

Im Abseits der Netze

Dezentrale Energieversorgung in Entwicklungsländern

Fachtagung Bonn, 10.-12. Januar 2011

Themenwerkstatt 3

Sustainability of business models for sales and distribution of small RE systems

Tuesday, January 11th 2011

“A recipe for success? Large scale dissemination of Solar Home Systems in Bangladesh”

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IDCOL SHS Program - the „Bangladesh Experience“

Provisions to ensure Sustainability

Lessons learned and Way Forward

The Problem:

- Less than 40% of the approx. 150 million inhabitants of Bangladesh are connected to the electricity grid, in rural areas the percentage is considerably lower (10 - 15%)
- heavily insufficient generation capacity leads to serious load shedding and sets tight limits on grid-based electrification, no significant changes to be expected in near future

The Approach

- Start of off-grid PV electrification program in January 2003 with the support from IDA and GEF, KfW involved from 2005
- Program restricted to households in rural areas which - in the foreseeable future - are not expected to get access to the public grid
- Program management and channeling of funds through semi-autonomous financing institution “Infrastructure Development Company Limited (IDCOL)”
- Promotion, procurement, installation, maintenance and support, as well as provision of financing to end-users through private sector “Partner Organizations (POs)”,
- Involvement of external expertise for support of monitoring and performance control

Contribution of KfW

- EUR 16.5 million for grants

Project Structure: Role of the Partners



IDCOL (Project-Executing Agency)

- Implementing agency and overall management of the program
- funds manager of bi-lateral agreements
- provides grants to Owners to reduce SHS cost and to POs for institutional development
- provides soft loans/refinance to POs on project finance basis
- executes capacity building & technical assistance (training of PO staff and customer, logistic and promotional support)

Donor Agencies:

- provide grant fund and credit funds to IDCOL (directly or through Bangladesh Government)
- Provide technical assistance to IDCOL

NGOs/MFIs (Partner Organizations(PO's)):

- Promote, procure and install SHS
- extend micro-credit to customers
- provide after sales service

Manufacturers and Suppliers :

