Previous International Thermal Energy Projects and their Financing/Financial Flux

Daniel Kerr, UCL Energy Institute

Second STEPs Network Meeting, Richard's Bay, South Africa, 28.10.14

STEPs – Sustainable Thermal Energy Service Partnerships

Purpose

- This presentation seeks to highlight and provide data for a wide range of previous renewable thermal energy projects, from a number of funding bodies and sources. These projects cover the gamut of thermal energy technologies in a number of country contexts. The primary focus is financial viability and sustainability of thermal energy projects, particularly those involving renewable thermal business and business models.

STEPs – Sustainable Thermal Energy Service Partnerships

Part I – Direct Grant Projects

UCL ENERGY INSTITUTE

Sustainable Energy Associates

ECONOLER

RESTIO ENERGY

UNIVERSITY OF Southampton

STEPs – Sustainable Thermal Energy Service Partnerships

PERMER - Renewable Energy in the Rural Market Project

Years: 1999 -2011

Funding Agency: IBRD/World Bank

Countries Targeted: Argentina

Technologies Used: Solar home systems, solar thermal, biomass gasifiers, solar PV

Total Number of Systems Disseminated: 16,272

Total Project Budget: US$ 50 million (2009-2011 additional)

Financing Models Used: Direct grant, financing partnership with local SMEs through direct subsidy

Project also supported building of capacity for private sector participation in energy sector in national regulator, as well as supporting the creation of sustainable RE business in rural areas, through capacity building and training, as well as direct subsidies.

Project overview: http://www.worldbank.org/projects/P110498/ar-permer-renewable-energy-additional-financing?lang=en

Latest Project Report: http://goo.gl/5ZDkZ2

STEPs – Sustainable Thermal Energy Service Partnerships

PERMER - Renewable Energy in the Rural Market Project

- PERMER model is based around a public-private partnership for rural electricity and thermal services.
- Government subsidies for equipment and installation are combined with concession contracts to private, public or cooperative groups, who own and a responsible for maintenance of the installed equipment in their concession area.
- Technology-neutral and inclusive of fossil fuel sources as well as renewables.
- Investments recovered by a user tariff over a 15 year period, paid to the concessionaire. Tariff structure varies according to location, capacity and willingness to pay and existing local tariff structures. Tariffs are heavily subsidised by provincial governments (70-90% is typical)
- Community participation and engagement is a large part of the success of the model: consultations on tariff structure, building demand through demonstrations, managing social risk through engagement.

STEPs – Sustainable Thermal Energy Service Partnerships

Second Sustainable and Participatory Energy Management Project (PROGEDE II)

Years: 2010 - 2016

Funding Agency: World Bank

Countries Targeted: Senegal

Technologies Used: Improved biomass cookstoves, biodigesters

Total Number of Systems Disseminated: 502,431

Total Project Budget: US$ 19.37 million

Financing Models Used: Direct grants, subsidies

Project has financed four organisations to produce cookstoves in Senegal to date, and has financed equipment grants to NGOs and local trade chambers for cookstove distribution and dissemination. Project has also directly financed four village-scale biomass digesters in targeted rural communities.

Project overview: http://www.worldbank.org/projects/P120629/second-sustainable-participatory-energy-management-progede-ii?lang=en

Latest Project Report: http://goo.gl/rmox9o

UCL ENERGY INSTITUTE · sea Sustainable Energy Associates · ECONOLER · RESTIO ENERGY · University of Southampton

STEPs – Sustainable Thermal Energy Service Partnerships

Second Sustainable and Participatory Energy Management Project (PROGEDE II)

- PROGEDE II has financed through direct sub-grants the training of local artisans on improved cookstove production, as well as the creation of local manufacturing capacity for improved cookstoves.
- Technical assistance has also been provided through the World Bank to the Senegal government for the facilitation of improved market conditions for improved cookstoves.
- Counterpart grants are also provided through the project (50/50 donor/consumer) for charcoal traders in the country to transition to more efficient charcoal production methods. These grants are also available for business diversification, for example through establishment of an LPG depot or other thermal energy equipment.

STEPs – Sustainable Thermal Energy Service Partnerships

Biomass Energy Initiative in Africa (BEIA)

Years: 2010 - Present

Funding Agency: World Bank / ESMAP

Countries Targeted: Benin, Ethiopia, Gambia, Kenya, Uganda, Rwanda, Tanzania and South Africa

Technologies Used: Improved biomass stoves, improved biomass fuels, biodiesel

Total Number of Systems Disseminated: No data

Total Project Budget: US$ 2,051,557.13

Financing Models Used: Direct grants

Project has financed nine pilot biomass projects in the targeted countries, covering improved cookstoves, improved woodfuels and biodiesel/bioethanol projects. Two projects have gone on to leverage further non-WB funding, implying successful business models. Models focus on local production of improved woodfuel stoves and improved wood fuels, as well as the social aspects of biofuel production, creating employment, particularly for women.

