



# Commercialisation of Solar Energy in Urban and Industrial Sector in India: Prospects in Dairy Sector

Anand Shukla  
GTZ

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## GTZ Profile

**GTZ is a limited liability company, owned by the Federal German Government**

**GTZ is an implementing agency for International Cooperation and Technical Assistance (TA) in Developing Countries and Countries in transition**

**Working on a public-benefit basis GTZ provides viable solutions for sustainable development worldwide**

**GTZ works on behalf of**

- **German Government (BMZ, BMU, BMWi, etc.), and**
- **International Organisations (EU, UN, etc.), Private Clients and Governments**



# Fields of Competence of GTZ



**Economic and employment  
promotion**



**State and democracy**



**Agriculture, fisheries and  
food**



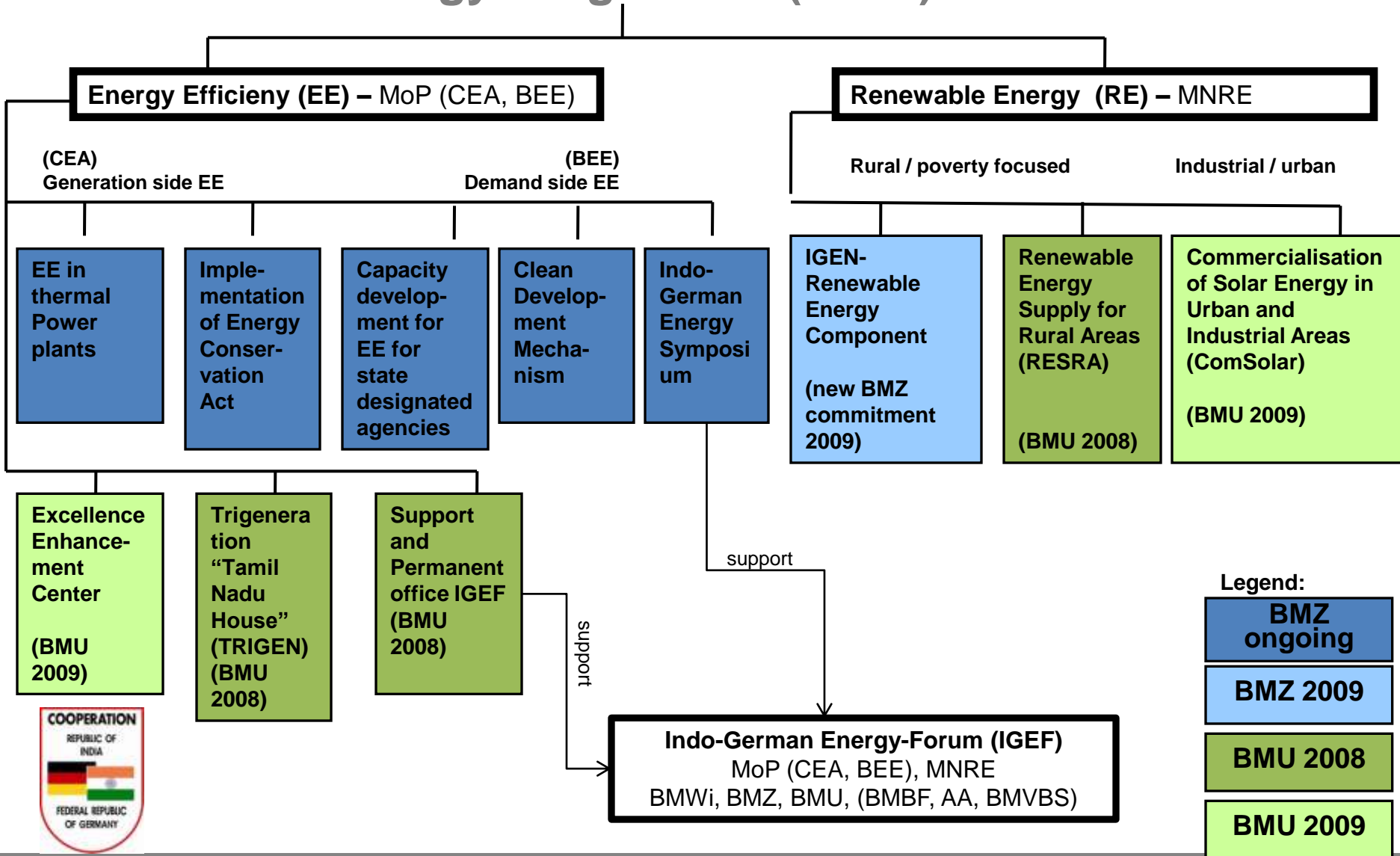
**Environment and  
infrastructure**



**Health, education, social  
security**



# Indo German Energy Programme (IGEN)



**Legend:**

- BMZ ongoing
- BMZ 2009
- BMU 2008
- BMU 2009



# ComSolar: Commercialisation of Solar Energy in Urban and Industrial Areas

## Main Objective of the project:

To develop and demonstrate commercially viable models for decentralised commercialisation of solar energy in urban and industrial areas developed and tested through pilot projects