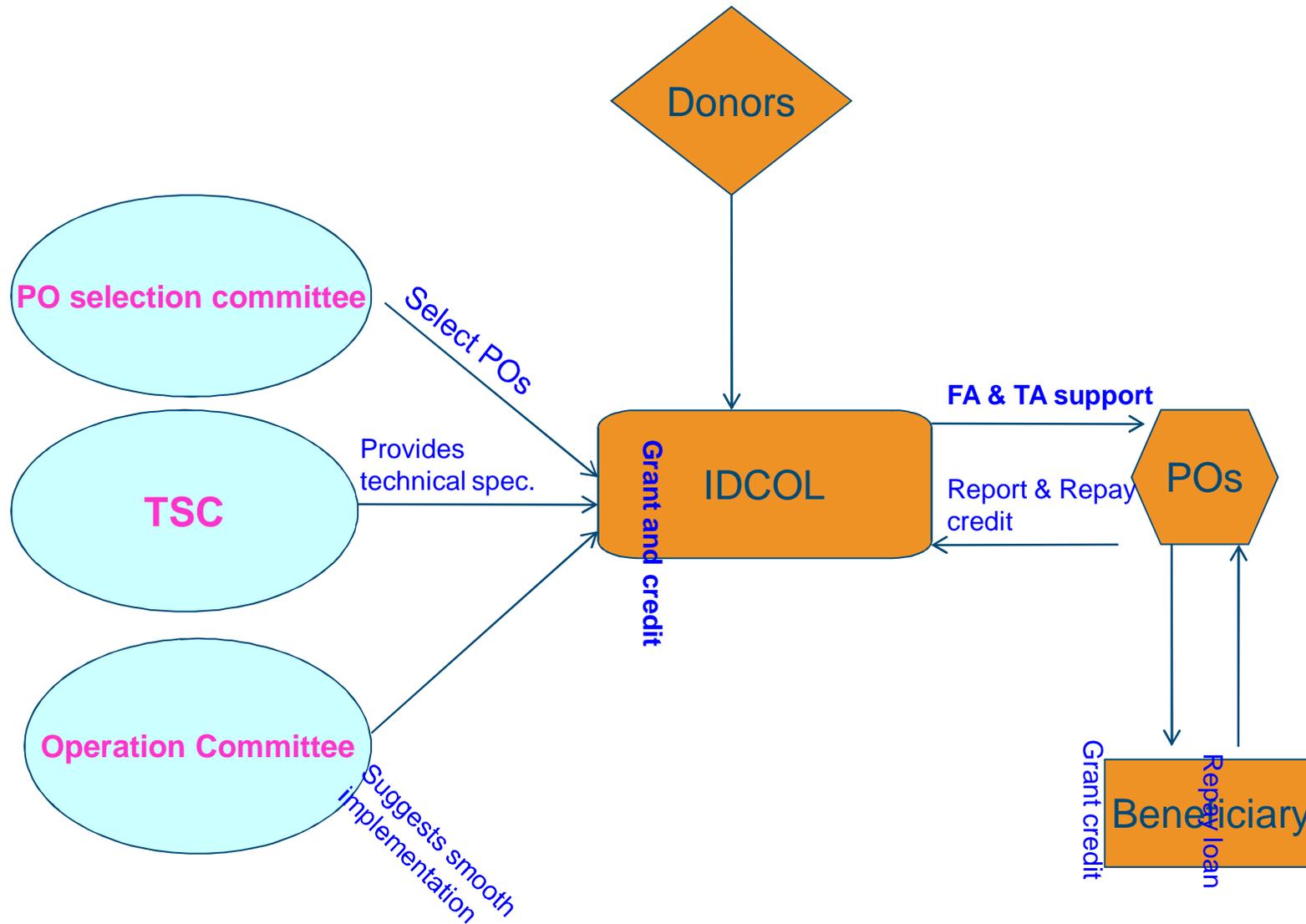
- sell SHS or its components to POs

External Professionals and Institutions:

- participate in preparation of technical design and technical/commercial monitoring/social impact assessment



Simplified Project Structure



PO Selection Committee:

- Consists of the representatives from IDCOL, ministry and relevant government organizations.
- Selects PO to implement the program on the basis of intent, micro-finance experience and financial ability

Technical Standards Committee:

- Consists of technical experts from universities, engineering departments of govt. and IDCOL
- Determines technical standards, review product credentials of dealers, and approves eligible equipment

Operations Committee:

- Consists of program heads of POs and representatives from IDCOL
- looks after the operational and business aspects of the program

Sample Calculation for a 50 Wp SHS

	<i>US\$</i>
(a) Solar Home System Cost	420
(b) Buy-down Grant from IDCOL	20
(c) Remaining Cost (b-a)	400
(d) Household Down payment [15% of (c)]	60
(e) Remaining Cost (c-d)	340
(f) Loan from IDCOL to PO [80% of (e)]	272
(g) Contribution of PO as loan to customer (e-f)	68

Lending Conditions IDCOL - PO: 6%, tenor 10 years, 2 years grace
Lending Conditions PO- Owner: 10-15%, tenor 3 years