Latest Project Report: http://esmap.org/sites/esmap.org/files/activities/P116419.pdf

STEPs – Sustainable Thermal Energy Service Partnerships

Biomass Energy Initiative in Africa (BEIA)

- BEIA project recipients in Gambia and Ethiopia have both leveraged non-bank funding based on their project models.
- Gambian grant recipient, the Centre for Research in Energy and Energy Conservation, promoted local manufacturing of improved cookstoves through direct subsidy and technical assistance. Further US$500,000 from USAID to continue this effort.
- Ethiopian grant recipient, the Gaia Foundation, directly financing micro-ethanol plant projects in the country, financed by Nordic Climate Fund for US$436,500 in addition to WB financing.
- Project also contains financing for improving market conditions for improved cookstoves in the targeted countries, which has gone on to inform, for example, the African Clean Cooking Initiative, building on the promotion of local manufacturing capacity and building of local markets done under the BEIA.

Part II – Micro-Finance Projects

STEPs – Sustainable Thermal Energy Service Partnerships

ENDEV - Cambodia

Years: 2004 - Present

Funding Agency: NGO – Government funded

Countries Targeted: Cambodia

Technologies Used: Biogas for cooking/thermal energy for households

Total Number of Systems Disseminated: 3,900 people reached as of Dec 2013

Website: http://endev.info/content/Vietnam

Total Project Budget: No data

Financing Models Used: Micro-credit for biogas installation construction investment

ENDEV is supporting Cambodia's National Biogas Programme (NBP) in a first phase of the transition from a grant driven biogas plant market to a commercially viable market supported by carbon funding.

ENDEV – Cambodia Business Models

- Current biomass installation construction companies in the country are financed under a grant model by the National Biogas Programme.
- Project aims to support current and new organisational transition to a commercial franchise-based business model, through features such as technical support, capacity-building and strengthening supply-side market actors.
- The project also aims to support the creation of a permanent credit facility for biogas construction and installation projects.

National Biogas Programme - Cambodia

- ENDEV supports the current National Biogas Programme of Cambodia
- Program run by the Cambodian government
- As of 2011, 14,314 biogas plants had been built, with over 70% on loan schemes.
- Roughly 1,000 micro-finance institution staff have been trained under the program to provide biogas plant construction loans.
- In addition, project has supported creation of 25 biogas user networks (BUN), cooperatives trained by in-country NGO People In Need (PIN), enabling users to access expertise and equipment (spare parts etc.) to maintain functioning of their systems.

Source: “Domestic biogas programmes in Asia: transformation towards commercial sectors and development of effective financing facilities”, 22-24 November 2011, Bandung, Indonesia, p. 21

STEPs – Sustainable Thermal Energy Service Partnerships

Bangladesh - IDCOL

Funding Agency: Gov. of Bangladesh

Countries Targeted: Bangladesh

Technologies Used: Biogas installations

Total Number of Systems Disseminated: ~20,000 systems as of 2011, 80% on micro-credit

Total Project Budget: No data

Financing Models Used: Micro-credit for biogas installation construction investment

Bangladesh's IDCOL (Infrastructure Development Company) supports the government's National Domestic Biogas and Manure Programme in Bangladesh.

Source: "Domestic biogas programmes in Asia: transformation towards commercial sectors and development of effective financing facilities", 22-24 November 2011, Bandung, Indonesia, p. 19-20

STEPs – Sustainable Thermal Energy Service Partnerships

Bangladesh - IDCOL

- 38 partner organisations as of 2011 contributed to the construction of ~20,000 systems, 80% on a micro-credit scheme.
- Availability of the micro-credit line has been instrumental in success of the biogas installation project.

Domestic biogas financing model

NDBMP (IDCOL/SNV/ KfW Programme)		
Cost of an average size plant	USD467	2.4 m3 is the average size plant
Subsidy	USD120	BDT 9,000 per plant
Remaining after subsidy	USD347	
Household's contribution	USD52	15% of the plant cost
Remaining arranged by Micro-credit loan from MFIs	USD295	• At 10% - 14% flat interest rate • Usual loan tenor of two years • Average collection efficiency of MFIs is about 89%
IDCOL refinances 80% of the MFI loan	USD236	• At 6% diminishing interest rate • Loan tenor of seven years • One-year grace period

Prakti – Company / NGO Collaboration Loan Model

Funding Agency: CCD (Madurai), IFMR Trust (Tajore)

Countries Targeted: India

Technologies Used: Improved biomass cookstoves

Total Number of Systems Disseminated: No data

Financing Models Used: Micro-loan for improved woodfuel stove purchase for restaurant industry

Website: http://www.hedon.info/docs/GVEP_Markets_and_Cookstoves_.pdf, pg. 14-16

Prakti – Company / NGO Collaboration Loan Model

- Prakti stove model is targeted at bottom of the pyramid consumers in India, both institutional and residential.
- Proposed model involved restaurants taking loans with partnership of supply company Prakti and investor agencies to purchase improved biomass stoves. Loans would then be repaid over short period, using offset woodfuel purchase costs. Provision of loans would also enable regular follow-ups and data collection on stove performance and usage.
- Seed funding is provided by the financing agencies for this private-sector organisation, but business ultimately aims to be sustainable through micro-finance model. Loan model is was piloted in 2009, institutional stoves still being offered under this model as of 2014.

