Global Europe Results Framework Indicator Methodology Note

1. Indicator name
GERF 2.4: Renewable energy generation capacity installed (MW) with EU support
2. Technical details

Please use the information provided in OPSYS or the SWD.

Results Dashboard code(s): *65199*.

Unit of measure: *Megawatt (MW)*.

Type of indicator: *Quantitative (not qualitative) – Numeric (not percentage); Estimated ex-post (not actual, but not ex-ante either); Cumulative (not annual); Flow (not stock).*

Level of measurement: *Specific Objective – Outcome; Direct Output; Output.*

Disaggregations: *None*.

DAC sector codes: *23210 – Energy generation, renewable sources, multiple technologies*.

Main associated SDG: *7.2 By 2030, increase substantially the share of renewable energy in the global energy mix*.

Other associated SDGs: *3.9 environmental pollutants; 7.1 access to energy; 8.4 resource efficiency; 8.2 diversification and innovation; 9.1 sustainable and resilient infrastructure; 9.5 39 technology upgrade; 12.1 sustainable consumption and production; 12.2 sustainable management of natural resources; 13.2 climate measures; 13.3 climate capacity including mitigation***.**

Associated GERF Level 1 indicator: *1.3 Renewable energy share in the total final energy consumption (SDG 7.2.1)*.

Associated GERF Level 3 indicators:

3.1 Amount and share of EU-funded external assistance contributing to: (a) climate change (adaptation and mitigation), (b) protecting biodiversity, (c) combating desertification, (d) protecting the environment (Aid to Env)

3.4 Amount and share of EU-funded external assistance contributing to: (a) aid for trade, (b) aid for trade to LDCs, and (c) trade facilitation

3.5 Leverage of EU blending and guarantee operations financed by EU external assistance, measured as: (a) Investment leverage ratio, (b) Total eligible financial institution financing leverage ratio, (c) Private financing leverage ratio

3.13 Number and share of EU- external interventions promoting gender equality and women's empowerment

3.14 Number and share of EU-funded external interventions promoting disability inclusion

3.16 Amount and share of EU-funded external assistance qualifying as ODA

3. Policy context and Rationale

The European Union (EU) is dedicated to promoting sustainable development and addressing climate change as key elements of its policy framework, in alignment with the Paris Agreement and the European Green Deal. The Paris Agreement, established in 2015, seeks to limit global warming to well below 2°C above pre-industrial levels while striving to limit the temperature increase to 1.5°C. The European Green Deal, launched in 2019, outlines the EU's strategy for creating a sustainable economy by turning environmental and climate challenges into opportunities, ensuring a just and inclusive transition for all.

The 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs) includes a commitment to ensure access to reliable, affordable, sustainable and modern energy for all (SDG 7).

The New European Consensus on Development (SWD(2016)387) (Article 39)) has recognised energy as a key driver for sustainable development. Renewable energy was further emphasised as one of the BETS of the Staff Working Document on the "Empowering Development: Implementation of the new European Consensus on Development in energy cooperation"[1]

Transitioning to renewable energy sources is critical in reducing greenhouse gas (GHG) emissions, combating climate change, and enhancing energy security. Renewable energy technologies such as wind, solar, hydro, and biomass are key to decarbonizing the energy sector and reducing reliance on fossil fuels. Increasing the capacity for renewable energy generation is thus a central component of the EU's efforts to achieve climate neutrality by 2050 and to foster a resilient and sustainable energy system.

4. Logframe inclusion

If an intervention generates the result measured by this indicator, then it must be reported in OPSYS. Corporate targets have been set for the indicators used to monitor the Strategic Plan and the Multiannual Financial Framework (see Section 9). Progress towards these targets is reported annually in the Annual Activity Plan (for the Strategic Plan) and the Programme Performance Statements (for the Multiannual Financial Framework). These values are calculated by aggregating the results reported in OPSYS. These reports ultimately contribute to the Annual Management Performance Report submitted by the European Commission to the Council and Parliament during the annual budgetary discharge procedure. If targets are not met, explanations must be provided. Therefore, it is crucial that all results are recorded in OPSYS.

