

# RENEWABLE ENERGY COURSE

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Armenia Renewable Resources and Energy  
Efficiency Fund

# INTRO

- ❑ Hayk Levonyan
- ❑ Yerevan, Armenia
- ❑ Armenia renewable resources and energy efficiency fund, Project Analyst
- ❑ Ph.D., Associate Professor
- ❑ Project Analyst

# COUNTRY

Country: ARMENIA  
AREA: 29.7 ths  $km^2$   
POPULATION: 3.0 mln  
CAPITAL: YEREVAN  
OFFICIAL LANGUAGE: ARMENIAN  
MAIN NATIONALITY: ARMENIAN (98%) CURRENCY:  
ARMENIAN DRAM

NATIONAL EMBLEM



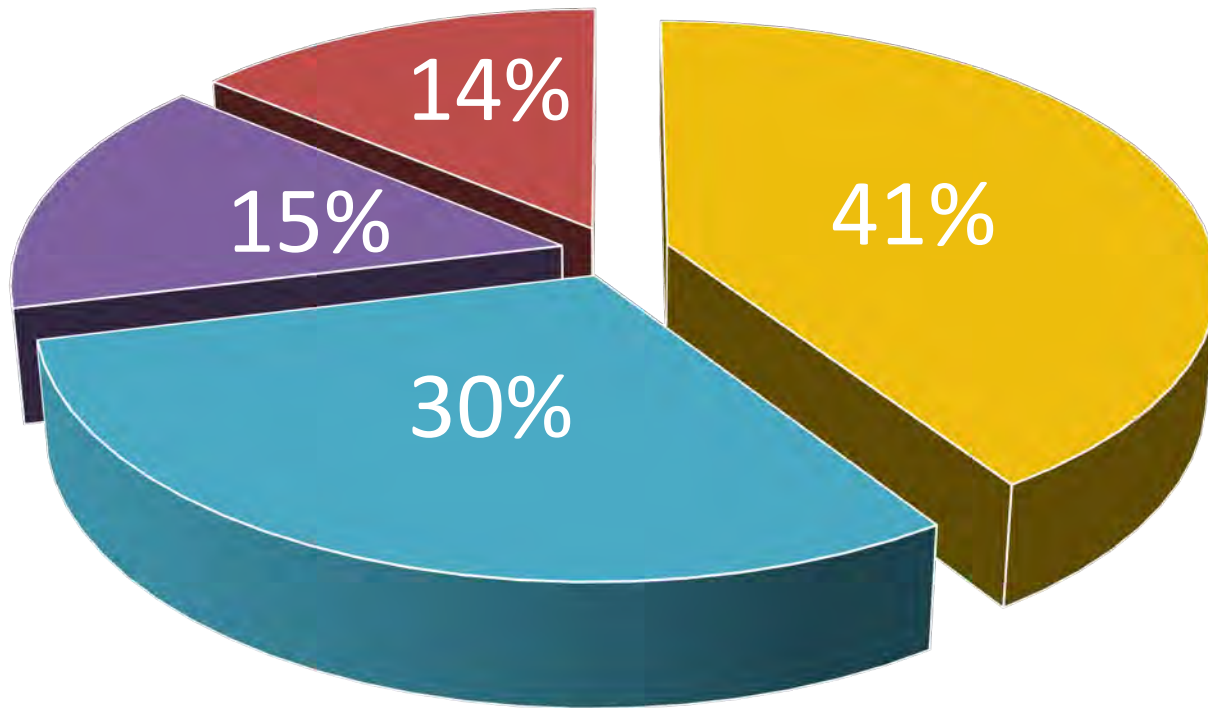
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MAP