STEPs – Sustainable Thermal Energy Service Partnerships

Electricity Network Reinforcement and Expansion Project

Years: 2012 - 2017

Funding Agency: World Bank

Countries Targeted: Ethiopia

Technologies Used: SHS, improved cookstoves, solar lighting, biogas plants

Total Number of Systems Disseminated: 88,860

Total Project Budget: US$ 275.00 million

Financing Models Used: Direct grant, partnership with local MFIs (5 to date)

Project targets installation of 5,000 biogas plants and SHS and 15,000 improved cookstoves by 2017. Project also involves a micro-loan component from WB partner institutions to households, with initial funding of US$ 1 million

Project overview: http://www.worldbank.org/projects/P119893/electricity-network-reinforcement-expansion-project-enrep?lang=en

Latest Project Report: http://goo.gl/FvLNM1

UCL ENERGY INSTITUTE · sea Sustainable Energy Associates · ECONOLER · RESTIO ENERGY · University of Southampton

Electricity Network Reinforcement and Expansion Project

- Development Bank of Ethiopia as implementing agency is to extend access to finance for private sector enterprise and MFIs. Bank is currently lending to 5 approved MFIs under the project. Interest rates for loans from MFIs are devised collaboratively between DBE and MFI.
- DBE lending to private sector is for loans over US$2,500, with a flexible market-based interest rate, maturity of 10 years and a 2 year grace period.
- DBE lending to MFIs is on market-based interest rates, with 10 year maturities. Loan amounts are based on financial stability of partner MFI.

	ADCSI	ACSI	DECSI	OCSSCO	SFPI	Wasasa	Harbu	OMO
	Q1 2011-12	Q1 2011-12	Q1 2011-12	Q1 2011-12	Q1 2011-12	Q1 2011-12	Q1 2011-13	Q1 2011-14
GENERAL INFORMATION								
Number of branches	134	238	157	249	10	24	13	168
Number of employees	690	3,000	2,041	2,407	168	225	88	1,263
Number of active borrowers	160,971	689,951	392,639	515,280		55,866	19,359	509,888
Number of outstanding loans	159,783	689,951	392,639	515,280	33,421	55,866	19,359	382,405
Number of active savers		1,705,683	484,626	672,000	33,335	58,036	22,232	51,227
Percent of women borrowers	64%	68%	51%	37%	56.3%	43.8%	47.2%	30.3%
Average loan amount (USD)	205	165	281	149	101	127	89	108
Avg. deposit balance (USD)		50	118	64	39	35	25	367
Government ownership (%)	96%	25%	25%	83%	0%	0%	0%	80%