There are two ways of doing this:

1. Include the indicator directly in the logframe (recommended approach);
2. Match the indicator to the closest logframe indicator (only if the indicator was not

[1] https://ec.europa.eu/europeaid/empowering-development-implementation-new-european-consensus-development-energy-cooperation_en

originally included in the logframe and modification is not possible).

Why? The matching functionality in OPSYS only accommodates reporting current values and does not yet support encoding baselines and targets. This is a significant drawback because targets are a valuable piece of information, especially at the beginning of a Multiannual Financial Framework. Indeed, results take time to materialise as they are the last step in the chain, appearing only after programming, commitments, contracting, and spending have occurred. Targets allow to see what results are expected long before they materialise, which is reassuring to the different stakeholders concerned with accountability. **Therefore, include all corporate indicators directly in the logframe whenever possible, and reserve the matching functionality only for cases when this is not feasible**.

5. Values to report

The following values must be determined in line with the definitions provided in Section 6.

Baseline value: the value measured for the indicator in the baseline year. The baseline value is the value against which progress will be assessed. For GERF indicators, this value is usually zero**.** This is because the results being measured must be directly attributable to EU support; prior to the start of implementation, the specific intervention has not yet occurred and therefore cannot have generated a result. A non-zero baseline may only occur if the intervention is following up on work achieved by another intervention financed by the same instrument.

Current value:

- **For logframe indicators**: the most recent value for the indicator at the time of reporting. The current value includes the baseline value which is reported separately for logframe indicators in OPSYS.
- **For matched indicators**: the most recent value for the results achieved at the time of reporting since the start of implementation of the intervention. This value is obtained by taking the most recent value for the indicator at the time of reporting and subtracting off the baseline value which is not reported separately for matched indicators in OPSYS.

Current values will be collected at least once a year and reported cumulatively throughout the implementation period.

Final target value: the expected value for the indicator in the target year.

Intermediate target values (milestones). A tool has been developed in OPSYS to generate intermediate targets automatically[2].

[2] This has been done in the context of the Primary Intervention Questionnaire (PIQ) for the EAMR. Three new KPIs provide an overall assessment of ongoing interventions (current performance and future performance) and completed interventions (final performance). Scores will be calculated for all INTPA and NEAR interventions participating in the annual results data collection exercise.

- **For outputs**: the intermediate targets are generated using a linear interpolation between the baseline and target values because it is assumed that outputs materialise sooner and more progressively over implementation (than outcomes).
- **For outcomes**: the expected progression over the course of implementation will vary across interventions. During the creation of a logframe, the expected outcome profile must be selected (OPSYS offers four options[3]) and this selection triggers the generation of intermediate targets for all 30 June and 31 December dates between the baseline and target dates for all output and outcome quantitative indicators. All automatically generated intermediate targets values and dates can be subsequently modified by the Operational Manager or the Implementing Partner with the approval of the Operational Manager.

6. Calculation of values

Specify all assumptions made, list definitions for all technical terms, provide any relevant guidance on (double) counting, and include checklist for quality control.

The value for this indicator is calculated by counting the number of megawatts (MW) of renewable energy generation capacity installed with EU support, using the Technical Definitions and Counting Guidance provided below. Please double check your calculations using the Quality Control Checklist below.

Technical Definitions

Renewable energy refers to energy from renewable non-fossil sources, namely wind, solar (solar thermal and solar photovoltaic) and geothermal energy, ambient energy, tide, wave and other ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas, and biogas.

Both *off-grid and on-grid* energy generation may be counted, where off-grid means that the power generator is not connected to publicly or privately managed electricity utilities (the grid).

