

# Armenian Energy Sector Overview

A nighttime photograph of Yerevan, Armenia, featuring a large, brightly lit fountain in the foreground and a cityscape with numerous lights in the background, set against a backdrop of dark mountains under a twilight sky.

**Eduard Karapoghosyan**

**Energy Strategy Center**

**Yerevan, Armenia**

**E-mail: [EduardKarapoghosyan@gmail.com](mailto:EduardKarapoghosyan@gmail.com)**

# Regional location

## The Caucasus and Central Asia





# Armenia: country overview

## Main indicators

➤ <b>Territory</b>	<b>29.8 thousand</b>
<b>km<sup>2</sup></b>	
➤ <b>Population</b>	<b>3.083 million</b>
➤ <b>GDP</b>	<b>8.71 bln. USD</b>
➤ <b>Energy/GDP</b>	<b>299.3 toe/mln.</b>
<b>USD</b>	



# Power System Main Indicators

## Installed capacities (MW)

<b>Armenian NPP (2 x VVER-440)</b>	<b>408</b>
<b>Hrazdan TPP</b>	<b>1110</b>
<b>Yerevan CHP</b>	<b>550</b>
<b>Yerevan CCPP</b>	<b>271</b>
<b>Sevan-Hrazdan Cascade of HPPs</b>	<b>550</b>
<b>Vorotan Cascade of HPPs</b>	<b>400</b>
<b>Small HPPs (&lt;10 MW)</b>	<b>102</b>
<b>Wind Power Plant</b>	<b>2.6</b>



