Clean Energy: Installed capacity (MW) as a result of ICF

KPI 7 Methodology Note
November 2018
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## Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>BAU</td>
<td>Business as Usual</td>
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<tr>
<td>CCS</td>
<td>Carbon Capture and Storage</td>
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<td>CSP</td>
<td>Concentrating Solar Power</td>
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<tr>
<td>DFID</td>
<td>Department for International Development</td>
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<td>HMG</td>
<td>Her Majesty’s Government</td>
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<td>ICF</td>
<td>International Climate Finance</td>
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<td>IEA</td>
<td>International Energy Agency</td>
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<td>IRENA</td>
<td>International Renewable Energy Agency</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
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<tr>
<td>M&amp;E</td>
<td>Monitoring and Evaluation</td>
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<tr>
<td>MW</td>
<td>Megawatt</td>
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<tr>
<td>MWe</td>
<td>Megawatt (output of electrical power)</td>
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<tr>
<td>MWt</td>
<td>Megawatt (output of thermal power)</td>
</tr>
<tr>
<td>PV</td>
<td>Photovoltaic</td>
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<tr>
<td>RE</td>
<td>Renewable Energy</td>
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<tr>
<td>SDGs</td>
<td>Sustainable Development Goals</td>
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<tr>
<td>SDP</td>
<td>Single Departmental Plan</td>
</tr>
<tr>
<td>SREP</td>
<td>Scaling Up Renewable Energy in Low-Income Country</td>
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<tr>
<td>tCO₂e</td>
<td>Tonnes of Carbon Dioxide Equivalent</td>
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Clean Energy: Installed capacity (MW) as a result of ICF

Rationale

This indicator measures the increase in clean energy “installed capacity” from ICF programmes/projects. Low or zero carbon energy generation can partially or fully displace fossil fuel energy generation, depending on the type and scale of technology used. This indicator demonstrates progress towards a transformed clean energy supply.

This indicator monitors the “installed” or full-load capacity of clean energy, which is different from monitoring energy generation. To distinguish between high-quality and low-quality instances of clean energy technology, evaluators should assess the actual clean energy generated from their programmes/projects.

Summary table

Table 1: KPI 7 summary table

<table>
<thead>
<tr>
<th>Units</th>
<th>Megawatt (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disaggregation summary</td>
<td></td>
</tr>
<tr>
<td>(click for full details)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Technology type</td>
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<tr>
<td></td>
<td>• On-grid vs. Off-grid</td>
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<tr>
<td></td>
<td>• Rural vs. Urban</td>
</tr>
<tr>
<td>Headline data to be reported</td>
<td>Installed capacity of clean energy (MW) installed by ICF programmes in current year</td>
</tr>
<tr>
<td>Latest revision</td>
<td>September 2018.</td>
</tr>
<tr>
<td></td>
<td>The main revisions to this Methodology Note are:</td>
</tr>
<tr>
<td></td>
<td>• Step-by-step methodological guidance</td>
</tr>
<tr>
<td>Timing issues</td>
<td>When to report: ICF programmes will be required to report ICF results once each year in March. Please bear in mind how much time is needed to collect data required to report ICF results and plan accordingly.</td>
</tr>
<tr>
<td></td>
<td>Reporting lags: Your programme may have produced results estimates earlier in the year, for example during your programme’s Annual Review. It is acceptable to provide these results as long as they were produced in the 12 months preceding the March results commission. In some cases, data required for producing results estimates will be available after the results were achieved – if because of this, results estimates are only available more than a year away from when results are delivered, this should be noted in the results return.</td>
</tr>
<tr>
<td>Links across the KPI portfolio</td>
<td>KPI 7 has strong links with other KPIs. It contributes to KPI 6 (tCO2e). See KPI 6 Methodology Note for details of how to convert KPI 7 results into tCO2e. KPI 7 should also be linked to KPI 2 (energy access) and KPI 9 (clean technologies). KPI 7 is most useful when it is able to demonstrate transformational potential, linking to KPI 15. Most ‘clean energy’ projects are more about demonstration benefits and linking to policy or market transformation, and may not necessarily deliver the lowest cost or largest volume of MW.</td>
</tr>
</tbody>
</table>
Technical Definition

This indicator measures total clean energy "installed capacity" (in MW) from ICF projects/programmes, including installed capacity from grid-connected and off-grid networks. This KPI's key definitions follow:

