your attention

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