The *installed capacity* could be new, reconstructed, rehabilitated or upgraded. If the installed capacity is not new, only the additional installed capacity in comparison with the current

- *KPI 10* reflects the relevance, efficiency and effectiveness of ongoing interventions. The information on relevance is provided by the Operational Manager's response to a question in a survey. The information on efficiency and effectiveness is provided either by the logframe data, if sufficient data is available, or the response to a question in a survey, if not.
- *KPI 11* reflects expectations regarding the most probable levels of relevance, efficiency, effectiveness and sustainability that can be achieved by ongoing interventions in the future. In this case, all the information is provided by the Operational Manager's responses to questions in a survey.
- *KPI 12* reflects the relevance, efficiency and effectiveness of completed interventions. The information on relevance is provided by the Operational Manager's response to a question in a survey. The information on efficiency and effectiveness is provided by the logframe data if sufficient data is available, or the response to a question in a survey, if not.

[3] a. *steady progress*: The outcomes are achieved continuously throughout implementation; b. *accelerating progress*: The outcomes are achieved towards the end of implementation; c. *no progress until end*: The outcomes are mostly achieved at the end of implementation; d. *none of the above*.

available capacity should be reported for this indicator.

Capacity is the maximum output an electricity generator can physically produce, measured in megawatts (MW). Capacity is measured at the alternating current (AC) level because this is the type of electricity supplied to the grid and used by consumers.

Although most energy sources, such as wind and hydro, have their capacity measured in AC terms, solar panels generate direct current (DC) electricity which must be converted to AC using an inverter. Inverter losses and efficiencies vary, so the AC capacity gives a more accurate representation of the power that is actually available for use. However, this requires converting the solar capacity that is usually expressed in DC terms (sometimes noted MW_{DC} or more often referred to as megawatts peak and noted MWp, or just simply MW) to capacity expressed in AC terms (sometimes noted MW_{AC} but more often just simply MW). For solar energy, assume that the capacity is expressed at the DC level, unless explicitly indicated otherwise.

Here is a summary of the different units used to measure power output and energy in the electric industry. For this indicator, the correct unit is megawatts.

- **Megawatts (MW)**: Measures the instantaneous power output of a system. It represents the rate at which energy is generated (or consumed), usually in millions of watts (1 MW = 1 000 000 watts). Note that this unit of measure is used to measure capacity in generating both DC and AC electricity. Sometimes a subscript is used to distinguish between the two (**MW_{DC}** or **MW_{AC}**), but this is not the usual practice. A special case is the term **megawatts peak (MWp)** which specifically refers to the maximum power output of a solar photovoltaic system under ideal conditions, such as direct sunlight and optimal temperature. It represents the system's theoretical maximum power generation capacity at the DC level.
- **Megawatt-hours (MWh)**: Measures the amount of energy generated (or consumed) over a period of time, typically an hour. It represents the total energy produced or used, usually in millions of watt-hours (1 MWh = 1 000 000 watt-hours).

<u>Counting Guidance</u>

1. Beware that blending operations and guarantees often finance actions that result in additional renewable energy generation capacity INDIRECTLY, in two different ways. 1. Instead of financing a specific intervention that will directly result in additional renewable energy generation capacity, the EU provides technical assistance which includes feasibility studies of interventions, some of which are expected to result in additional renewable energy generation capacity. 2. Instead of financing a specific intervention that will directly result in additional renewable energy generation capacity, these leverage-based mechanisms involve setting up a fund which will provide financing to a portfolio of interventions which are not yet known, some of which are expected to result in additional renewable energy generation capacity. In both cases, the monitoring will involve reporting upon the expected results to be generated by the interventions. Unfortunately, these EXPECTED results are often reported using the same indicators as the ACTUAL results. This is incorrect and must be avoided. Reporting results for this indicator must take place only after the

intervention is under implementation and the results have already materialised.