- ‘Clean energy’: low and zero carbon energy generation sources, including but not limited to the following technologies: wind power, solar photovoltaic (PV), concentrating solar power (CSP), marine energy (including wave energy and tidal energy), hydropower, ‘clean coal’ using carbon capture and storage (CCS), second generation biofuels¹, clean cookstoves, and biomass, boilers, and kilns for process heating/drying. It does not include nuclear energy.
- ‘Installed capacity (MW)’: the rated power capacity of the clean energy technology when operational – in Megawatts (MW), either in electrical power (MWe) or thermal power (MWt). Power installations must be operational (e.g. technology is installed and clean energy is being generated) for measurements to be included.
- ‘Grid-connected’: clean energy generation projects that are feeding into a national or regional grid. These projects will typically be utility-scale, in the order of tens or hundreds of MWs.
- ‘Off-Grid’: clean energy generation technologies that do not feed into a national grid, but may feed into localised energy grids if that localised energy grid is not connected to the national grid. Examples may include a district heat network within an industrial estate, or solar PV projects with battery storage serving a small number of buildings (i.e. mini-grids or micro-grids).

Methodological Summary

The diagram below shows a step-by-step guide on how to report on KPI 7. These steps are explained further in the Methodology section immediately below.

Figure 1: KPI 7 Methodological Summary

<table>
<thead>
<tr>
<th>ICF KPI 7: Clean energy installed capacity (MW) from ICF support</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Check intervention fits within definition of clean energy e.g. wind power</td>
</tr>
<tr>
<td>2. Obtain data from project-level M&amp;E (i.e. project implementer provides info on installed clean energy capacity)</td>
</tr>
<tr>
<td>3. Take account of baseline. E.g. if recipient country govt planned to install 30MW: 100MW - 30MW = 70MW</td>
</tr>
<tr>
<td>4. Calculate pro-rata share where HMG only funded part of a programme E.g. 70 *0.5 = 35MW</td>
</tr>
<tr>
<td>5. Report data in disaggregated categories: Technology type, on vs off grid, rural vs urban. E.g. 35MW on grid wind energy, rural</td>
</tr>
<tr>
<td>6. Where possible use a third party (e.g. independent evaluator) to verify the capacity installed. IEA country data can also be used to assess whether the share of clean energy installed is in the right proportion</td>
</tr>
</tbody>
</table>

Methodology

1. **Check that the intervention fits within the definition of “clean energy”, and classify whether on-grid or off-grid.**

Definitions of clean energy and on-grid/ off-grid are in the “Technical Definition / Methodological Summary” section above. [See example.](#)

¹ Second-generation biofuels, also known as advanced biofuels, are fuels that can be manufactured from various types of non-food biomass (plant materials and animal waste used especially as a source of fuel)
2. **Obtain data from project/programme-level M&E**

Obtain information on the installed capacity of clean energy (in MW) from the project implementer (usually verified by a certified energy expert). Obtain information on whether this falls in urban/rural areas if not already known. **See example.**

3. **Subtract the baseline (counterfactual/additionality)**

To compare results with the counterfactual and account for additionality, the projected level of installed capacity of clean energy without the ICF intervention (i.e. the baseline) should be subtracted from the total. If you are not able to estimate what the counterfactual is, you can use an ‘adjustment factor’, which should be high (e.g. 95%) if you are confident your results are additional, and your data quality is good. A lower ‘adjustment factor’ (e.g. 50%) should be used if you have a lot of uncertainty about the quality of data, and additionality of results, for example if there are other partners in the area undertaking similar activities. **See example.**

4. **Calculate pro-rata share where HMG only funded part of a programme (attribution)**

If HMG is the sole investor in a project or programme, it should assume all responsibility for any results (where the results are assessed to be additional and where HMG has a causal role).

In many instances HMG may be acting alongside one or more other development partners or multilateral bodies that also provide funding or support for projects or programmes – and where each partner has played a role towards the results. In these cases, HMG should only claim responsibility for the portion of results that can be attributed to its support.

**If HMG is only funding part of a project/programme**, reporters should calculate results as a pro-rata attributable share based on the value of all public co-financing towards the project.

In instances where ICF programmes leverage (public or private) finance that helps to deliver programme results, please contact your central ICF teams on how to address attribution of results delivered. See methodology notes for KPI 11 and 12 for definitions (of public, private, and leveraged finance and co-finance).

**If HMG is contributing to a fund**

‘First best’ approach: use project/programme level attribution (as above)

In this approach, reporters calculate results attributable to the UK for each project/programme implemented by the fund using the project/programme level attribution approach, and then sum results across all projects/programmes in the fund to reach total UK attributable results.

