Indicators for Renewable Energy – GEF Experience

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Introduction to GEF

- Established in 1991, 183 member countries
- Total Funding: $ 16 billion, $ 93 billion co-financing
- Climate change: 1300 projects, $ 4.7 billion
  - $ 1.5 b, $ 350 m for RE projects (over 50) in Americas
  - 25 RE projects completed, 18/24 rated satisfactory
  - Wind, hydropower, biomass, photovoltaic, solar-thermal, geothermal, RE represented in GEF portfolio in Latin America and Caribbean
  - Recent RE projects in the region focus more on biomass based energy

Indicators used in GEF

- M&E at Program level
  - Few agreed indicators for aggregation of results
  - Used by all the projects for which they are relevant
  - Adequately cover different levels of the programs causal chain

- M&E at Project level
  - All relevant national/program level indicators used
  - Additional indicators relevant for the project specified
  - Should adequately cover different levels of the projects causal chain

Tracking Renewable Energy Program

- Indicators to track
  - **Inputs:**
    - GEF funding
    - Co-financing and sources.
  - **Outputs**
    - Increase in installed capacity per technology
    - Policy, guidelines, regulations supported per sector.
  - **Outcomes and impact**
    - GHG Benefits - direct and indirect (replication)
    - Life time energy production per technology
    - Number of users per technology, etc.

Indicators used in GEF RE projects in Americas (1)

Promotion and Development of Local Solar Technologies in Chile. GEF Funding: $2.7 m; Co-financing: $31.8 m, IADB

- **Objectives:**
  - Promote solar technology transfer and capacity building;
  - Develop projects to pilot solar technologies (Solar Water Heating, and Concentrated Solar Power)
  - Support for incentives, financial mechanisms and public awareness.
- **Project Results indicators:**
  - CO2 emissions avoided directly and indirectly by technology
  - Solar Capacity Installed (Solar water heating, concentrated solar power)
  - Electricity generated with solar technologies
  - Thermal energy generated
  - Number of people benefitting from installed technologies, etc.

Indicators used in GEF RE projects in Americas (2)

Sustainable business models for biogas production from organic municipal solid waste in Argentina. GEF Funding: $2.8 m, Co-financing: $12.6 m, UNDP

- **Objectives:**
  - To introduce biogas technologies for energy generation as part of the National Strategy for integrated municipal waste management.
- **Project Results indicators:**
  - CO2 emissions avoided directly and indirectly (through replication);
  - installed electricity generation capacity;
  - annual volume of electricity produced;
  - number of people served by the electricity produced by pilot biogas plants and replication;
  - Number of municipalities with sewage-based biogas projects;
  - number of people trained in biogas energy generation;
  - financing mobilized for investment in sewage-based biogas; etc.

Common errors in measuring GHG relevant indicators in GEF RE projects

GHG methodology concern	Type of error
Lack of consistency	Inconsistent approaches used to estimate GHG benefits making comparison difficult.
Installed Capacity	Over or under estimation
Capacity factor (power that can be generated from a MW of installed capacity)	Over or under estimation: unrealistic estimate of capacity factors used.
Operating hours	Calculation errors
System size	Digits
Emission factors: CO_2 emission reduced per unit of fuel /electricity	Using marginal or Average emission factors; use of outdated emission factors
Benefit period	Inconsistent with methodology or comparison between technologies.

Source: Climate Change Mitigation Impact Evaluation, GEF IEO, 2014

Ensuring quality of information

- Use of prescribed standard methodologies to measure changes in indicators
- What, why, when, who will measure
- Budgeting M&E activities
- Post completion arrangements for tracking changes in indicators

Relevance for the Parliamentarians

- Input/output indicators – useful for oversight and supervision
  - Reporting on use of inputs, meeting milestones, outputs
  - Identifying and addressing implementation barriers
  - Is program/project being well implemented – corrective measures
- Results Indicators – outcome of public expenditure
  - Benefits, e.g. GHG emission avoidance, energy production, installed capacity, air quality, health improvement, employment, etc.; and, unintended effects
  - Effects on vulnerable population
  - Value for money: resources used/ actual costs
  - Learning and Future direction: replicate, change, curtail, abandon?