

CDM for solar lanterns and pico-PV systems

Methodology

⇒ TYPE I - RENEWABLE ENERGY PROJECTS, Electricity generation by the user --- AMS-I.A. Version 14

UNFCCC projects as of July 1st, 2010ⁱ

- ⇒ Currently 2 solar lantern projects registered
 - India
 - Total of over 1 mio. pico-systems
- ⇒ No others in pipeline
- ⇒ No PoA so far for solar lanterns/ pico PV
 - BUT: D.Light Indian project (see below) regarded as preparation for a solar lantern PoA
 - (so far, one PoA using this methodology has been registered – SHS Bangladesh/Grameen Shakti)

Project Overview

- ⇒ **D.light Rural Lighting Project Indiaⁱⁱ**
 - 1 mio. pico systems (planned)
 - LED-lamps with integrated batteries und solar module– LED-Lamps of 0.5 W, 1 W and 1.3W
 - Lifetime of 5 years (crediting period), later project extension to PoA
 - Various forms of distribution (MFI, (whole-) salers, NGOs)
 - Low price level co-financed through **revenues from CDM**
 - **CDM as an argument for investment in D.Light** – equity generation, buffer for rising prices / price difference between PV and kerosene (state subsidies)
 - Approx. 460.000 CERs in 5 years

| Lamp | 0.5 W | 1 W | 1.3 W |
|--------------------|--------|--------|--------|
| CERs tCO2 per year | 0.0712 | 0.1094 | 0.1450 |

- ⇒ **Rural Education for Development Society PV Lighting Project**ⁱⁱⁱ
 - 60.000 sites (households and community centres) with 5 lamps each (300.000 lamps total)
 - Different CFL or LED, Modules of 5 W or 2-3 W
 - D.light, Grameen, and various others as distributors
 - **CDM revenues** (forward sales) are used to purchase the lamps and **hand them out for free**
 - Semi-commercial maintenance and battery replacement approach
 - Approx. 460.700 ER in 10 years
 - 0.768 CER of tCO₂/household/year

For further details on the projects please refer to Appendix A.

Gold Standard Projects^{iv}

- ⇒ Currently 4 projects registered or pending
 - Malawi, Zambia, Tanzania and India
 - very low amount compared to other technologies and project types

Project Overview

- ⇒ **SolarAid Microsolar Lanterns Project for Malawi**^v
 - VERs already issued
 - Replacement of 39.000 kerosene lamps with 1.8 W modules with lamps and other devices, partly locally produced
 - Focus on capacity development and training of local youth
 - Project VER 19.017 tCO₂ eq => 0.049 tCO₂ eq per system /year
 - GS seen as mean to generate attention and FDI for Malawi
 - **Credit revenues support start-ups in the solar market**, lower market prices, support the refinancing of loans taken out etc.
 - **Revenues will be reinvested in the project** in Malawi to facilitate further training and start ups or to subsidize imports of solar products => carbon revenues make the business more viable

- According to monitoring report – 100% of sold systems (1.635 units) are in daily use, light use has increased compared to the use of kerosene lamps before, kerosene use has nearly completely stopped in households with solar systems
 - July 08 – July 09 VERs of around 35 tonnes
- ⇒ **SolarAid Microsolar Lanterns Project for Zambia^{vi}**
- Verification pending
 - Project outline, architecture and size etc. match exactly the above mentioned Malawi project
 - Total VERs 25.718 tCO₂ eq => 0.09 tCO₂ per torch/year
- ⇒ **D.Light Rural Lighting Project Tanzania^{vii}**
- Different lamp models to be sold – amount of VERs depend on different models (between 0.0254 and 0.2823 tCO₂ eq/lamp/year)
 - 3,640.000 lamps to be sold
 - Estimation: total amount of VERs 500.00 tCO₂ eq

 - **VER as main investment argument** for D.Light to attract equity for further growth (see above)
 - Subsidising system costs with VER revenues, equalize duties and taxes on imported goods, invest in training and education of sales personnel
- ⇒ **D.light Rural Lighting Project – India Pre-CDM VERs (of GS 600)^{viii}**
- PRE-CDM-VERs of above mentioned CDM project

For further details on the GS projects please refer to Appendix B.