This approach allows for recognition of other co-finance contributions at the project/programme level. However, this approach may be complicated or not always possible in practice as it relies on (i) full information about project/programme level inputs, (ii) additional work to calculate results at the project/programme level.

‘Second best’ approach: use fund-level attribution

Reporters apply fund-level attribution (i.e. at point of UK investment) for reporting results. i.e. results should be shared across all donors that contribute to a fund. All results are attributable to the relevant fund (e.g. CIFs, CP3, GAP) regardless of whether these funds blend with other sources of finance in implementing projects at levels below the point of UK investment. This approach assumes that any further finance towards the project is counted as leveraged. Where this is known to not be the case, a

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2 See Annex 3 for definition of counterfactual and additionality.
more conservative approach to attribution may be appropriate, please contact your central ICF teams on further guidance.

While this is the less preferred approach as it does not recognise additional contributions at the project/programme level, it may be more practical to implement where full data on project/programme level inputs is not available.

**Note:** The distinction between attribution at the project/programme level and at the fund level (or at point of UK investment) is only an issue where the UK is investing in funds where there are multiple investment levels. [See example.](#)

### 5. Disaggregate the data

Disaggregate according to the following parameters:
- Technology type (e.g. wind energy)
- On-Grid vs. Off-Grid
- Rural vs. Urban

[See example.](#)

### 6. Where possible, use a third party

(e.g. independent and certified energy & emissions evaluator) to verify the capacity installed, as the monitoring and measurement of clean energy installed capacity can sometimes be complex. See Quality Assurance sub-section of Data Management section below.

[See example.](#)

## Worked Example

**Worked example 1**

Based on a fictitious programme where ICF part funds two large wind farms in Lake Turkana, in collaboration with the Danish Government, as part of a clean energy programme in Kenya. The project is expected to contribute to the regional grid.

1. **Clean energy definition, & on or off-grid:** This wind farm fits within the definition of “clean energy”. It is classified as on-grid (definitions found in the “Technical Definition”).

2. **Installed capacity of clean energy** (in MW), & urban or rural: Data on installed capacity of clean energy (in MW) obtained from a local certified energy expert. This project is rural, as all project activities occur around the rural areas of Lake Turkana.

3. **Subtract the baseline:** To determine the installed capacity of this DANIDA/DFID funded programme the programme’s M&E team requested information on the wind farm’s size from the project implementer - the Government-owned energy utility. It is 100MW. However, the government-owned energy utility was already considering installation of wind turbines, and had approved investment for 30MW capacity, with final siting to be approved. The Government’s original target of 30 MW is taken as the business as usual ‘baseline’. This was not installed separately as it was crowded out by the ICF intervention.

4. **Calculate attribution:** Subtract the baseline data of 30MW installed capacity of clean energy without the intervention from the ICF target (assuming the host government’s stated willingness
to invest prior to DFID engagement): 100MW – 30 MW = 70MW. As DFID funded 50% of the wind farm, 35MW was attributed to the UK.

5. **Disaggregate data**: The data was disaggregated as follows:
   - Installed Capacity: 35MW
   - Technology: Wind
   - On-Grid vs. Off-Grid: On-grid
   - Rural vs Urban: Rural

6. **Verification expert**: A certified energy & emissions evaluator was used to verify the capacity installed.

### Data Management

**Data Sources**
Some data will be available directly from programmes, for example from project-level M&E. Ideally, the duty to collect data should be the responsibility of recipients of ICF funding, or a third-party auditing entity. This information will need to be kept up to date by liaising with programme managers.

IEA World Energy Outlook\(^3\) data could be used to assess whether the share of clean energy generated is in the right proportion. For example, if we estimate that the new energy generation is 10% of the country’s energy, we would expect this to match up with 10% of the IEA's energy generation figure. Country offices are advised to comment on the source of the underlying IEA data (if known), and its reliability.

**Most Recent Baseline**
The baseline should reflect project status prior to ICF funding, along with anticipated projections of what would happen without the ICF (i.e. BAU). For long running programmes, the baseline should be taken as 2015 unless otherwise stated. The baseline should align with the economic appraisal in the project design.

**Data Issues / Risks and Challenges**
To avoid reporting errors, country offices are encouraged to rely on independent third-party verification of installed capacity.