2. The estimated renewable energy generation capacity should be reported once the relevant capacity has already been installed, most probably at the end of implementation.
3. The unit of measure is megawatts (MW) and NOT kilowatts (kW) or gigawatts (GW): 1 MW = 1 000 kW; 1 MW = (1 / 1 000) GW. Please take great care in determining the right number to report because it is easy to make a mistake with unit conversion (many are made), and the resulting mistakes usually end up being very large. It is highly recommended to use an online unit converter to avoid careless errors: https://www.unitconverters.net/. Record the calculations in the calculation method field to facilitate quality control.
4. The unit of measure is megawatts (MW) and NOT megawatt-hours (MWh). MWh can be converted to MW using the following formula:

   MW = MWh / (capacity factor * 8760 hours/year)

   If the capacity factor is not available, then use the appropriate value from the following table containing global weighted averages for 2022 from the IRENA database:

Renewable energy generation technology	*Capacity factor*
Bioenergy	72%
Concentrated solar power	36%
Geothermal	85%
Hydropower	46%
Offshore wind	42%
Onshore wind	37%
Solar photovoltaic	17%

   Record the calculations in the calculation method field to facilitate quality control.

5. The unit of measure is megawatts (MW) and NOT megawatts peak (MWp). MWp can be converted to MW using the following formula: MW = MWp / (inverter efficiency). If inverter efficiency is not available, then you may assume that it is 100% and just report the value for MWp as MW. Record the calculations in the calculation method field to facilitate quality control.

Quality Control Checklist

1. Has the indicator been included directly in the logframe? Reserve the OPSYS matching functionality only for cases when this is not feasible.
2. If the indicator has been included directly in the logframe, does the current value

include the baseline value? If the indicator has been matched to a logframe indicator, does the current value *exclude* the baseline value?

3. Has implementation begun? If not, report the GERF value as zero. Note that a feasibility study or the inclusion of an intervention in a portfolio to be financed do not count as implementation.
4. Is the energy generated using renewable non-fossil sources? Non-renewable energy generation cannot be counted.
5. Is the GERF value expressed in MW? Good! Values in kW and GW must be converted to MW. Values in MWh, kWh and GWh must be converted to MW. Values in MWp should be converted to MW, if possible.
6. Is the GERF value an absolute value? Good! Percentages must be converted to absolute values.
7. Have all calculations been recorded in the calculation method field? Has all relevant information, including the geographic location of results, been reported in the comment field?

7. Examples of calculations

Example 1

An intervention to improve electricity access supports the building of a small hydroelectric plant in a mountainous region of country X. In the feasibility report it is indicated that the expected power output of this plant will be 2.9 MW. After the construction of the plant is finalised, the actual energy generation capacity installed is reported to be 2.8 MW in the final report submitted by the Implementing Partner, as indicated in the reception acts for the works undertaken. This is the number to be reported after the construction has been finalised.

Example 2

An intervention to improve electricity access supports the installation of biodigesters in country Y.

In the annual progress report, the following information is reported:

	Baseline value (2021)	Current value (2022)	Target value (2023)
Energy supplied to households using newly installed biodigesters	4 094 935 kWh/year from biodigesters in use *(80% of biodigesters installed)*	5 420 753 kWh/year from biodigesters in use *(80% of biodigesters installed)*	39 741 200 kWh/year
Energy supplied to schools	0 kWh/year	624,413 kWh/year	7 708 800 kWh/year

The energy production values for households corresponds to 80% of the full capacity[4]. GERF 2.4 measures capacity, so this must be calculated:

Baseline value: 4 094 935 / 0.8 kWh/year = 5 118 668.75 kWh/year

Current value: 5 420 753 / 0.8 kWh/year = 6 775 941.25 kWh/year

The increase in energy production measured at capacity can then be calculated:

6 775 941.25 – 5 118 668.75 = 1 657 272.5 kWh/year

The energy production values for schools must be added to this value:

1 657 272.5 + 624 413 = 2 281 685.5 kWh/year

Energy production in MWh must be converted to capacity[5] in MW, using the relevant capacity factor from the counting guidance in Section 6:

2 281 685.5 kWh/year / (0.72 * 8 760 hours/year) = 361.48 kW

Finally, kW must be converted to MW:

361.48 kW / 1 000 kW/MW = 0.36 MW

8. Data sources and issues

Please use the data source categories specified in OPSYS.

