STANDARDISED APPROACH IN NEW DRAFT SMALL SCALE CDM METHODOLOGY FOR GRID RURAL ELECTRIFICATION

PRESENTATION AT UNFCCC STANDARDISATION WORKSHOP JUNE 2011

BY FELICITY SPORS (FSPORS@WORLDBANK.ORG)

THANKS TO SUBSTANTIAL SUPPORT AND INPUTS FROM: HARI GADDE (hgadde@worldbank.org) ALEXANDRA LE COURTOIS AND FOR THE WORK BY RANDAL SPALDING-FECHER, POYRY MANAGEMENT CONSULTING

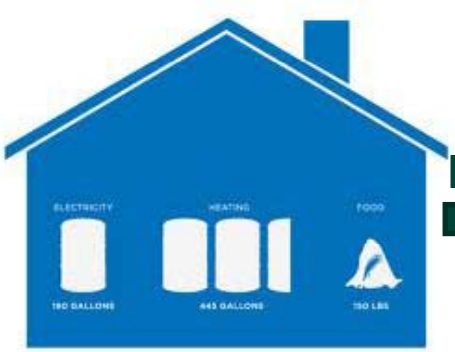
Contents

- Methodology overview
- Emission Sources (Baseline and Project)
- Leakage
- Monitoring
- Summary of standardised aspects in the methodology.
- Questions about the approach
- Next steps – applying the normative approach ?

Overview of methodology

- **Goal of methodology** – The project activity will displace energy from stand-alone power generators, existing mini-grids and traditional fuel uses with more efficient power generation from an interconnected grid or new local mini-grid. The aims is thus to increase access to electricity in rural areas reduce the green house gas emissions with the support of carbon finance
- **Difference to other approved meths**: is the treatment of fuel use and the implementation of the concept of suppressed demand in the baseline.
- **Specific applicability criteria**
  - Rural electrification: remote areas at least 50km (or less) from integrated grid
  - Installation of high efficient technologies (for lighting), consistent with the objective of increasing electricity access
- **Status of development of new meth:** Draft Final methodology is circulated to selected peer reviewers and awaiting for comments.
  - Peer reviewers include both external (DFID, UNDP, UNEP RISOE, GERES, SSN, Orbeo, LDC DNAs) and internal to the World Bank
  - Underlying project is being finalized very shortly
  - Methodology is expected to be submitted to SSC-WG in next 2-3 month

Baseline Emission Sources



Elec consumption

30%

70%

Residential lighting. Fixed based on service level equi. to 2 lights of ~1700-1800 lumens each, or 240 lux at typical working distance. Fuel kerosene. 0.75 tCO2e/year/HH.

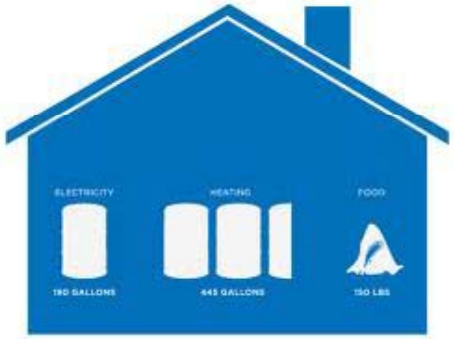
Other HH electrical appliances: Assumed to be small scale (e.g. <15 kW) generators or car batteries. Default EF:
- Diesel generator = 2.4 tCO2/MWh
- Car battery – EF a/c literature.

Elec. Consumption

Other customers (businesses and services) Assume diesel generator is displaced

Project Emission Sources

HH emissions capped to 250 kWh (RUAL)



CO2 emissions from the increase (due to the project activity) of elec. generation in power plants connected to the grid **or** the mini-grid.

a) New mini grid

Tool to calculate baseline, project and/or leakage emissions from electricity consumption used to calculate the mini-grid EF.(i.e. Is weighted average emissions from the mini-grid).

b) Extension of grid

As AM45, emissions are electricity sent out from the grid Xgrid EF. T&D losses are considered

Leakage

- The assessment of land use change impacts is taken directly from AM45.
- Leakage from transfer of equipment is taken directly from AMS I.A and AMS I.D.
- Continued use of old equipment – e.g. wick lamps used during power outages, in outdoor areas, or as stand by. Considered insignificance since the consumption of these lamps is relatively low (compared to the pressure lamps used to calculate the baseline) and given the much higher cost of lighting with wick lamps versus CFLs, their use would be minimal.
- Free riders is not relevant here. Households might be able to buy their own LED lamps without CDM incentives but they cannot generally pay for their own grid or mini-grid electrification.