Development of Grant Component

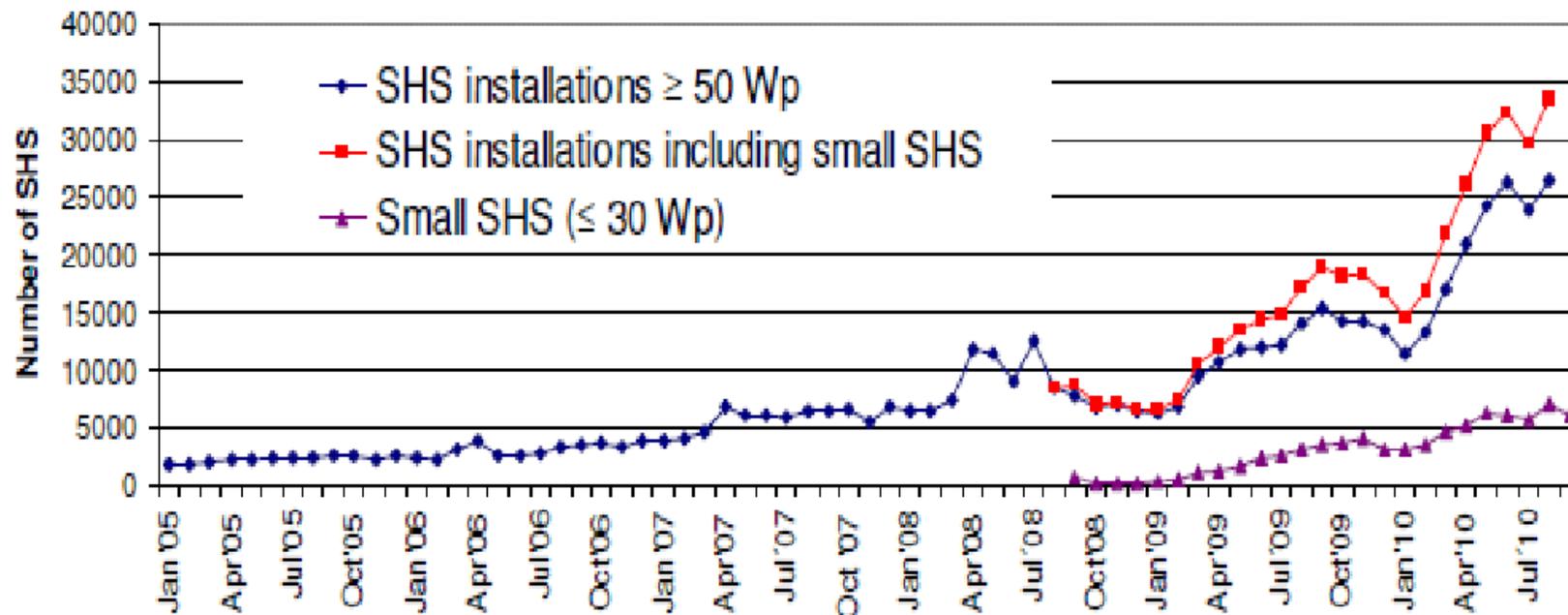


Schedule of Subsidies and Fees							<i>Amounts in EURO</i>	
	First 30,000 SHS	30,001 to 65,000 SHS	65,001 to 100,000 SHS	100,001 to 200,000 SHS	200,001 to 300,000 SHS	Beyond 300,000 SHS	Total*	
Number of SHS	30.000	35.000	35.000	100.000	100.000	71.724	371.724	
Investment Subsidy per SHS	30	30	30	30	25	20		
Investment Subsidy-Total	900.000	1.050.000	1.050.000	3.000.000	2.500.000	1.434.483	9.934.483	
Business Development Subsidy per SHS	8	6	4	4	3	2		
Business Development Subsidy-Total	240000	210000	140000	400.000	300.000	143.448	1.433.448	
IDCOL Fee per SHS	13	10	7	7	7	7		
IDCOL Fee-Total	390000	350000	245000	700.000	700.000	502.069	2.887.069	
	1.530.000	1.610.000	1.435.000	4.100.000	3.500.000	2.080.000	14.255.000	
<i>If new POs are selected under the program, business development subsidy for those will be as follows:</i>								
	First 2,000 SHS	2,001 to 4,000 SHS	4,001 to 6,000 SHS	6001 to 8,000 SHS	Beyond 8,000 SHS			
Business Development Subsidy per SHS	8	6	4	3	2			
*In case of inclusion of new POs, less number of SHS will get subsidy.								