## Target groups:

- ⊙ Buildings in urban areas, e.g. solar PV rooftop systems
- ⊙ Industry with heating and cooling requirements and cogeneration potential
- ⊙ Solar thermal and PV power plants through Independent Power Producers





# ComSolar: Planned Measures and Selection Criteria

The **planned measures** can be divided into **six thematic areas**:

- ⊙ Pilot projects
- ⊙ Technology transfer
- ⊙ Monitoring
- ⊙ Information and knowledge campaign
- ⊙ Capacity building and dissemination programme

## **Selection Criteria for Pilot Projects**

- ⊙ Innovative and commercially viable project ideas
- ⊙ Market potential for scaling up
- ⊙ Commitment of partners



# ComSolar: Benefits of Solar Applications

## **Photovoltaic**

- diesel replacement
- peak power shaving
- energy independence
- reduction of GHG emissions

## **Solar thermal**

- diesel replacement
- savings through process heat for & cooling
- energy independence
- reduction of GHG emissions

## **Solar thermal power generation**

- reduced dependence on oil import
- saving of foreign exchange
- energy security
- enables cost effective thermal storages



## Milk Collection Units



BMCs (Litres)	DG sets (kVA)	Operation (hrs)	Combination
500	5	2 - 8	Grid + DG set, DG set
1000	7.5		
2000	15		
5000	25		