STEPs – Sustainable Thermal Energy Service Partnerships

Electricity Network Reinforcement and Expansion Project

	ADCSI	ACSI	DECSI	OCSSCO	SFPI	Wasasa	Harbu	OMO
	Q1 2011-12	Q1 2011-12	Q1 2011-12	Q1 2011-12	Q1 2011-12	Q1 2011-12	Q1 2011-13	Q1 2011-14
BALANCE SHEET SUMMARY (USD)								
Total assets	45,102,650	195,231,508	155,945,657	95,300,010	4,988,949	8,138,070	2,224,018	50,249,227
Net loans	32,240,577	111,370,377	107,504,628	75,265,986	3,294,712	6,960,469	1,685,636	36,457,709
Total deposits	10,169,317	84,499,941	57,285,914	46,255,892	1,303,928	2,041,725	629,556	18,776,723
Equity	22,845,936	56,162,898	39,625,307	25,684,725	1,993,288	2,865,126	959,121	11,454,809
CAPITAL ADEQUACY								
Regulatory capital adequacy ratio	61.9%	36.0%	36.0%	30.4%	44.7%	37.0%		46.8%
Total equity to total assets	50.7%	28.8%	25.4%	27.0%	40.0%	35.2%	43.1%	22.8%
Paid-up capital (ETB)	231,017,000	2,000,000	4,775,000	65,050,000	406,000	201,000	200,000	1,896,250
PROFITABILITY								
Return on assets	5.6%	6.4%	2.5%	3.7%	3.7%	8.3%	1.8%	0.7%
ROA less donation & non-oper. income	5.6%	4.1%	2.5%	3.7%		8.3%	1.8%	0.6%
Return on average equity	11.3%	22.4%	10.4%	14.2%	8.5%	23.7%	3.7%	2.7%
LIQUIDITY								
Regulatory liqudity ratio	90.4%	54.1%	38.0%	23.0%	50.7%	20.1%	36.9%	42.0%
Gross loans to deposits	322.6%	135.0%	192.9%	165.8%	258.4%	348.1%	274.3%	219.2%
Liquid assets to total assets	20.4%	23.4%	14.1%	11.1%	13.2%	5.1%	10.4%	15.6%
CREDIT RISK								
PAR ratios:								
31-90 days		0.1%	0.3%	2.6%		0.00%	0.1%	
91-180 days	0.9%	0.1%	0.3%	0.0%	0.5%	0.00%	0.2%	2.7%
181-360 days	0.9%	0.3%	1.3%	0.0%	0.3%	0.00%	0.1%	2.0%
361+ days	1.1%	1.1%	2.0%	2.9%	4.2%	2.49%	3.2%	14.0%
Total classified loans (91+)	3.0%	1.5%	3.5%	2.9%	5.0%	2.49%	3.5%	18.8%
PAR 31+ to total loans		1.5%	3.8%	5.5%		2.49%	3.6%	18.8%
Loan loss reserve to PAR 91+	58.0%	162.7%	75.9%	65.4%	43.9%	83.1%	68.5%	60.8%
Exchange rate	16.98	16.98	16.98	16.98	16.98	16.98	16.98	16.98

Solar Water Heating Loan Facility in Tunisia - PROSOL

Years: 2005 - Present

Funding Agency: Gov. of Tunisia

Countries Targeted: Tunisia

Technologies Used: Solar water heaters

Total Number of Systems Disseminated: 561,960 m2 as of 2011

Total Project Budget: No data

Financing Models Used: PPP - subsidies, on-bill financing through state utility

The PROSOL program is currently selling 3,500 units/year through a network of producers and distributors. Government subsidises solar suppliers, households repay via their electricity bill on a loan scheme, proceeds of loan go directly to supplier via commercial bank.

Project page: http://www.unep.org/climatechange/finance/LoanProgrammes/MEDREP/PROSOLinTunisia/tabid/29559/Default.aspx

Solar Water Heating Loan Facility in Tunisia - PROSOL

- PROSOL project is based around financing SWH supply to consumers through accredited installers, via commercial bank loans. Users take out a loan at a commercial rate (modified according to PROSOL interventions below) to have an accredited installer install their system. These loans are repaid to the national utility, STEG, through payments on-bill.
- STEG assumes default risks by acting as the debt repayment enforcer and guarantor of the loans, and passed these risks on to consumers by withholding services in the event of non-payment.
- Financing for SWH loans involved STEG facilitating a temporary interest rate subsidy of 7% for 12 months, 50% reductions in interest rates from 12% to 6%, and lengthened repayment terms of 5 years, from 3 years. Full subsidies for systems were also available from STEG for low-income consumers.

Unified Petroleum Price Fund Programme

Years: 2005 - Present

Funding Agency: Gov. of Ghana

Countries Targeted: Ghana

Technologies Used: LPG fuels

Total Number of Systems Disseminated: No data

Total Project Budget: No data

Financing Models Used: Direct subsidy, microloan for cylinder supply

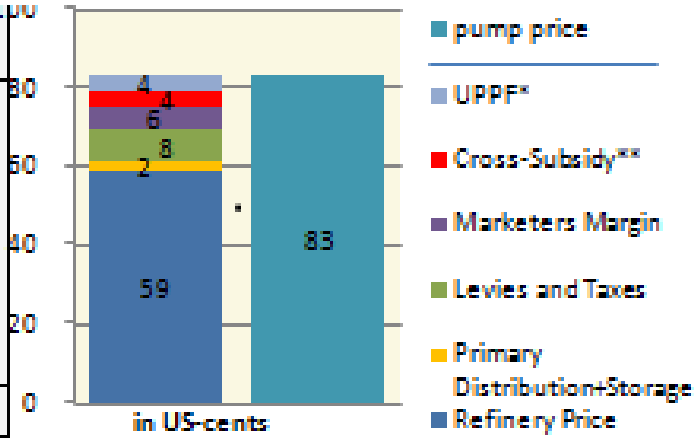
Programme sought to increase access to LPG fuels in rural parts of the country by subsidising price of LPG in rural areas, and incentivising transporters/sellers. Price caps and subsidy mechanisms to manage to price of LPG across the country.