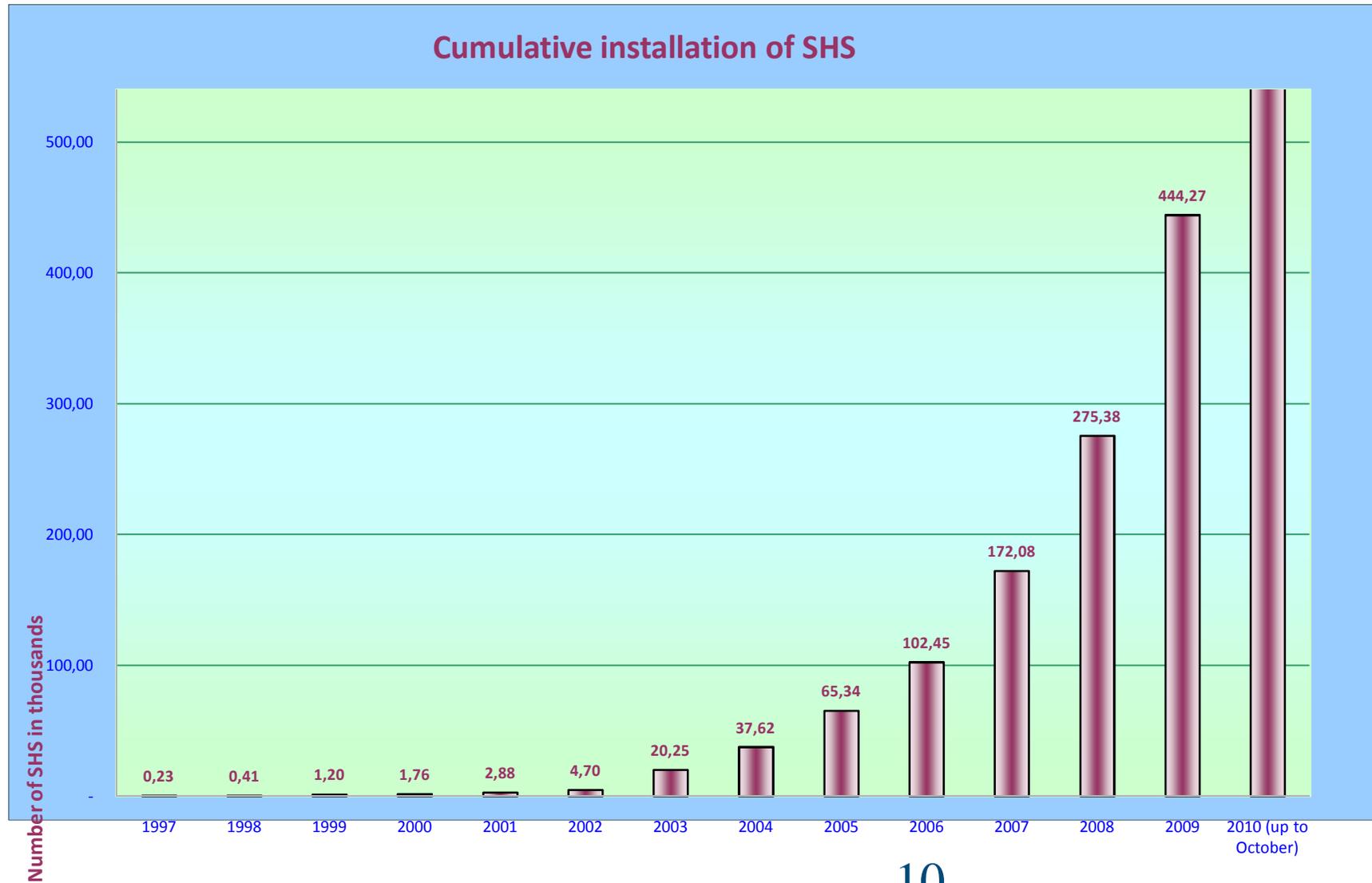
Monthly System Installation Figures



Monthly SHS Installation under IDCOL Solar Program



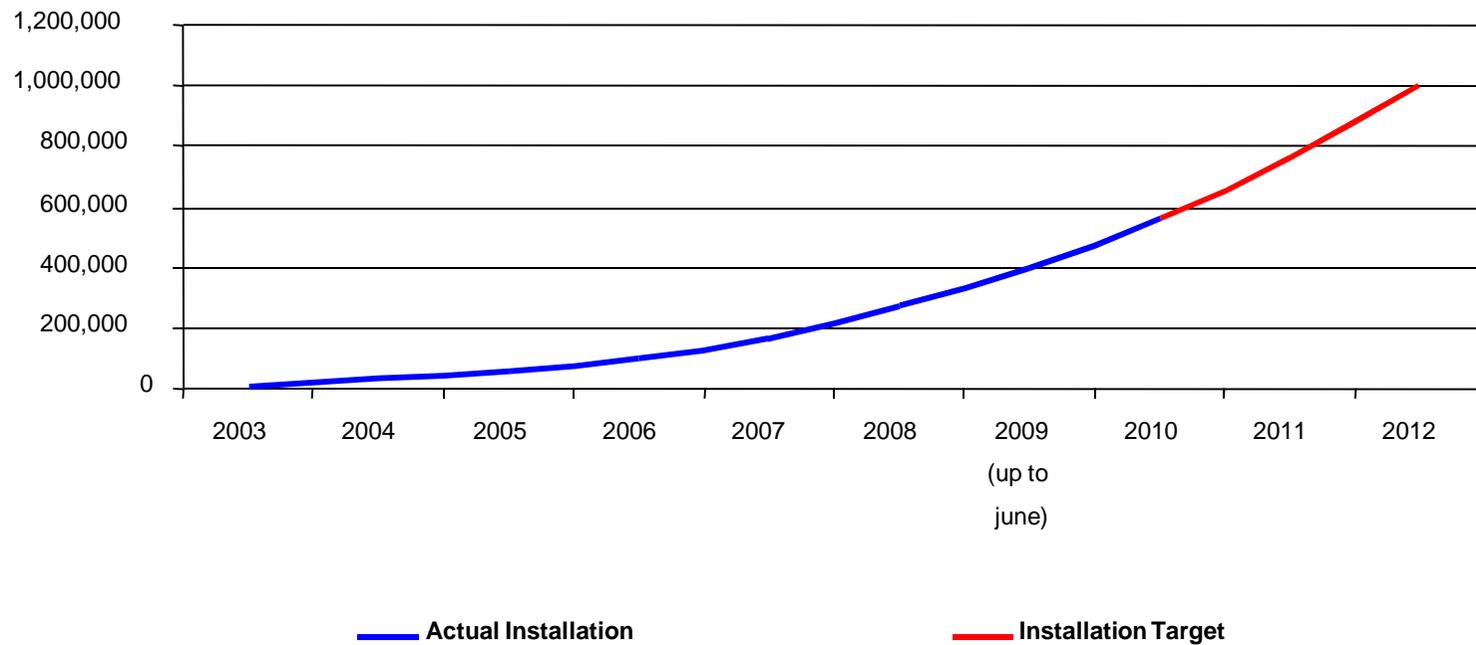
Cumulative Installation Figures (since 2003 IDCOL Program)