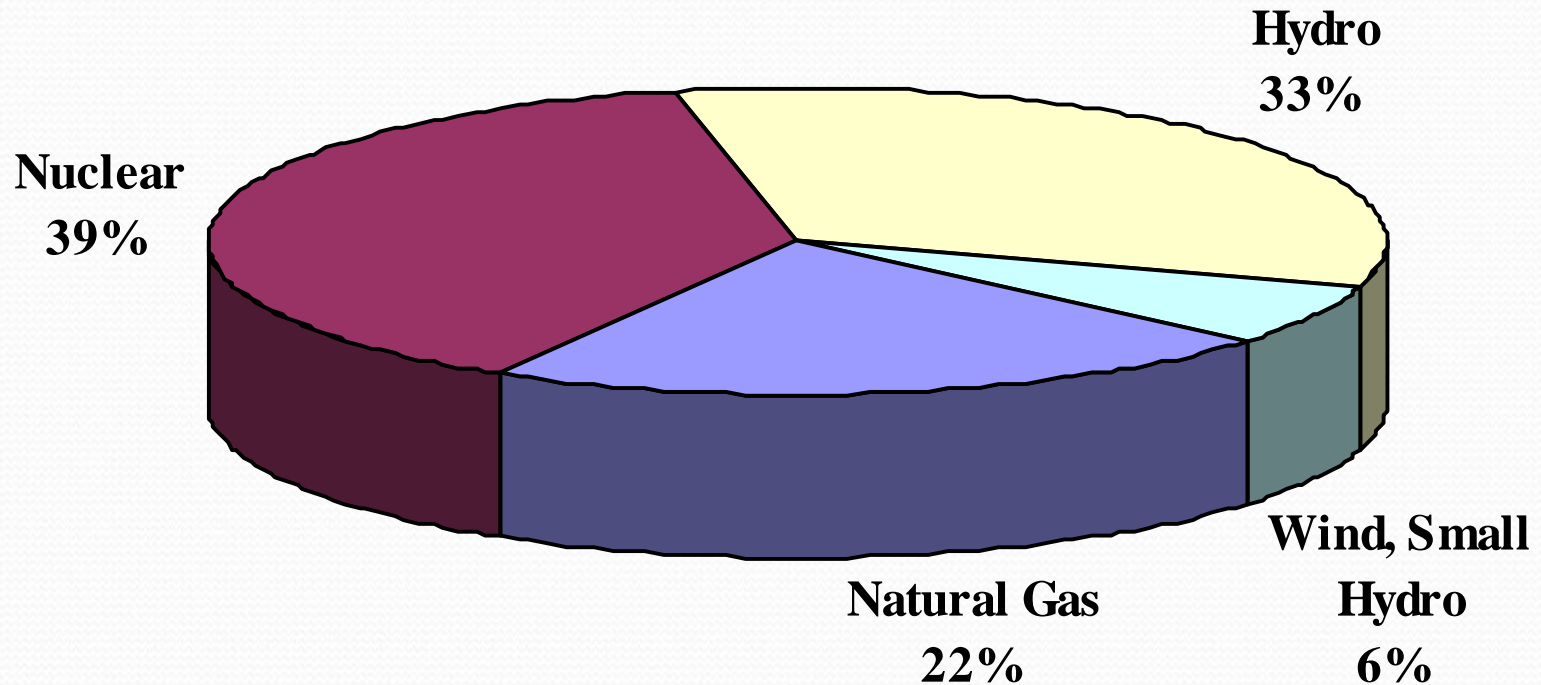
# Power System Main Indicators

## Electricity generation and consumption

- ✓ **3394 MW** – total installed capacity
- ✓ **6490 mln. kWh** – annual production
- ✓ **4507 mln. kWh** – final consumption
- ✓ **1225 mln. kWh** – export
- ✓ **358 mln. kWh** – import

# Power System Main Indicators

## Electricity production by primary energy sources



# Interconnections





# Customer Electricity Tariffs

*1 \$ = 380 AMD*

<i><b>Voltage, Connection type</b></i>	<i><b>Tariff, AMD (USc)/kWh</b></i>	
	<i><b>Night-time</b></i>	<i><b>Daytime</b></i>
<b>35 kV and higher</b>	<b>17 (4.47)</b>	<b>21 (5.53)</b>
<b>6 (10) kV direct connection</b>	<b>17 (4.47)</b>	<b>25 (6.58)</b>
<b>6 (10) kV non-direct connection</b>	<b>17 (4.47)</b>	<b>30 (7.89)</b>
<b>0.38 kV</b>	<b>20 (5.26)</b>	<b>30 (7.89)</b>





# Energy Policy

**Energy sector development strategy** was adopted in 2007 by the Government.

The main objective of this paper is formulation of the strategic targets for the development of the Armenian energy sector and determination the fundamental directions towards their achievement, based on the sustainable development principles for society in general and the energy sector in particular, adopted by the international community, and guided by provisions of the national security strategies of the Republic of Armenia



# **Energy Policy**

**Armenia has ratified UN Framework Convention on Climate Change in May 1993, and the Kyoto Protocol – in December 2002.**

**According to UNFCCC Armenia regularly carries out its commitments, defined for non-Annex 1 Parties to the Convention, as well as participates in international cooperation and regional programs related to climate change.**

**It also includes energy saving and promotion renewable energy resources usage.**



# Energy Saving Policy

## **In 2007, National Program on Energy Saving and Renewable Energy of RA was approved by the Government of RA.**

The Program development provided an unprecedented cross-sectoral assessment of energy saving and renewable energy potential in the Armenian economy, and recommended actions for cost-effectively utilizing this potential. All large and energy intensive enterprises underwent an in-depth energy examination, end-use consumption data was collected for all 35 economic sectors. This allowed revealing trends, making projections, drawing comparisons with other comparable countries and, most importantly, calculating the nationwide, sector-specific and enterprise-level **energy saving potential**.