Establishing Act: http://www.lexadin.nl/wlg/legis/nofr/oeur/arch/gha/ACT691NationalPetroleumAuthority.pdf

Unified Petroleum Price Fund Programme

- Under the UPPF, petroleum product distribution companies (predominantly focusing on LPG) receive disbursments from the Fund based on the difference between UPPF margin cost of petroleum product (determined by the National Petroleum Authority) and the freight cost, in an effort to equalise transit costs to all areas of the country.
- UPPF is financed by a levy per litre on LPG fuel (US$0.03 as of Feb 2013)

Price Component	in US-cents	in local currency	%
Refinery Price	59	0,8422	71
Primary Distribution+Storage	2	0,0325	2
Levies and Taxes	8	0,1093	10
Marketers Margin	6	0,0828	7
UPPF*	4	0,053	5
Cross-Subsidy**	4	0,05	5
Pump Price	**83**	**1,1698**	**100**



STEPs – Sustainable Thermal Energy Service Partnerships

Solar Water Heating Market Transformation and Strenghening Initiative

Years: 2008 - 2013

Funding Agency: UNDP/UNEP/GEF

Countries Targeted: Global

Technologies Used: Solar water heaters

Total Number of Systems Disseminated: No data

Total Project Budget: US$ 36,247,000

Financing Models Used: Direct subsidy, microfinance establishment, equipment grants

11 separate projects across the world to strengthen the global market for SWH, and improve market conditions in the targeted countries/regions, through business and entrepreneur support, technical assistance and regulatory assistance.

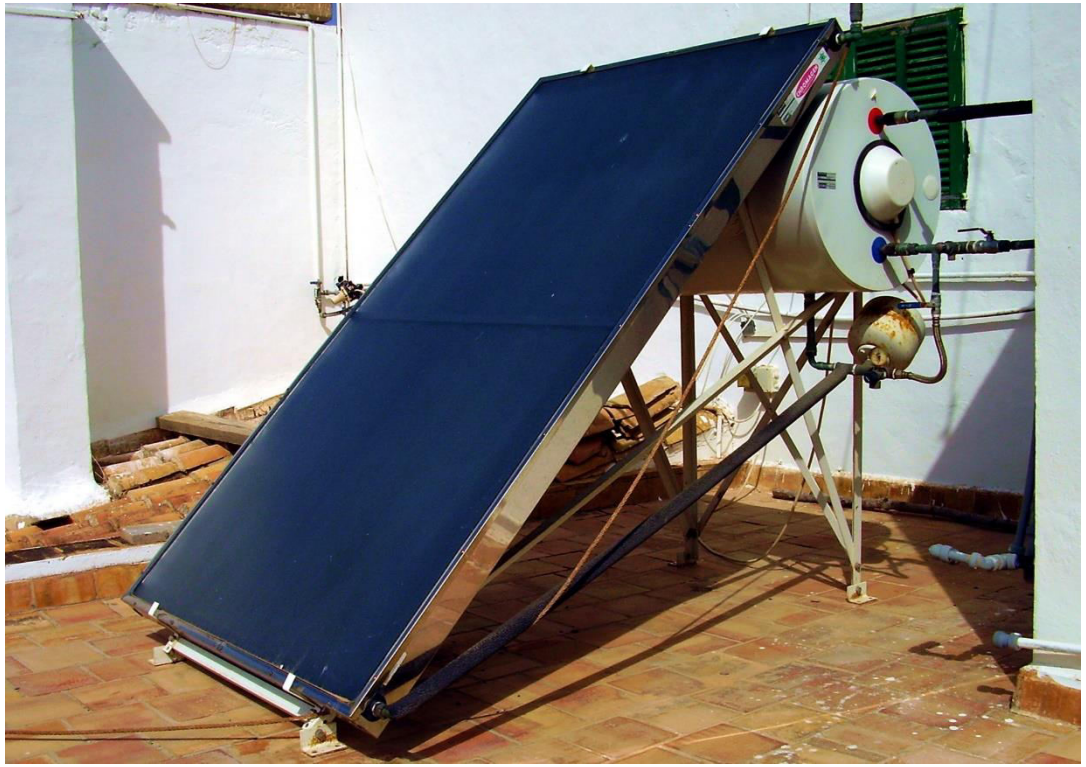
Project overview: http://www.thegef.org/gef/sites/thegef.org/files/repository/Global_Solar_Water_Heating_mkt_07-01%2008.pdf

STEPs – Sustainable Thermal Energy Service Partnerships

Solar Water Heating Market Transformation and Strenghening Initiative

- World Bank projects under this Initiative have introduced support for micro-credit access for SWH in Albania, Chile and Lebanon.
- Direct financing (US$1,040,000) available in Albania to finance new and existing MFIs in rural areas for SWH, as well as finance other delivery models, such as RESCOs and utility based models.
- Chilean Economic Development Agency is expanding operations into SWH system financing, having existing micro-credit and SME financing schemes within its remit for other activities.
- Lebanese project has similar goals to Albania, with Lebanese context also having established MFIs for rural business and consumers. Direct financing of US$1,820,000 available.