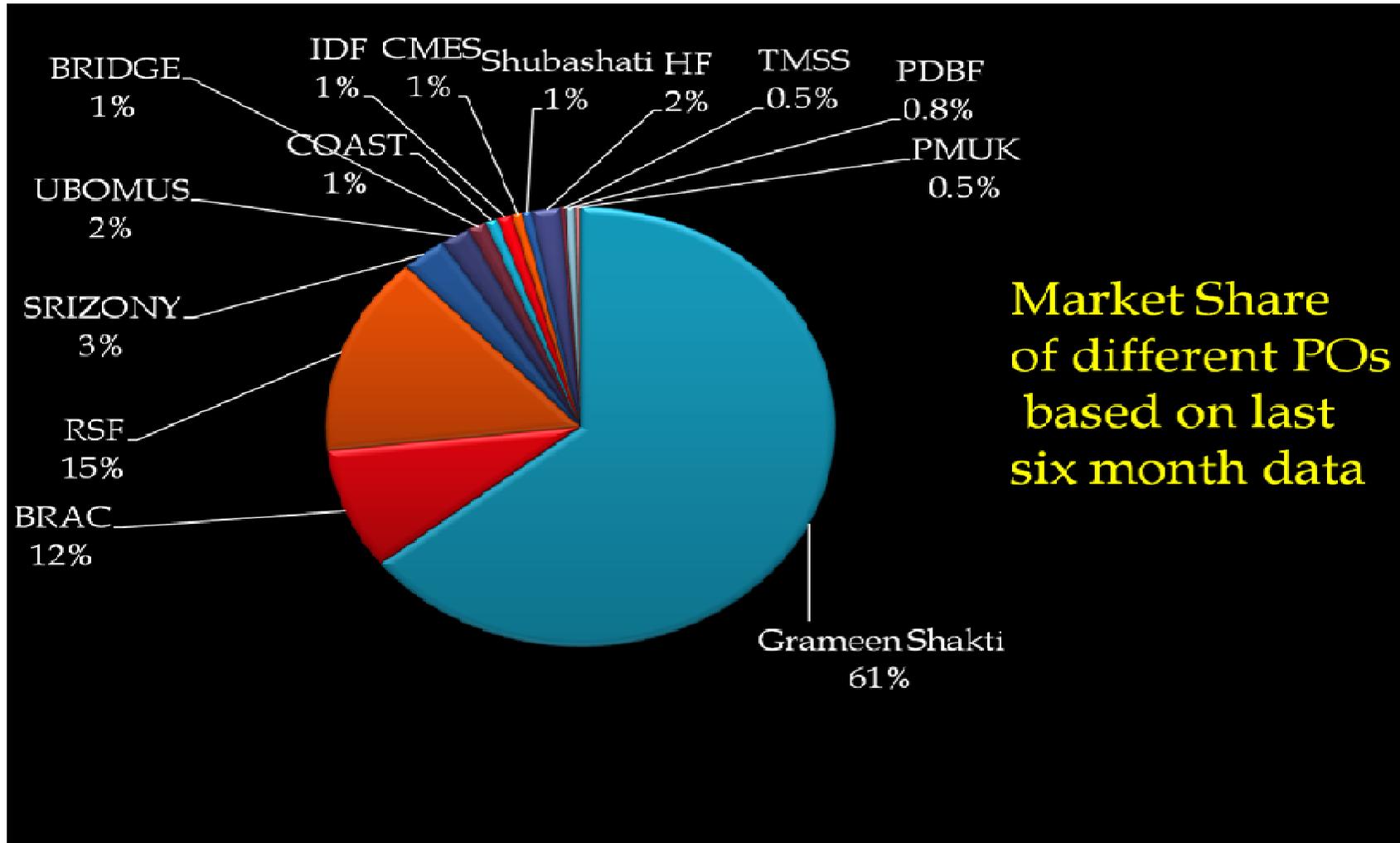
IDCOL Vision: “One Million SHS until 2012”