## **Armenian Sustainable Energy Financing Facility (ArmSEFF)**

Invests in energy saving or renewable energy projects

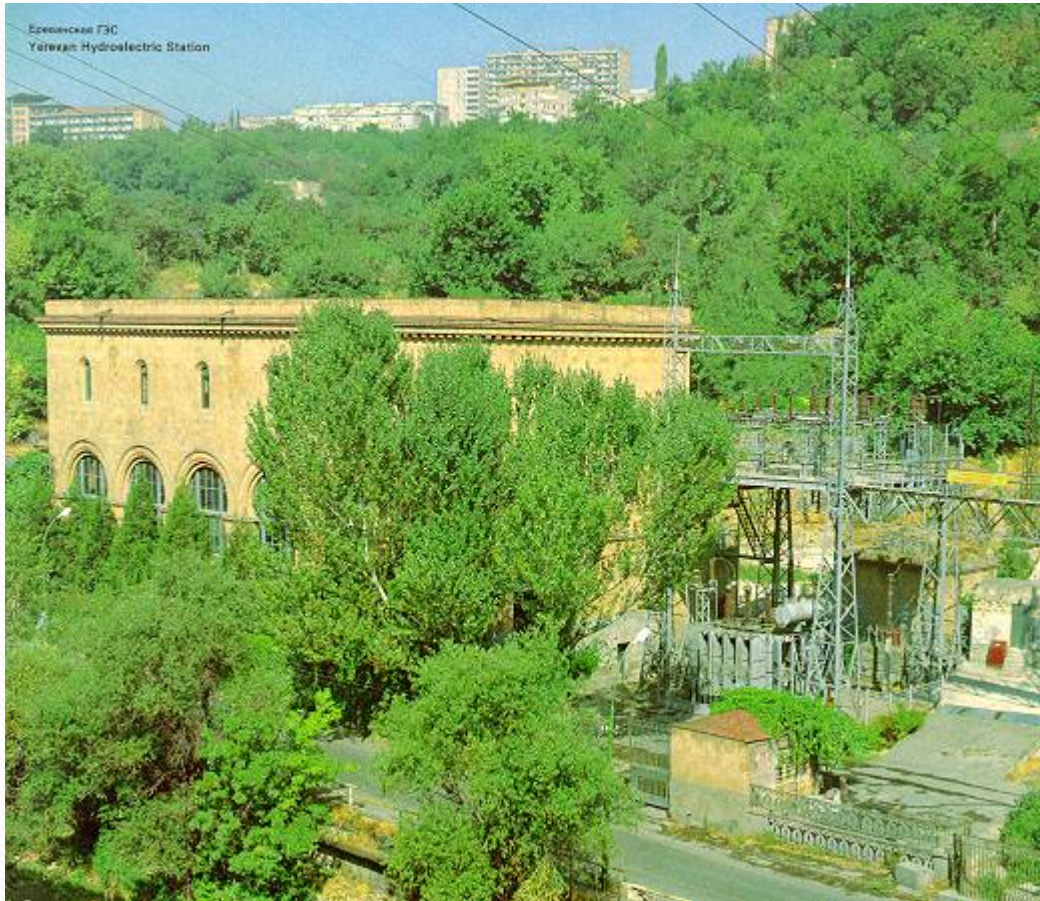
[www.armseff.org](http://www.armseff.org)

## **Armenia Renewable Resources and Energy Efficiency Fund**

[www.r2e2.am](http://www.r2e2.am)



