SAIFI/SAIDI indicators and the growing RES penetration

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ERRA EMER Committee Meeting
September 12, 2024 | Online meeting

Background

Large shares of intermittent renewable generation (wind and photovoltaic) cause additional stress on the system and can affect the network reliability. In order to keep stability network management requires inter alia increased flexibility where flexibility sources may include flexible capacities within the electricity generation mix, interconnection capacity, energy storage or improved load control.

Did you experience any changes in the network reliability performance (SAIDI / SAIFI) in the last years?

In the table below are presented the values recorded for SAIFI and SAIDI in the period 2019-2023

Indicator	2019	2020	2021	2022	2023
SAIFI planned interruptions (interruptions/year)	0.61	0.58	0.60	0.52	0.52
SAIFI unplanned interruptions (interruptions/year)	2.9	2.57	2.31	1.93	1.74
SAIFI aggregate value(interruptions/year)	3.51	3.15	2.91	2.45	2.26

Indicator	2019	2020	2021	2022	2023
SAIDI planned interruptions (minutes/year)	171.1	153.93	155.59	132.21	134.51
SAIDI unplanned interruptions (minutes/year)	178.9	146.78	130.43	108.25	103.92
SAIDI aggregate value (minutes/year)	350.00	300.71	286.03	240.46	238.43

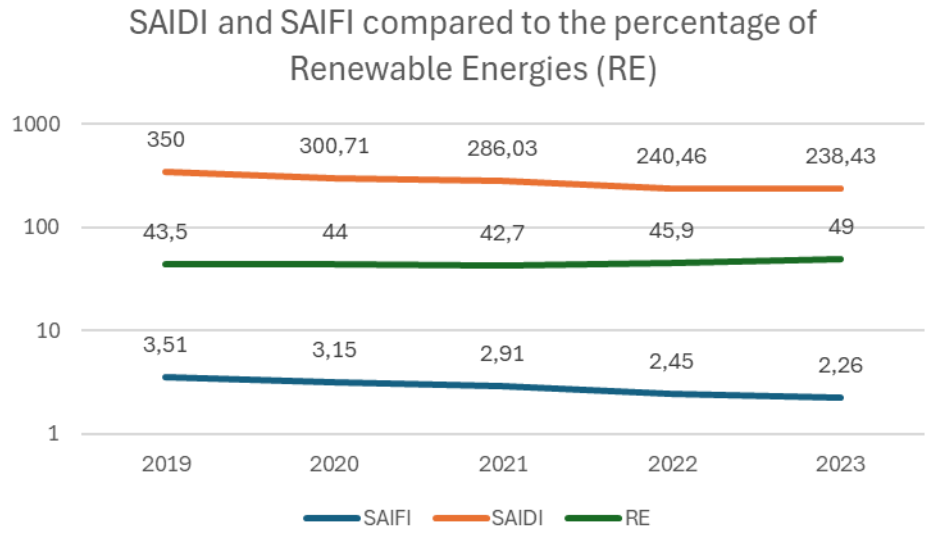
According to the analysis carried out, in the period 2019 – 2023 a slight improvement in SAIFI and SAIDI values is observed for planned and unplanned outages.

Source: ANRE - REPORT ON THE ACHIEVEMENT OF PERFORMANCE INDICATORS FOR THE TRANSPORT, SYSTEM AND DISTRIBUTION SERVICES OF ELECTRIC ENERGY AND THE TECHNICAL STATE OF THE ELECTRIC TRANSPORT AND DISTRIBUTION NETWORKS - 2023 -

What are the major reasons and can you causally connect such changes with the increasing share of intermittent renewable generation?

The improvement of the quality indicators is due to the increase in the number of investment and maintenance works during the year, as well as the automation of the medium voltage network.

The proportion of renewable sources in the final gross consumption of electricity (RE %) increased insignificantly between 2019 and 2023. The trend during this period for the SAIFI and SAIDI indicators is decreasing; Therefore, the idea that "more renewables means more power outages" does not hold up.



Source: ANRE - REPORT ON THE ACHIEVEMENT OF PERFORMANCE INDICATORS FOR THE TRANSPORT, SYSTEM AND DISTRIBUTION SERVICES OF ELECTRIC ENERGY AND THE TECHNICAL STATE OF THE ELECTRIC TRANSPORT AND DISTRIBUTION NETWORKS- 2023
Data processed by ANRE based on reports submitted by economic operators

Did you design / implement measures to prevent from potential deterioration of network reliability performance related that the increasing share of intermittent renewable generation?

In the period 2019-2023, the concessionaire distribution operators carried out extensive investment programs through which a large part of the existing installations were refurbished and modernized.

The modernization and re-technological works concerned component equipment from stations, transformer stations or existing power lines, the component equipment benefited from successive investment works through which their technical parameters were improved.

ANRE developed and approved the PROCEDURE regarding the substantiation and approval of the development and investment plans of the transmission and system operator (TSO) and of the electricity distribution operators (DO).

The provisions of the procedure are applied by the TSO and by the DO of the electricity distribution service, for the transmission and substantiation of development and investment plans, as well as in the analysis carried out by ANRE for the approval of development plans and investments and the recognition of the investments made in the regulated tariffs.

Regarding the maintenance programs, in 2023, the maintenance works were carried out in proportion to 105 % of the total value of the annual plan of the DO, respectively 99 % for TSO.

Source: ANRE - REPORT ON THE ACHIEVEMENT OF PERFORMANCE INDICATORS FOR THE TRANSPORT, SYSTEM AND DISTRIBUTION SERVICES OF ELECTRIC ENERGY AND THE TECHNICAL STATE OF THE ELECTRIC TRANSPORT AND DISTRIBUTION NETWORKS - 2023 -

Did you design / implement measures to prevent from potential deterioration of network reliability performance related that the increasing share of intermittent renewable generation?-continuation

ANRE proposed to modify and complete the methodology for setting tariffs for the distribution service, starting with the 5th regulatory period, which begins on January 1, 2025. The draft order to modify the methodology is subject to public consultation - phase II.

Within the draft order, ANRE considered the introduction of a flexibility mechanism through which incentives are granted to facilitate innovation in areas such as flexibility and interconnection services.

Source: ANRE- Draft Order on the approval of the Methodology for setting tariffs for the electricity distribution service – phase II

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What is the role & potential of network flexibility in this context?

The role of network flexibility is the ability to ensure a balance between supply and demand, to maintain continuity in unexpected situations and to cope with the uncertainty of supply and demand.

What are the major challenges encountered so far?

In conventional power systems, flexibility has been ensured by providing reserves and planning power generation.

In the conditions in which the penetration of renewable energy has constantly increased, uncertainties have appeared regarding energy production and energy availability.

Meeting energy demands is a challenge for conventional power plants whose load must be reduced or stopped when renewable energy sources produce enough and restarted when renewable energy production is interrupted or insufficient.

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