Part III – Fee-for-Service Projects



STEPs – Sustainable Thermal Energy Service Partnerships

Takamato Biogas

Years: 2012-Present

Funding Agency: None – Social Enterprise

Countries Targeted: Kenya

Technologies Used: Biogas digesters, biogas appliances, solar home systems

Total Number of Systems Disseminated: 106

Total Project Budget: No data

Financing Models Used: Direct payment, fee-for-service

Company was established in 2012 offering biogas digesters and appliances on a pay-as-you-go business model, operations have recently expanded to micro-solar systems on a direct purchase model.

Website: http://takamotobiogas.com/

Takamato Biogas – Business Model

- The Takamato business model is based on a pay-as-you-go service for biogas fuel. The company offers low up-front costs biogas systems, currently funded by seed funding for the founding entrepreneur. Consumers are then charged based on the amount of biogas they consume, metered on the digester.
- Biogas appliances and solar appliances (10W/15W PV panels, batteries, charge controllers) all provided on a direct purchase model at the moment.
- Payments are made directly through the MPESA mobile payments service, authenticated per-system via a unique system number.
- Systems currently offered only in Githunguri province.
- As system is biogas-based, consumers are required to keep cattle for digester feedstock.

STEPs – Sustainable Thermal Energy Service Partnerships

ENDEV - Vietnam

Years: 2004 - Present

Funding Agency: NGO – Government funded

Countries Targeted: Vietnam

Technologies Used: Biogas for cooking/thermal energy for households

Total Number of Systems Disseminated: 39,000 people reached as of Dec 2013

Website: http://endev.info/content/Vietnam

Total Project Budget: No data

Financing Models Used: Fee-for-service (results-based financing (RBF))

NGO is currently partnering with SNV Netherlands and the governmental National Biogas Program to implement RBF for national biogas market development (estimates that only 7% of market reached to date, 140,000 customers by NBP)

ENDEV Vietnam Fee-for-Service Model

- Proposed framework in open call for proposals is Results-Based Financing (RBF). This will replace the current National Biogas Program investment subsidy, delivering a payment to suppliers only on installation and certification by national utility of a biogas digester, meeting agreed quality standards.
- Market growth will also be stimulated by enhancing risk-taking capability by the private sector SMEs targeted under the program in a semi-controlled way, and through performance-related bonuses to well-performing biogas SMEs.
- Non-donor supported digester installations also promoted under the program (increase from 40% to 70% commercial market installations targeted by 2016)
- Finally, project also aims to collaborate with micro-finance institutions to provide greater access to micro-credit for rural consumers in the country.

STEPs – Sustainable Thermal Energy Service Partnerships

China – National Biogas Program

Funding Agency: Government funded

Countries Targeted: China

Technologies Used: Biogas digesters/appliances

Total Number of Systems Disseminated: 38.51 million domestic biogas plants to date, ~155 million people reached

Financing Models Used: Public-private partnerships, fee-for-service, direct grants

Since 2007, China's National Biogas Program has sought to introduce post-installation services as part of its remit, setting up a national biogas service network.

Source: "Domestic biogas programmes in Asia: transformation towards commercial sectors and development of effective financing facilities", 22-24 November 2011, Bandung, Indonesia, p. 16-17.