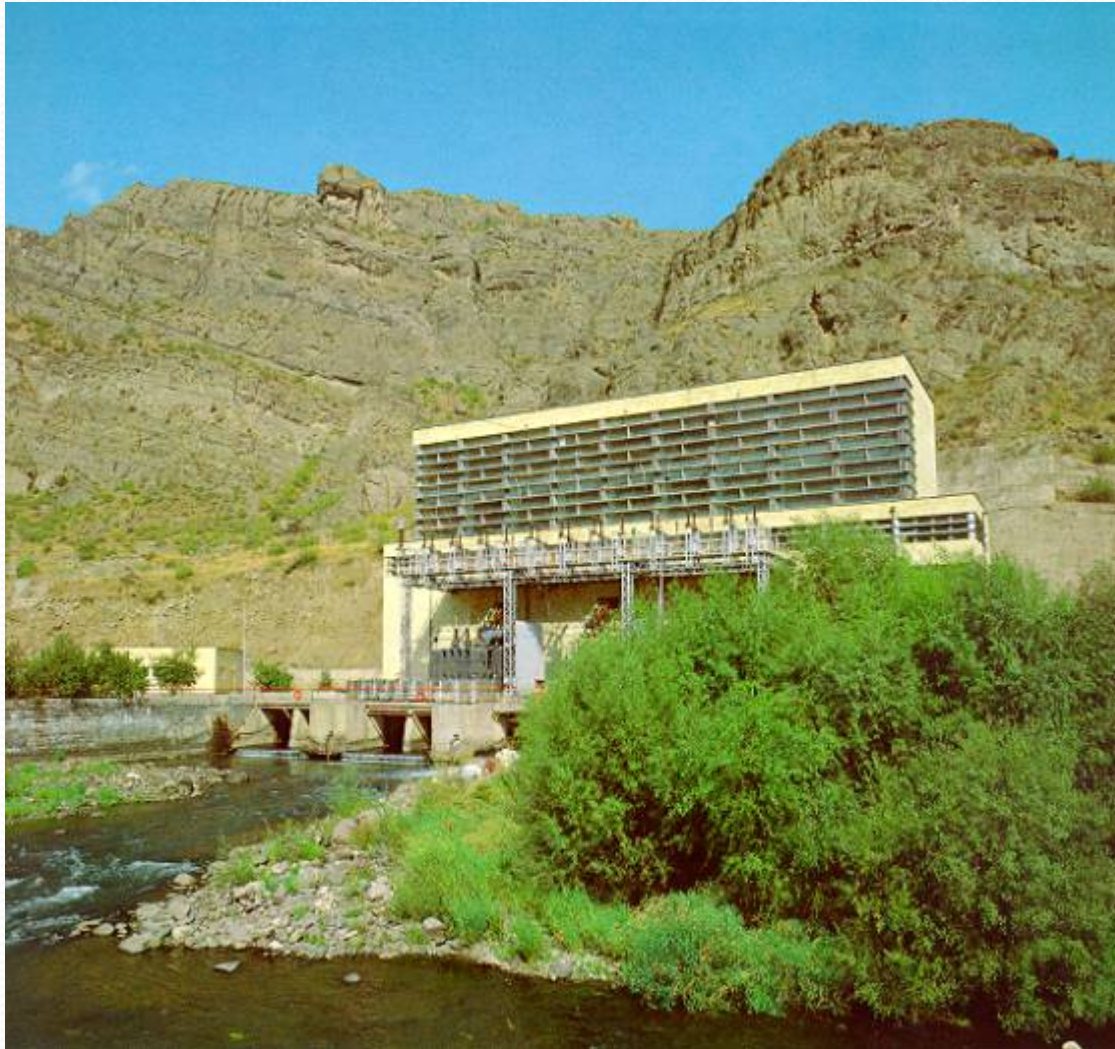
# Investment Projects – Hydro Energy



**Rehabilitation  
and  
Reconstruction  
of Existing HPPs**



# Investment Projects – Hydro Energy



**Construction of  
new medium  
size HPPs of  
275-300 MW**



# Investment Projects – Hydro Energy



**Construction of economically feasible  
Small HPPs up to 260 MW**



# Investment Projects – Thermal Energy



**Rehabilitation and  
Reconstruction of  
existing TPPs**



# Investment Projects – Thermal Energy



**Construction of modern Cogeneration  
Steam-Gas Power units**





# Investment Projects – Nuclear Energy



**Continuous enhancement of the safety level  
of the existing Armenian NPP**



# Investment Projects – Nuclear Energy



**Development of new nuclear unit(s) based  
on modern technologies**



# Investment Projects – Renewable Energy

- **Wind (200 MW)**
- **Solar (1750 kWh/m<sup>2</sup>/yr)**
- **Geothermal**





# Main Investment Projects Summary

<b>Project</b>	<b>Installed Capacity, MW</b>	<b>Annual Generation, million kWh</b>	<b>Expected Implementation Date (up to)</b>
Small HPPs (<10 MW)	260	600	2025
Medium size HPPs	275-300	1 300 – 1 400	2015
Wind farms	200	525	2025
TPPs	440+208	4 200	2011
NPP	1000	7 500	2017
<b><i>Total</i></b>	<b><i>2 383 – 2 408</i></b>	<b><i>14 125 – 14 225</i></b>	<b><i>2025</i></b>
<b><i>Interconnections HVL-400 kV</i></b>	<b><i>Single-circuit Georgia</i></b>	<b><i>Double-circuit Iran</i></b>	<b><i>2012</i></b>



***Thank you!***

Contact : [report@tky.ieej.or.jp](mailto:report@tky.ieej.or.jp)