Appendix A – Project details UNFCCC Projects

Table 1: Registered PICO-PV Projects under UNFCCC^{ix}

| Name of CDM Project Activity | Host Party | Other Parties Involved | Project Participants (Authorized by Host Party) | Project Participants (Authorized by other Parties involved) | Validator | Starting Date of the Crediting Period (UNFCCC HP) | End of crediting period |
|--|------------|------------------------|---|---|-----------|---|-------------------------|
| D.light Rural Lighting Project | India | The Netherlands | D.light Energy Pvt Ltd | OneCarbon International B.V. | TÜV SÜD | 30-Oct-09 | 29-Oct-19 |
| Rural Education for Development Society (REDS) CDM Photovoltaic Lighting Project | India | | Rural Education for Development Society (REDS) | | DNV | 10-Aug-09 | 9-Aug-19 |

Table 2: Estimated ER of these Pico-PV CDM Projects until 2019^x

| Name of CDM Project Activity | Annual ERs (tCO ₂ /y) (UNFCCC) | Total ERs by 2012 (tCO ₂) | Total estimated ERs by 2020 (tCO ₂) | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--|---|---------------------------------------|---|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| D.light Rural Lighting Project | 30.052 | 210.295 | 300.523 | 6.707 | 73.470 | 70.645 | 59.473 | 49.814 | 40.414 | 0 | 0 | 0 | 0 | 0 |
| Rural Education for Development Society (REDS) CDM Photovoltaic Lighting Project | 21.060 | 71.489 | 210.600 | 8.309 | 21.060 | 21.060 | 21.060 | 21.060 | 21.060 | 21.060 | 21.060 | 21.060 | 21.060 | 12.751 |

Appendix B – Project Details Gold Standard Projects

Table 3: Pico-PV Gold Standard Projects^{xi}

| Project Name | Country | Project Developer | Validation DOE | Expected average annual/ total amount of ER | Crediting Period | Status | GS registration date | Project Webpage |
|---|----------|----------------------------|--------------------------------|--|------------------|-----------------------------------|----------------------|-------------------|
| SolarAid Microsolar Lanterns Project for Malawi | Malawi | SolarAid | | 2,700/ 19.017 | 10 | Issued - Annual Review | 26/05/2009 | www.solar-aid.org |
| SolarAid Microsolar Lanterns Project for Zambia | Zambia | SolarAid | | 3,600/ 25.718 | 10 | Registered - Pending Verification | 26/05/2009 | www.solar-aid.org |
| D.light Rural Lighting Project - India_ Pre-CDM VERs (of GS 600). | India | OneCarbon International BV | TÜV SÜD Industrie Service GmbH | 130,000 | | Registered | 19/02/2010 | |
| D.Light Rural Lighting Project Tanzania | Tanzania | OneCarbon International BV | TÜV SÜD Industrie Service GmbH | 50,000/ 503.675 | 10 | Listed - Pending Validation | | |

Sources

ⁱ <http://cdmpipeline.org/>, 03-08-2010

ⁱⁱ PDD at: <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1245158196.62/view>, 04-08-2010

ⁱⁱⁱ PDD at: <http://cdm.unfccc.int/Projects/DB/DNV-CUK1226479189.57/view>, 04-08-2010

^{iv} GS-VER-Project List access at: <http://goldstandard.apx.com/resources/AccessReports.asp>, 03-08-2010

^v GS-VER-PDD and GS Monitoring Report at: <https://gs1.apx.com/myModule/ProjectDoc/EditProjectDoc.asp?id1=393>, 04-08-2010

^{vi} GS-VER-PDD at: <https://gs1.apx.com/myModule/ProjectDoc/EditProjectDoc.asp?id1=394>, 04-08-2010

^{vii} GS-VER-PDD at: http://www.netinform.de/KE/Wegweiser/Guide2.aspx?ID=6864&Ebene1_ID=49&Ebene2_ID=2292&mode=4, 04-08-2010

Appendices

^{viii} GS project list at: <https://gs1.apx.com/myModule/rpt/myrpt.asp> and PDD at: <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1245158196.62/view>, 04-08-2010

^{ix} UNEP CDM-Pipeline at: <http://cdmpipeline.org/>, 03-08-2010

^x UNEP CDM-Pipeline at: <http://cdmpipeline.org/>, 03-08-2010

^{xi} GS VER project list at: <https://gs1.apx.com/myModule/rpt/myrpt.asp?r=111>, 04-08-2010