EU intervention monitoring and reporting systems: *Progress and final reports for the EU-funded intervention; ROM reviews; EU-funded feasibility or appraisal reports*.

Include any issues relating to the availability and quality of the data.

9. Reporting process & Corporate reporting

The data collected on this indicator will be reported in OPSYS by the Implementing Partner. The values encoded in OPSYS will be verified, possibly modified and ultimately validated by the Operational Manager. Once a year the results reported will be frozen for corporate reporting. The methodological services in HQ that are responsible for GERF corporate reporting will perform quality control on the frozen data and aggregate as needed to meet the different corporate reporting requirements.

Please replace o *with* ● *for the relevant items below.*

This indicator will be reported upon in the following contexts:

- ● *NDICI via the Annual Report*
- ● *NDICI via the 2021-27 Programme Performance Statements*

[4] There are two related definitions of capacity used in this example. Here, we are referring to the full use of all biodigesters installed.

[5] Continuing from the previous footnote, here we are referring to the maximum amount of energy that the biodigesters can generate at any given point in time.

- *INTPA Strategic Plan 2020-24 via the Annual Activity Report*
- *INTPA Strategic Plan 2025-29 via the Annual Activity Report*
  - *NEAR Strategic Plan 2020-24 via the Annual Activity Report*
  - *ENEST Strategic Plan 2025-29 via the Annual Activity Report*
  - *MENA Strategic Plan 2025-29 via the Annual Activity Report*
  - *FPI Strategic Plan 2020-24 via the Annual Activity Report*
  - *FPI Strategic Plan 2025-29 via the Annual Activity Report*

This indicator has been included in the following other Results Measurement Frameworks:

- *EFSD+*
  - *GAP III*
- *IPA III*
- *TEI-MORE*

10. Baseline alignment and Annualisation

Corporate reports most often cover different timeframes. Only rarely does the 7-year Multiannual Financial Framework (MFF) start in the same year as the 5-year Strategic Plans. Because the MFF drives the funding for these interventions, it serves as the primary baseline for data collection. To report against other cycles with different start dates, results must first be annualised and then re-cumulated starting from the required baseline year.

The annualisation method depends on the type of indicator, which can be found in Section 2:

- **Flow Indicators** (discrete achievements): These measure "one-off" events or new beneficiaries reached within a specific timeframe (e.g., Number of people trained). To find the annual result, we calculate the variation (the difference between the cumulative total at the end of the year and the beginning of the year).

  Example: If a project reached 500 total people by 2024 and 800 by 2025, the 2025 annual result is 300 (the new results generated that year).

- **Stock Indicators** (continuous support): These measure an ongoing state or sustained support (e.g., Number of countries supported). To find the annual result, we take the total cumulative value at the end of the year, as this represents the full extent of the EU's active footprint.

  Example: If the EU supports 10 countries in 2024 and continues supporting those same 10 in 2025, the 2025 annual result remains 10 (the total "stock" of support active that year).

  In this case, the result is often achieved at the onset of the intervention and remains ongoing throughout implementation. When re-baselining for a new corporate cycle, these results are maintained rather than recalculated as variations. The annual value is the total number of entities under active support at the end of the reporting year, regardless of whether that support commenced before or after the new baseline year.

11. Other uses

GERF 2.4 can be found in the following thematic results chains:

- Sustainable cities

GERF 2.4 can be found in the following groups of EU predefined indicators available in OPSYS, along with other related indicators:

- Energy
- Sustainable cities

For more information, see: Core indicators for design and monitoring of EU-funded interventions | Capacity4dev (europa.eu)

External bodies using the same or similar indicator:

- African Development Bank: “New renewable power capacity installed (MW)”
- Asian Development Bank: “Installed energy generation capacity (megawatts) Renewable”
- World Bank: "Generation capacity of renewable energy (MW)"

12. Other issues