Λεωφόρος Βασ. Σοφίας 50, Αθήνα 11528
Τ. 210 7233384
https://thegreentank.gr
Email: info@thegreentank.gr

Methodology - Assumptions

The following data are being used to analyze the trends in electricity production:

1. Electricity generation data (MWh) for the interconnected grid from the monthly data from the Independent Power Transmission Operator (IPTO).
2. Electricity generation data (MWh) for non-interconnected islands from the monthly Statistical Reports of the Hellenic Electricity Distribution Network Operator (HEDNO).
3. Data on the installed capacity of self-production systems and electricity generation data for low and medium voltage from HEDNO's Archives of Connection Applications for stations by self-producers.
4. Data from the Renewable Energy Special Account bulletin (ELAPE) of the Renewable Energy Sources & Guarantees of Origin Operator (DAPEEP) for CHP production at low and medium voltage, as well as for the PV utilization factors needed to estimate self-production.
5. Data on the estimated Energy Surplus from the solution of the Integrated Scheduling Process of the IPTO.
6. Data on wholesale electricity prices from the Day-Ahead Market from the European Network of Transmission System Operators for Electricity (ENTSO-E).

For the analysis the following assumptions were made:

I. Electricity production from Renewables (RES) and "Clean Energy"

Electricity production from Renewables includes production from renewable sources in the interconnected grid and in non-interconnected islands. By renewable sources, we include:

- wind
- photovoltaic (including self-production systems that use the net metering and virtual net metering)
- small hydro
- biomass
- hybrid systems installed in non-interconnected islands.

Clean energy is the sum of renewable energy sources and large hydro. The contribution of the latter is presented both cumulatively with renewables and separately, as they are considered conventional plants and participate in the electricity market in the same way as thermal plants.

The total renewables production is calculated by summing up the monthly data from IPTO and HEDNO, adding data on self-production and subtracting the production from fossil gas-fired CHP. The latter is then added to electricity production from fossil gas.

II. Electricity Production from CHPs

Data on the electricity production from CHPs connected to high voltage is taken from IPTO's monthly reports. Data on the electricity production from CHPs at low and medium voltage is taken from the respective monthly reports of DAPEEP's ELAPE, subtracting the high voltage part. When data from DAPEEP's ELAPE bulletin is not available, an estimate is made

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based on the trend of the last three months and then combined with the CHP unit load factors of the respective months as estimated from the historical data in DAPEEP's bulletins.

III. Self-production capacity

Self-production capacities are taken from the latest data available from the IPTO. For months for which no data is available an estimate is made based on the trend of change in self-production capacity over the previous three months. The corresponding electricity production is calculated using the photovoltaic utilization rates in the respective months, which are derived from DAPEEP's reports of the Renewable Energy Special Account Bulletin. For months with no available data on PV utilization rates, we assume an average of the previous three months.

IV. Electricity production data of non-interconnected islands

HEDNO publishes electricity production data for non-interconnected islands with a time lag of one month compared to the electricity production data for the interconnected grid from IPTO. Because of this time lag, we estimate the electricity production of island power plants based on a linear approximation between current and last year's monthly data.

V. RES energy curtailments

The Independent Power Transmission Operator (IPTO) is publishing daily the solutions ISP2 and ISP3 from the Integrated Scheduling Process (ISP), which include the daily forecast for the estimated Energy Surplus from RES. This is consistent with RAAEY's (Regulatory Authority for Energy, Waste and Water) forecast for daily RES curtailments. The two ISP solutions are combined using ISP2 data for the first twelve hours and ISP3 data for the last twelve hours.

VI. Wholesale electricity prices

Data on wholesale electricity prices is data on the day-ahead market (DAM) from ENTSO-E's new transparency platform, downloaded in CET/CEST (Central European Time/Central European Summer Time). This data coincides with day-ahead market data as published from the Greek Electricity Market Exchange (ENEX, EL-DAM-Results).