STEPs – Sustainable Thermal Energy Service Partnerships

China – National Biogas Program

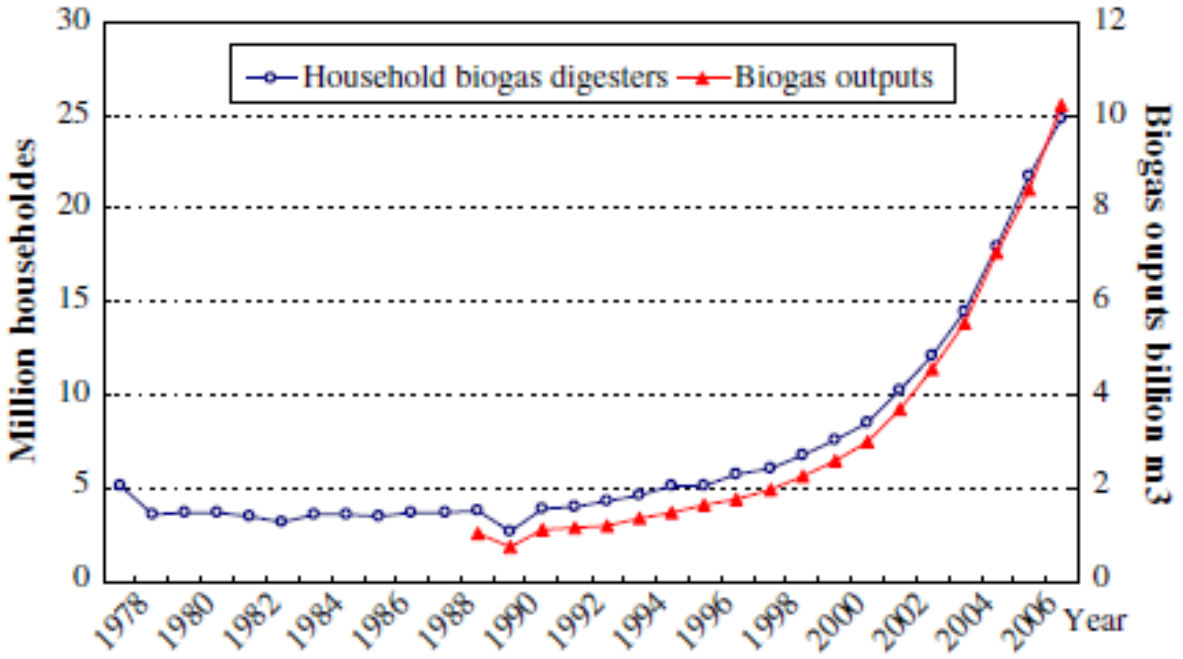
- Fee-for-Service/PPP model introduced as of 2007 to stimulate private sector involvement in the biogas installation and servicing sector, under the Rural Biogas Services Initiative
- Initiative targets the establishment of village-level biogas service enterprises, available to individuals, cooperatives, business, institutions…
- Model for basic “3 in 1” system is gov. subsidy, more complex “4 in 1” system is financed through local banks and cash down-payment by the customer, with a small equipment subsidy from government
- Initial funding set at USD4,000-7,000, available to partners who can serve 300-500 households with equipment, as well as offering repairs and servicing, spare parts, and measurement/testing equipment.
- 79,200 village level outlets have been set up to date, supported by 756 country-level stations offering more advanced services. Total central government funding to date is USD400 million.
- Various sub-business models developed under the PPP scheme: individual/share holding companies, non-profit public welfare initiatives, user associations etc.

STEPs – Sustainable Thermal Energy Service Partnerships

Dissemination of Bio-Digesters in China

- Technology and policy changes in China
  - Modern biogas technologies
    - Scheme of Low-temperature Biogas Production and Commercialized Utilization Technology
  - Size of bio-digesters tend to increase
    - Linked to increase size of farms
      - Increase productivity to provide gas/heat, cooking
      - 10,000 pig farm = 100 kW electricity capacity
  - Standardization engineering equipment and materials used in construction
      - 31 standards for biogas construction
  - From 2003 to 2009, 3 billion US$ invested
    - 82% for households bio-digesters (subsidy around 150 US$ for 8m3 = +/- half of the price)
    - 10% medium & large scale bio-digesters
    - 8% to finance service system
      - Encourage creation of local consultancy and service providers

Dissemination of Bio-Digesters in China



Source: Zhang, 2009.

Fiberglas reinforced plastic digesters

http://greeningchina.wordpress.com/

Biomass Energy in Rural India (BERI)

Years: 2002 - 2012

Funding Agency: UNDP/GEF/Gov. of Karnataka, India

Countries Targeted: India

Technologies Used: Biomass for cooking, household energy use

Total Number of Systems Disseminated: 52 (1 500kW 4-digester system, 51 group biogas plants)

Total Project Budget: US$ 8,623,000

Financing Models Used: Grant funding, fee-for-service

Fee-for-service policy and regulation framework and implementation was planned as a project component, but never fully implemented. Power-purchase agreements (the first of their kind) signed under the project between state utility and panchayat (village) groups.

Website: http://www.in.undp.org/content/dam/india/docs/biomass_energy_for_rural_india_factsheet_project.pdf

Annex I – Other Direct Grant Projects

STEPs – Sustainable Thermal Energy Service Partnerships

Sustainable Rural Development

Years: 2009 – 2016

Funding Agency: World Bank

Countries Targeted: Mexico

Technologies Used: Solar thermal, biomass digesters, PV, biomass electricity, energy efficient technologies

Total Number of Systems Disseminated: 1,146

Total Project Budget: US$ 157.85 million

Financing Models Used: Grant-matching

Project also contains a technical assistance component for design and implementation of sustainable agribusiness SMEs, including energy diagnostic assistance.