# ENERGY SECTOR IN ARMENIA



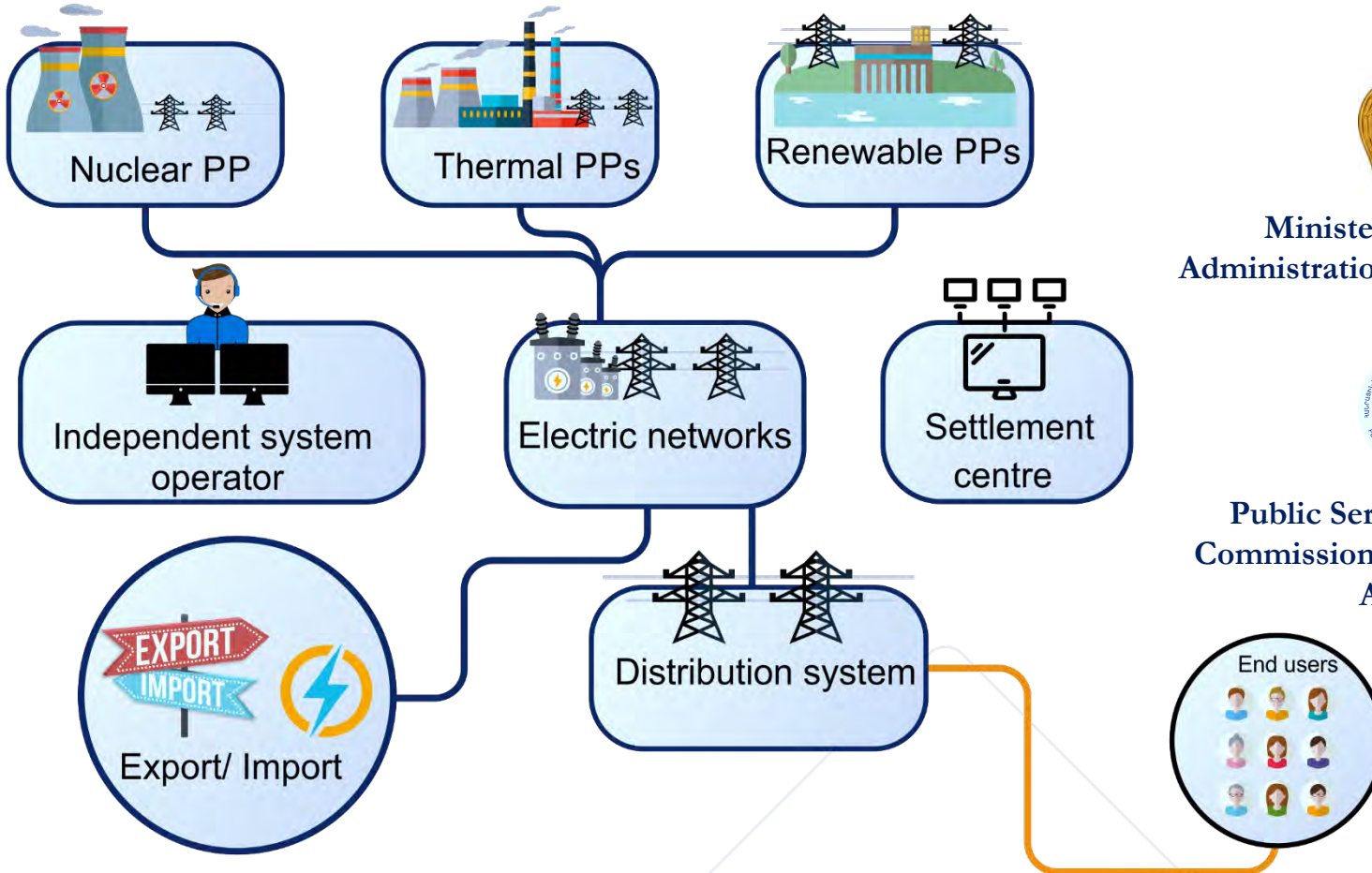
■ Nuclear

■ Thermal

■ HPP

■ Renewable

# ENERGY SYSTEM



Minister of Territorial  
Administration and Infrastructure  
of RA



Public Services Regulatory  
Commission of the Republic of  
Armenia

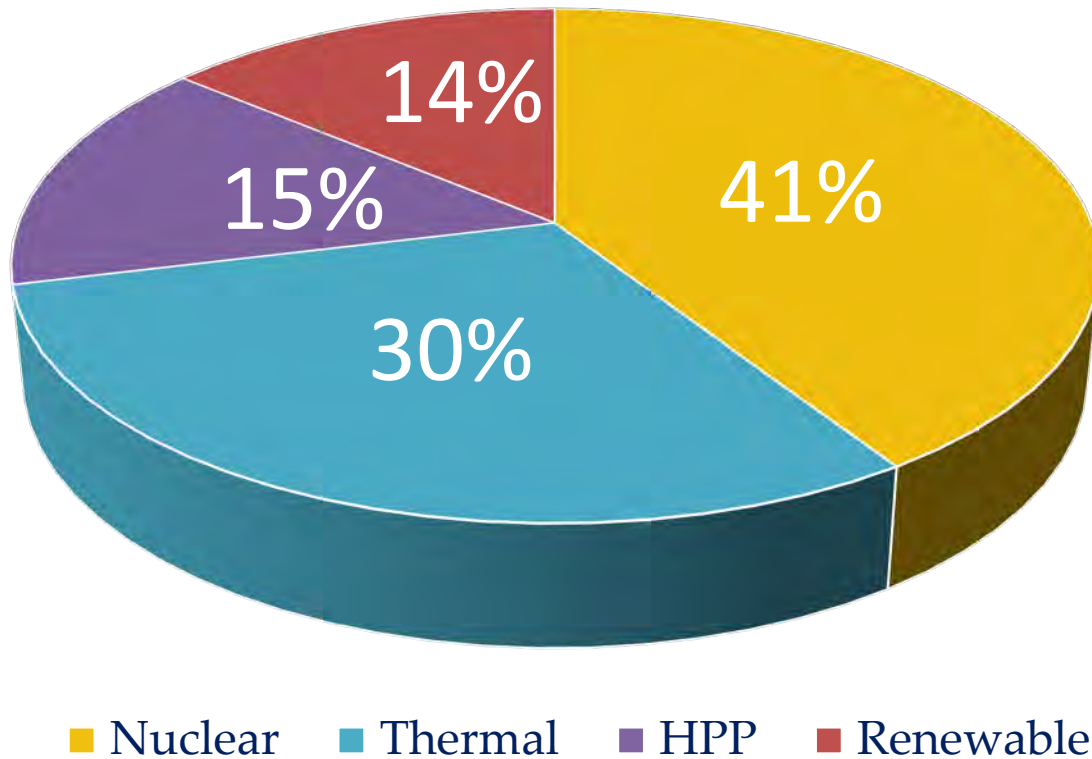


# ENERGY SYSTEM

## Generation Capacities

- 1 Nuclear PP- 400 MW
- 3 Thermal PP- 1800 MW
- 3 HPP (2 cascade) – 964 MW operated
- 189 Small HPPs – 384 MW operated up to 30MW
- 23 Small HPPs – 46 MW under construction
- 12 Solar PV plant – 10 MW operated up to 1 MW
- 10 Solar PV plant – 36 MW operated up to 5 MW
- 39 Solar PV plant – 164 MW under const. up to 5 MW
- Masrik 1 - 55MW under construction
- 4 Wind Farm under operation – 4.2 MW
- 1 Wind Farm under construction - 4 MW