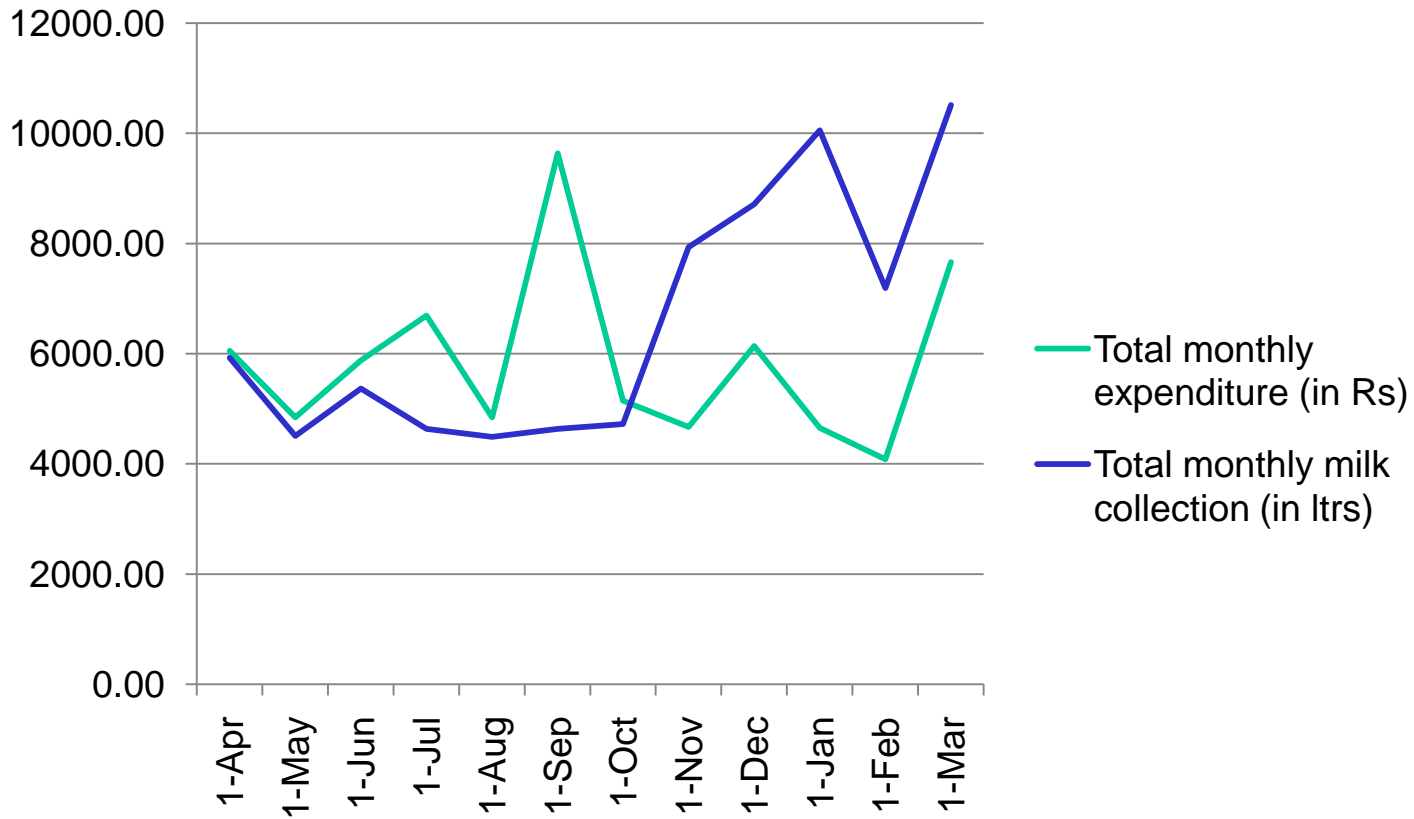


## Case – 1: Expenditure on Milk cooling System with 500 litres capacity and 7.5 kVA DG set

Months	Total monthly expenditure (in Rs)	Total monthly milk collection (in ltrs)	Fuel Expenses per litre
1-Apr	6055.00	5924.10	1.02
1-May	4844.00	4508.50	1.07
1-Jun	5,882.00	5,368.80	1.10
1-Jul	6691.00	4636.70	1.44
1-Aug	4844.00	4489.10	1.08
1-Sep	9638.00	4636.40	2.08
1-Oct	5150.00	4723.60	1.09
1-Nov	4671.00	7932.70	0.59
1-Dec	6141.00	8713.40	0.70
10-Jan	4655.00	10057.20	0.46
10-Feb	4085.00	7189.60	0.57
10-Mar	7664.00	10515.60	0.73