Monitoring

- **Electricity consumption** measured for all facilities & groups of households or a conservative default flat rate.
- **Total consumption** compared to total electricity generated in a mini-grid or sent from the integrated grid. Also calculate the technical T&D losses of project.
- **Household lighting baseline is determined ex-ante** with conservative parameters, no monitoring of lighting use. Simply need to confirm the households have access to electricity lighting with high efficiency bulbs.
- **Household TV, radio, and other appliances,** total household electricity use is monitored for groups of households. A share is allocated to TV and radio using fixed ex-ante (either measured or default) share of consumption parameters.
- **Commercial, institutional and agricultural facilities**, electricity consumption is monitored in the project activity at each site or at groups of sites served by a single meter.
- **Area of land deforested** is also a once-off measurement take at the start of the project.

Summary of the standardized aspect of the methodology

- **Suppressed demand applied to a specific service**
  - Electricity consumption by low-income household
  - Though the consumption in primarily for lighting. The methodology is applicable to other services (and is similar to other methodologies, e.g., AM0045 or AMS-I.F.)

- **The suppressed demand related service of the Project is capped**, i.e. the service level over that cap not included in the Project
  - Create financial incentive for the project developer by ensuring minimum revenues from the connection of low-income households
  - Promote broader electricity access for basic services (e.g., fan, radio), not high residential consumption of higher income households

- **Simplified methodology with standards or default values**, and limited monitoring and ex-ante data collection

“Normative” standardized as general approach ?

- Use “reasonable, adequate” service level as baseline activity level – reflect social view of development needs (e.g. minimum lighting needed per day, minimum ambient indoor temperature for comfort, minimum potable water requirements
- Convert service level to energy and emissions using technology choice that is accessible to poor household – the next technology step (e.g. kerosene pressure lamps, not diesel generators)
- Advantages
  - No monitoring necessary for certain services because baseline is fixed
  - No baseline energy survey needed for these services
  - Recognises need for adequate services – no penalty for being poor
  - Does not require exhaustive data gathering process to establish SBL
- Challenges
  - How to define minimum service (both units and level) – still need some form of stakeholder input and policy decision
  - How to define baseline technology to deliver that service

Source: Adapted from presentation by Spalding-Fecher: Jt Workshop 2011 - SBLs

Open questions about the approach

- The applicability of methodology is restricted to areas with less than 5% penetration level for renewable powered lighting among households. Is this information easily available? How feasible would be to conduct a survey?
- The total project level electricity consumption in households is capped at a level equal to a rural universal access level (RUAL), which is 250 kWh based on literature (IEA 2010). Is it consistent with experience in LDC and low income regions?
- The methodology at present assumes the fixed baseline and caps the project level electricity consumption. Does this approach penalize the emission reduction potential? If so, what would be the appropriate cap and its justification?
- Increasing the cap on electricity consumption assumes inclusion of other household electricity usage areas (e.g refrigerator use). How would the baseline change?
- The methodology proposes to monitor the electricity consumption of households or groups of households using electricity meters (i.e. meters should not include other end user types). This approach is preferred based on best-practices. But is this a major barrier from a project developer perspective?
- The methodology also proposes to avoid the need for scrapping of old equipment to address leakage issues. Is this acceptable or any other way of addressing this?

Thanks for listening

Difficulties

- Define the clear distinction between suppressed demand and satisfied demand concepts; how to include the incremental consumption as part of baseline?
- Justification for application to rural electrification
- Global trends in rural electricity patterns (to compare with their peers) not available
- Luminous standard not available for residential sector
- Minimum standard for residential electricity consumption (250 kWh)just published (IEA 2010)
- How to include dynamic baseline setting to account consumption growth without hampering environmental integrity?
- Interpreting increase in energy with increase in lighting?