# ENERGY SYSTEM



PLANTS	Mln.kWh
Thermal	1904
Nuclear	2551.8
HPP	932.10
RE	871.90
SHPP	813.90
Solar	21
Wind	1.80
Net met.	35.2

# SOLAR ENERGY

Currently, 49 companies have been licensed to build solar PV plants,  
from which:

- **12 companies** with a tariff of 0.0883 US dollar 10MW cumulative capacity
- **49 companies** with a tariff of 0.0492 US dollar, 200 MW cumulative capacity
- **Masrik 1** with a tariff of 0.0419 US dollar, 55 MW
- **Ayg 1** with a tariff of 0.0290 US dollar, 200 MW
- **20 years** purchase warranty
- **Yearly** adjustment based on inflation and US exchange rate

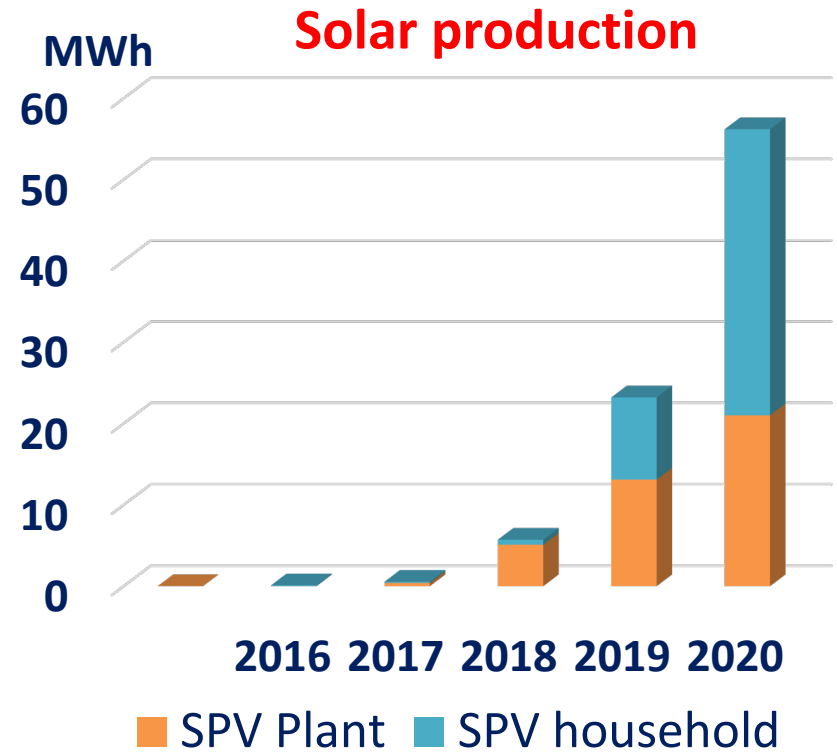
All amounts are without VAT



# SOLAR ENERGY

Under Net Metering law, it is possible to build up to 500 kW PV plant for self consumption purpose