Project overview: http://www.worldbank.org/projects/P106261/sustainable-rural-development?lang=en

Latest Project Report: http://goo.gl/00wjii

STEPs – Sustainable Thermal Energy Service Partnerships

Albania Country Program - Global Solar Water Heating Market Transformation and Strengthening Initiative

Years: 2008 - 2015

Funding Agency: UNDP/UNEP/GEF

Countries Targeted: Albania

Technologies Used: Solar water heaters

Total Number of Systems Disseminated: 20,000 m2/year as of 2012

Total Project Budget: US$ 2,750,000

Financing Models Used: Direct subsidy to new business, equipment grants

137 trained professionals, 3 vocational centres running SWH installation and management courses. Discussions on setting up RE/EE financing mechanism fund held for rolling out ESCO models in the country.

Project overview: http://open.undp.org/#project/00050767

Latest Project Report: http://erc.undp.org/evaluationadmin/downloaddocument.html?docid=6178

STEPs – Sustainable Thermal Energy Service Partnerships

Increased Access to Modern Energy

Years: 2009 – 2016

Funding Agency: World Bank

Countries Targeted: Benin

Technologies Used: LPG cookstoves, efficient biomass stoves

Total Number of Systems Disseminated: 0

Total Project Budget: US$ 1.3 million

Financing Models Used: Direct grant

Contracts signed for procurement and dissemination of 16,000 LPG stoves

Project overview: http://www.worldbank.org/projects/P110075/increased-access-modern-energy?lang=en

Latest Project Report: http://goo.gl/Ut52i9

STEPs – Sustainable Thermal Energy Service Partnerships

Rural Electrification and Renewable Energy Development II (RERED II)

Years: 2012-2018

Funding Agency: World Bank

Countries Targeted: Bangladesh

Technologies Used: Improved cookstoves, biogas

Total Number of Systems Disseminated: 1,453

Total Project Budget: US$ 503.74 million

Financing Models Used: Grants/direct distribution

ICS program not started as of March 2014, end target of 1,000,000 cookstoves disseminated by 2018.

Project overview: http://www.worldbank.org/projects/P131263/rural-electrification-renewable-energy-development-ii-rered-ii-project?lang=en

Latest Project Report: http://goo.gl/8bjOAA

STEPs – Sustainable Thermal Energy Service Partnerships

Kureimat Solar Thermal Hybrid Project

Years: 2007 - 2011

Funding Agency: World Bank

Countries Targeted: Egypt

Technologies Used: Solar thermal electricity, hybrid RE/conventional electricity

Total Number of Systems Disseminated: 1

Total Project Budget: US$ 327.57 million

Financing Models Used: Direct grant

Project constructed a 20MW combined cycle gas/solar thermal power plant, generating both electric power for the grid and heat for local industrial processes.

Project overview: http://www.worldbank.org/projects/P050567/kureimat-solar-thermal-hybrid-project?lang=en

Latest Project Report: http://goo.gl/swBtDT

STEPs – Sustainable Thermal Energy Service Partnerships

Household Energy Project

Years: 1997 - 2004

Funding Agency: World Bank

Countries Targeted: Chad

Technologies Used: Efficient woodfuels, LPG, improved cookstoves

Total Number of Systems Disseminated: 14,900

Total Project Budget: US$ 6 million

Financing Models Used: Direct sales, equipment grants

LPG/Kerosene stove activities dropped by end of project to further enhance improved woodfuel stove dissemination, predominantly charcoal stoves. 64,000 tonnes of standing wood estimated to have been saved, 20% reductions in cooking expenditure

Project overview: http://www.worldbank.org/projects/P000532/household-energy-project?lang=en

Latest Project Report: http://goo.gl/tDytpH

STEPs – Sustainable Thermal Energy Service Partnerships

Solar Water Heating

Years: 1994 - 2004

Funding Agency: World Bank

Countries Targeted: Tunisia

Technologies Used: Solar water heaters

Total Number of Systems Disseminated: 17,626

Total Project Budget: US$ 20.90 million

Financing Models Used: Direct subsidy for system procurement/business creation

51,060 m2 of SWH installed due to the project over its lifetime. Project assisted in creation of 8 SWH suppliers in the country, with two manufacturing the systems also.

Project overview: http://www.worldbank.org/projects/P005589/solar-water-heating?lang=en

Latest Project Report: http://goo.gl/V8wTV2

STEPs – Sustainable Thermal Energy Service Partnerships

DRC Improved Forested Landscape Management Project

Years: 2014 - Present

Funding Agency: World Bank

Countries Targeted: Democratic Republic of Congo

Technologies Used: Improved cookstoves

Total Number of Systems Disseminated: No data

Total Project Budget: US$ 36.90 million

Financing Models Used: Cost-sharing grants, direct subsidy

Project aims to improve the performance of biomass cookstoves in terms of efficiency, and enhance the distribution, assembly and production of cookstoves, by supporting the scaling up of selected entrepreneurs' cookstove businesses through cost-sharing grants and business development services

Project overview: http://www.worldbank.org/projects/P128887/drc-forest-investment-program?lang=en

Latest Project Report: http://goo.gl/loCBHk