## Case – 1: Milk Collection and Expenditure System with 500 litres capacity and 7.5 kVA DG set



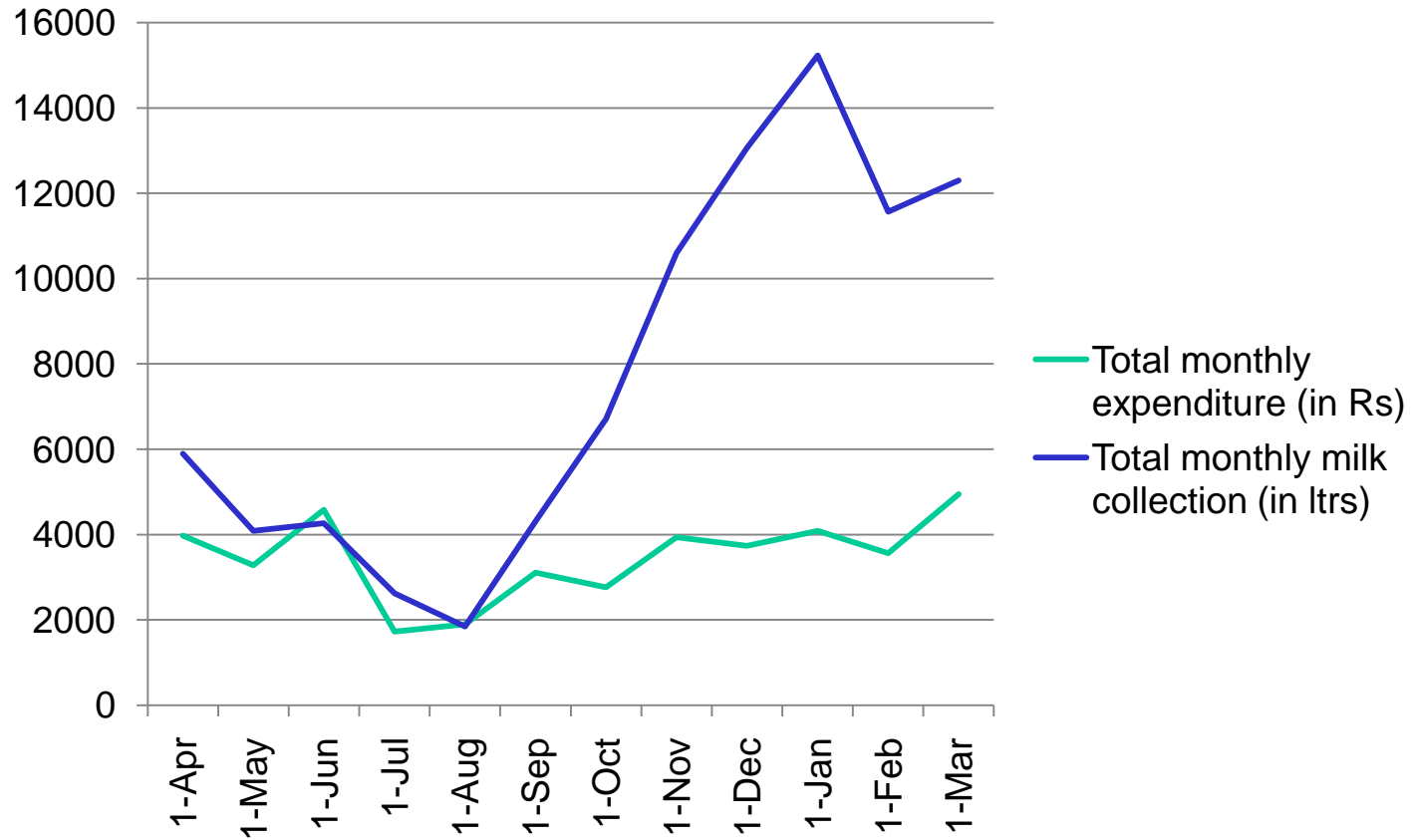


## Case 2: Expenditure on Milk Cooling System with 1000 litres capacity and 10 kVA DG set

Months	Total monthly expenditure (in Rs)	Total monthly milk collection (in ltrs)	Fuel Expenses per litre
1-Apr	3979.00	5900.00	0.67
1-May	3287.00	4091.00	0.80
1-Jun	4,582.00	4,270.00	1.07
1-Jul	1730.00	2626.00	0.66
1-Aug	1903.00	1848.00	1.03
1-Sep	3114.00	4311.00	0.72
1-Oct	2768.00	6712.00	0.41
1-Nov	3941.00	10601.00	0.37
1-Dec	3740.00	13065.00	0.25
10-Jan	4088.00	15230.00	0.31
10-Feb	3565.00	11572.00	0.31
10-Mar	4950.00	12298.60	0.40



## Case – 2: Milk Collection and Expenditure System with 1000 litres capacity and 10 kVA DG set





## Activities required in ComSolar

Task
Identification of suitable site
Exercise energy audit
Customize Bulk Milk Coolers as per Indian Conditions
Work out economics and design solar system
Implementation
Evaluation and Monitoring
Process of scaling-up



## GTZ is willing to provide technical support and invites:

- ⊙ **Socially adaptable, commercially viable and innovative project ideas with high potential to scale up;**
- ⊙ **Partners with high commitments**
- ⊙ **High potential for GHG emission reduction**
- ⊙ **Project approaches: Public Private Partnership**
  - Microfinance**
  - Corporate Social Responsibility Initiatives**

Technical support in form of feasibility study, project planning, technology cooperation and transfer, interfacing with project stakeholders, capacity building, development of management and governance model, monitoring plans and policy advocacy etc.



# Thank You

A landscape photograph showing a dry, hilly area with sparse vegetation. In the foreground, there is a prominent, gnarled, leafless tree on the left. The middle ground features several green trees and a dirt path. The background consists of rolling hills and mountains under a clear blue sky.

**anand.shukla@gtz.de**