**6077** connected to the ENA,   
with **115 MW** total capacity  
**504** in pipeline with **13 MW**   
total capacity



# ARMENIA RENEWABLE RESOURCE AND ENERGY EFFICIENCY FUND

R2E2 FUND IS AN ENVIRONMENT FORMING INSTITUTION IN THE AREA OF RENEWABLE RESOURCES AND ENERGY EFFICIENCY. THE R2E2 FUND WAS ESTABLISHED BY THE

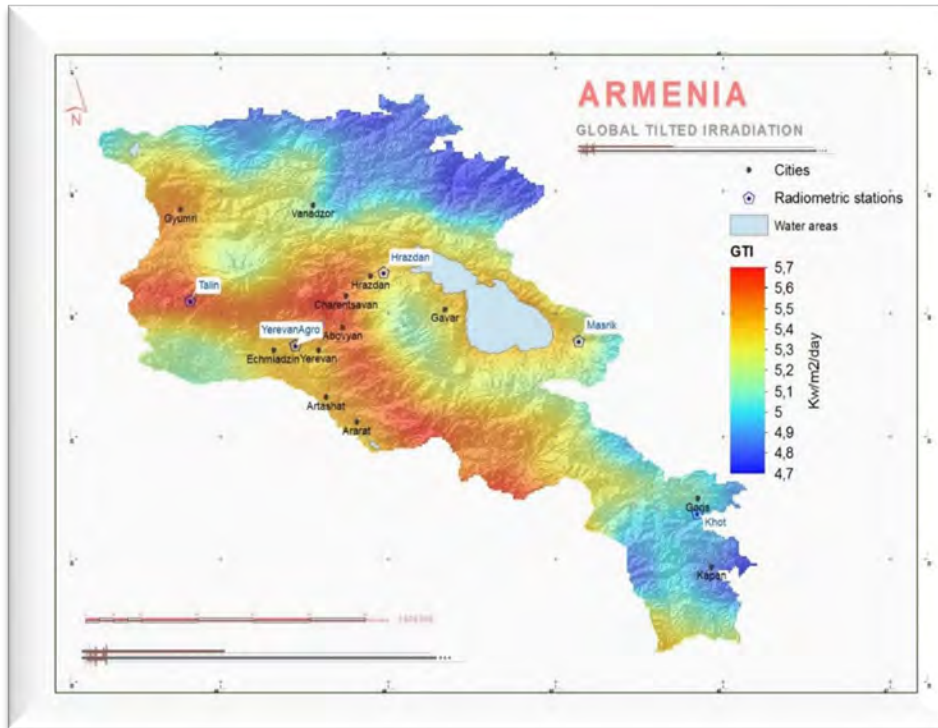
- Year of establishment: 2006 by GA,
- Board members: 7 Government and 2 Public representatives,
- Number of worker: 20 person,
- Number of projects: more than 15,
- Amount of investment: over 40 mln USD,
- Revolving fund around: 12 mln USD,
- Accreditation to Green Climate Fund,
- Professional engineering laboratory.



# SOLAR MAP

Average 1,720 kWh/year per square meter, compared with an of 1,000 kWh/year in Europe.

One quarter of the country's territory has an annual capacity of 1,850 kWh per m<sup>2</sup> of solar energy and more than 300 sunny days in a year.



# ENERGY EFFICIENCY IMPROVEMENT PROJECT” IN NON-GASIFIED COMMUNITIES

The Project implementation started in 2017. The objective of the project is to reduce energy consumption of households of non-gasificated communities by using renewable energy sources and decrease greenhouse gas emissions.

<b>246</b>	<b>Communities</b>
3202 pcs	Solar water heater
214pcs/1036 kW	Solar PV units instalation
4688 ton	CO <sub>2</sub> annual reduction



# MASRIK 1 PV PLANT - 55MW

- The first Utility-Scale Solar PV Plant of 55 MW to be constructed in the region
- As a result of tender the lowest tariff was proposed:
- The proposed tariff is 0.0419 USD excluding VAT.
- The Government Support Agreement (GSA) has been concluded between the Government of the RA and FRV MASRIK CJSC on July 18, 2018.
- PV plant launch date is January 2021.



# GEOHERMAL EXPLORATORY DRILLING PROJECT

## PHASE 1

Drilling of two slim wells including full analysis of all received data. Phase I of the project completed with the drilling of two exploratory wells.

The first exploration well, B-1, was completed at 1500m and tested in September 2016. Result 130o C.

The second well, B-2, was completed at 1684m and tested in November 2016.

Result 130-140o C.

## Phase 2

Drilling of one industrial size well including Feasibility study and Transaction advisory.

For the time being implementation of the second Phase of the Project is temporarily stopped until R2E2 understands the interests of international investors.





THANK YOU

Hayk Levonayn

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