Projected installation of SHS under IDCOL's solar program



The Partner Organizations (POs)



IDCOL SHS Program - the „Bangladesh Experience“

Provisions to ensure Sustainability

Lessons learned and Conclusion

- **Rigid qualification procedure** applied in selection process of Partner Organizations (POs), like requirement of fully developed business plan, adequate staffing, staff qualification and technical/microfinance experience, minimum size (number of beneficiaries of MFIs), etc.
- Technical standardization committee (TSC) developing **detailed installation specifications and performance requirements** for the systems, frequent monitoring through external institutions (e.g. International University)
- **Business/Institutional development grant** to the Partner Organizations in relation to numbers of system installed, provision of program funds and obligation of IDCOL to provide basic facilities (computer, instrumentation, etc.) and training to POs
- **Donor requirement of IDCOL to inspect and verify at least 50%** of the installed systems before approving grant and credit, resulting in huge increase of number of IDCOL full time monitoring staff (currently > 40 inspectors)

- **Donor requirement of external monitoring consultant** (international/local) assigned for continuous and additional detailed monitoring of certain percentage (1.5% resp. 3%) of the total number of systems installed
- Responsibility of external consultant also includes **review and monitoring of the structures, procedures and performance of the POs** implementing offices.
- **Assessment and monitoring of debt collection efficiency** (minimum 80%) as one of the performance evaluation parameters for POs. If not achieved, temporary exclusion from program.
- Monthly meetings (92 times since program start) of **Operations Committee (OC)** which comprises the responsible managers of all POs, Monitoring Consultant, etc. to review project progress and performance and to address e.g. outcomes of IDCOL/Consultants monitoring exercise

- Establishing of **IDCOL call center for customer complaints**, sticker with number attached to each installation, follow up of IDCOL on POs attendance to reported problems
- **Long warranty periods for equipment components** (20 years for panel, 5 years for battery, 3 years for charge controller) to be provided by PO/supplier.
- Obligation to PO to establish **post warranty support structures**
- **Moderate and decreasing levels of subsidy** in order to facilitate transition to a commercially viable, demand driven (and not subsidy driven) SHS market

Based on available figures of late 2009, 52% of the installations were without any problems and three categories of problems were found:

- **Negligible inefficiencies (13%)**, such as shading or wrong angle of the solar module, which were corrected locally.
- **Deficiencies needing attention (24%)**, such as inferior installation quality, use of excessively long cables, bad wiring or low quality cables not up to the technical standards defined by IDCOL
- **Installation Problems (11%)** that could potentially damage the system or reduce its lifetime and required immediate repairs. The main problems in this category were damages to or bypassing of the charge controller.

Findings of external Monitoring Consultant



The main results from the technical inspections of new SHS between November and December 2009 are shown below:

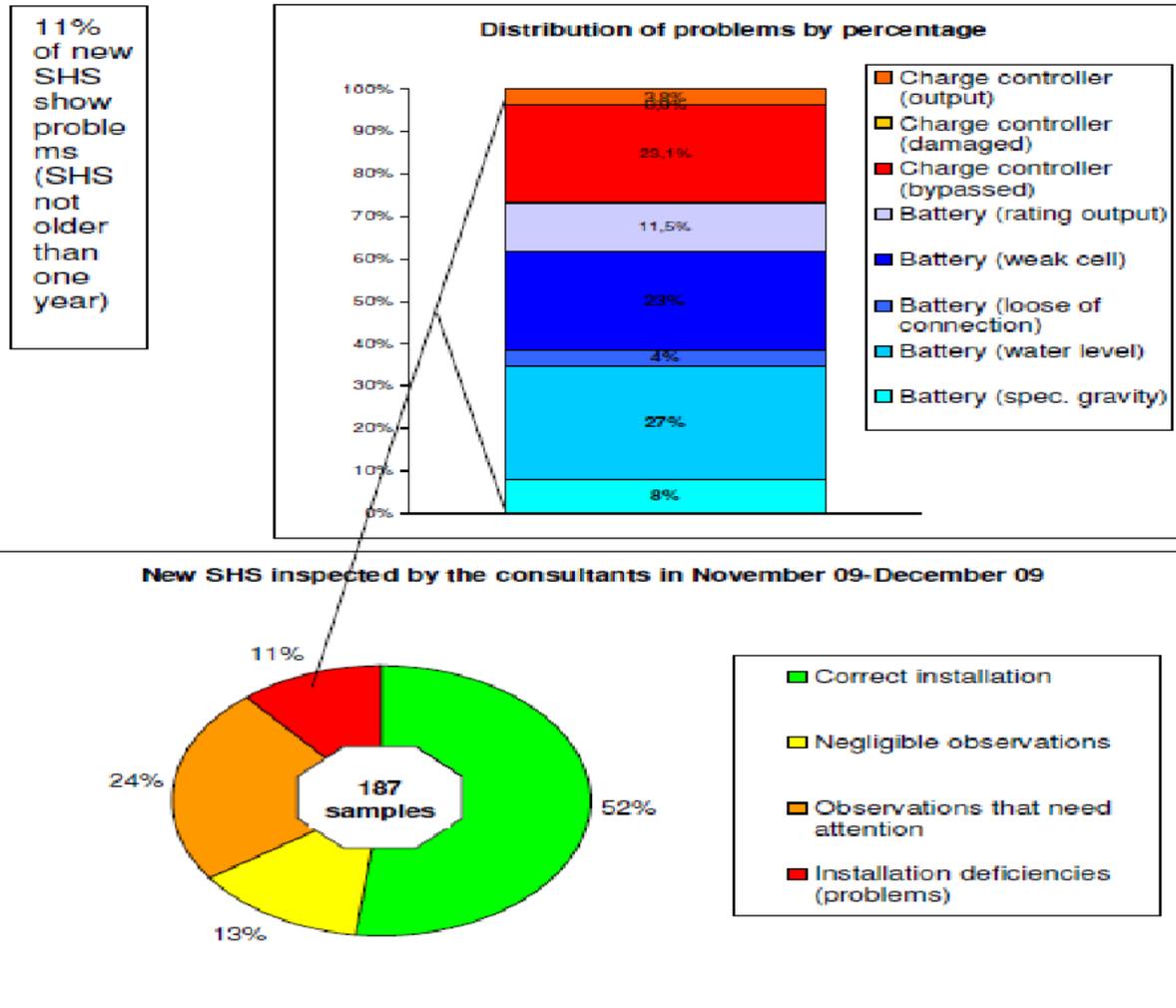


Figure 2: Distribution of new SHS installation deficiencies and problems Nov - Dec 09 – consultant's findings

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Provisions to ensure Sustainability

Lessons learned and Conclusion

- Existing **strong microfinance sector is a key element** for successful and large scale program implementation
- **Credit facility possibly more determining for program success** than level of subsidy
- Identification of institution with certain degree of **autonomy from government structures and procedures is crucial** for flexible and efficient program implementation
- **Technical and financial service “out of one hand”** ensures that customers are not “left alone” after system installation, debt collection activity **leads to continued relationship.**
- **Ownership Model** has (at least in Bangladesh) proven to be **more successful than the Fee-for-Service Model**

The success of the program is based upon (a unique?) combination of factors, like

- a continued bad prospective for grid connection and grid supply,
 - a relatively independent and proactive financing institution,
 - a vibrant micro credit sector, high acceptance of credit financing,
 - stable economic development of the country,
 - high population density and accessibility
 - additional income for rural households through remittances, and
- - a program that adequately considers all of this -

There is a lot to be learned for other programs, but using the „receipe“ will not necessarily ensure the expected success.

Thank you very much for your attention!!