**Quality Assurance**
All results estimates should be quality assured before they are submitted during the annual ICF results return, ideally at each stage data is received or manipulated. For example, if data is provided by partners, this data should be interrogated by the ICF programme team for accuracy, or at the very least data should be sense checked for plausibility. When converting any provided data into KPI results data, quality assurance should be undertaken by someone suitable and not directly involved in the reporting programme. Suitable persons vary by department; this could be an analyst, a results / stats / climate and environment adviser / economist.

Central ICF analysts will quality assure results that are submitted and this may lead to follow up requests during this stage.

To avoid inherent reporting biases, it is strongly recommended that, where possible, data collection is undertaken by a third party that is not directly involved with implementing the project. Where not

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\(^3\) [https://www.iea.org/weo2017/](https://www.iea.org/weo2017/)
possible, consider using independent evaluations or alternative means to periodically check the validity of results claims.

Any concerns about data quality or other concerns should be raised with your departmental ICF analysts and recorded in documentation related to your results return.

**Data Disaggregation**

- Technology type
- On-Grid vs. Off-Grid
- Rural vs. Urban
Annex 1: Further worked examples

**Worked example 2**

Based on a fictitious programme where ICF has part-funded two CSP plants, one in India and one in China, in collaboration with the German government.

1. **Clean energy definition, & on or off-grid:** This CSP project fits within the definition of “clean energy”. Energy generated is expected to contribute to the existing local area grid, so the project is classified as on-grid (definitions found in the “Technical Definition / Methodological Summary”).

2. **Installed capacity of clean energy (in MW), & urban or rural:** Data on installed capacity of clean energy (in MW) was obtained from a local certified energy expert. This project is rural, as all project activities in both target countries occurred in rural areas.

3. **Subtract the Baseline:** To determine the installed capacity of the programme, the M&E team requested information on the CSP plant’s size from the project implementers: 75MW CSP plant + 50MW CSP plant = 125MW.

4. **Calculate Attribution:** Subtracting the baseline data of 25MW installed capacity of clean energy without the intervention (assumed from host government’s stated willingness to invest prior to DFID engagement). 125MW – 25 MW = 100MW.

As DFID funded 40% of the wind farm, 40MW was attributed to the UK.

5. **Disaggregate Data:** The data was disaggregated as follows:
   - **Installed capacity:** 40MW
   - **Technology:** Concentrated Solar Power
   - **On-Grid vs. Off-Grid:** On-grid
   - **Rural vs Urban:** Rural

6. **Verification Expert:** A certified energy & emissions evaluator was used to verify the capacity installed.

**Annex 2: Comparability and synergies with other external indicators**

Other major players (particularly the Climate Investment Funds), as well as national governments and multilaterals (notably IRENA), already regularly report on installed clean capacity, and increases in renewable energy installations.

KPI 7 was reintroduced as a Single Departmental Plan (SDP) indicator demonstrating DFID’s results in its 2018 Annual Report. Renewable energy, rather than “clean energy” is used in the SDG framework. So, indicator 7.2 reads: "By 2030, increase substantially the share of renewable energy [not electricity] in the global energy mix." KPI 7 data could readily be converted to ‘SDG 7 contribution’ data, with minor checking and corrections for any differences in definition/coverage between clean energy and renewable energy.
Annex 3: Definitions of key methodological terms used across Methodology Notes

As different HMG departments may use the same terminology to refer to different concepts, this section sets out definitions for key terms used across Methodology Notes for ICF KPIs. The terms used in these notes refer to the concepts as defined below, rather than to alternative, department-specific usages of these terms.

**Counterfactual**: The situation one might expect to have prevailed at the point in time in which a programme is providing results, under different conditions. Commonly, this is used to refer to a ‘business as usual’ (BAU) counterfactual case that would have been observed if the ICF-supported intervention had not taken place.

**Additionality**: Impacts or results are additional if they are beyond the results that would have occurred in the absence of the ICF-supported intervention. That is, results are additional if they go beyond what would have been expected under a BAU counterfactual.

**Causality**: Causality refers to the assessment that one or more actors bear responsibility for additional results or impacts, because of funding provided through the ICF or actions taken under an ICF programme. Multiple development partners may be assessed to have played a causal role in delivering results.

**Attribution**: Attribution refers to allocating responsibility for impacts or results among all actors that have played a causal role in programmes that deliver additional results. Results are commonly attributed to causal actors based on their financial contributions to programmes (though there may be cases where greater nuance is needed, as with KPI 11 and KPI 12).
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