

Pilot project as part of BMBF-Megacities Project „Sustainable Hyderabad“

WP 6

nexus

Institute for Cooperation Management
and Interdisciplinary Research GmbH

WP 3.2.A

RESS

Humboldt-Universität zu Berlin
Faculty of Agriculture and Horticulture

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- Capital of Andhra Pradesh (South India)
- Population: 6.5 million (census 2001)
- Projection: 15 million in 2025
- Gap between population growth and infrastructure
- Region vulnerable to climate change



- Energy sector in India, A.P. (state) and Hyderabad is characterized by a steadily growing power demand surplus (> 8% p.a. 2012 to 2017) (RESS 2009)
 - This results in an increase of scheduled and unscheduled power cuts and voltage fluctuations
 - As energy is the main driving force of development, power insecurity is a mayor concern of Indian politics
- “India's development agenda focuses on the need for rapid economic growth as an essential pre-condition to poverty eradication and improved standards of living” (NAPCC 2008, 12)*



Source: nzherald.co.nz, 5.07.2007

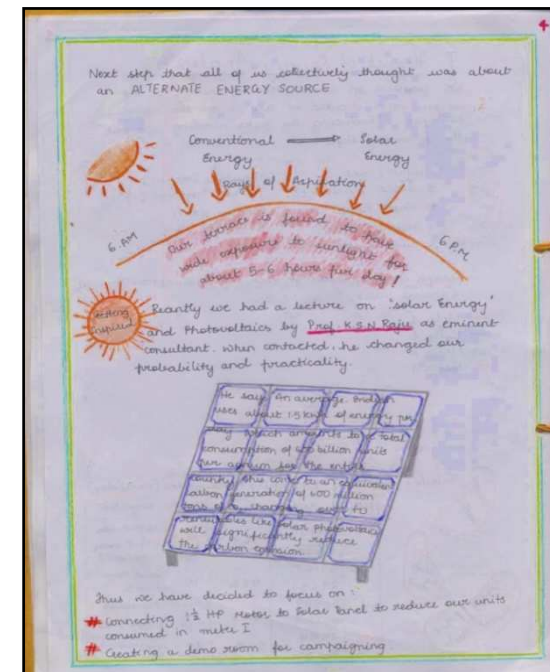
- Focus on off-grid installations in rural areas and on-grid installation in urban areas (Megacities)
- When PV-generated electricity competitive with tariff of grid power:
small scale rooftop installations more attractive
 - installation + consulting companies in great demand
 - Feed-in system (net-metering) to be introduced to make best use of grid connectivity

Our pilot project: develop a sustainable model to create a win-win-situation for user, companies as well as local energy suppliers.



Objectives:

- Testing of technical and financial feasibility of small-scale solar PVs
- Testing of market driven pricing structures
- Improvement of governance structures and efficiency of institutions
- Awareness-raising for renewable energy and sustainable development at grassroots level (school children as multipliers)



- Schools' working hours during peak insolation (8am – 4pm)
→ no need of expensive backup-systems (battery)
- Little energy demand
→ easy to implement 1st project phase
(3-5 kWp as pre-test of FIT + net-metering facilities)
- Use of renewable energy
→ make schools independent from diesel generator sets
→ save fuel and reduce CO₂ emissions
- Improvement of learning conditions is of political and social concern
- Children as multipliers in their direct environment
→ capacity building!

nexus 4. Project partners

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- Research project „Sustainable Hyderabad“ (BMBF)
www.sustainable-hyderabad.in
- Educational institutions (3-5 schools)
- Solar companies (from Germany and India):
 - SCHOTT Solar
 - Greenstratos Consulting Pvt. Ltd.
- Capacity Building:
 - Confederation of Indian Industries (CII - Sohrabji Godrej Green Business Centre)
 - Indian Youth Climate Network (IYCN)



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- Institutional Partners:



- NEDCAP (Non Conventional Energy Development corporation of Andhra Pradesh)



- APERC (Andhra Pradesh Electricity Regulatory Commission)



- APCPDCL (Andhra Pradesh Central Power Distribution Company Ltd)

nexus 5. Schools' rooftops to be utilized

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Driving forces of pilot project:

- India's Solar Mission (promotion of small scale projects)
- Little knowledge about the institutional and governance framework of Solar PV
 - establish FIT solutions on state level and test practicability of finance models (net-metering)
- Successful implementation of solar school projects in Germany (e.g. →BMU Climate Initiative for schools)

Cooperation Example:

Stakeholders of different backgrounds/ sectors aim at implementing smart energy systems

1. Politics (MNRE, NEDCAP)
2. Administration (APEREC, APCPDCL)
3. Economy (Schott, Greenstratos)
4. Civil society (Schools, NGOs)
5. Science (Indo-German Project, Osmania University)

- *RESS (Kaushik Deb, Anjali Garg, Kai Rommel) (2009): Background Study: Energy Management For The Emerging Megacity Hyderabad - Studying Demand, Supply And Gaps And Exploring Technical, Social And Institutional Factors (No.8, 21f). Berlin*
- *Government of India/ Prime Minister's Council on Climate Change: National Action Plan on Climate Change (2008). Delhi*
- *BMU - Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (2009): Climate Protection Pays Off. Berlin*

Thank you for your attention!

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www.sustainable-hyderabad.in

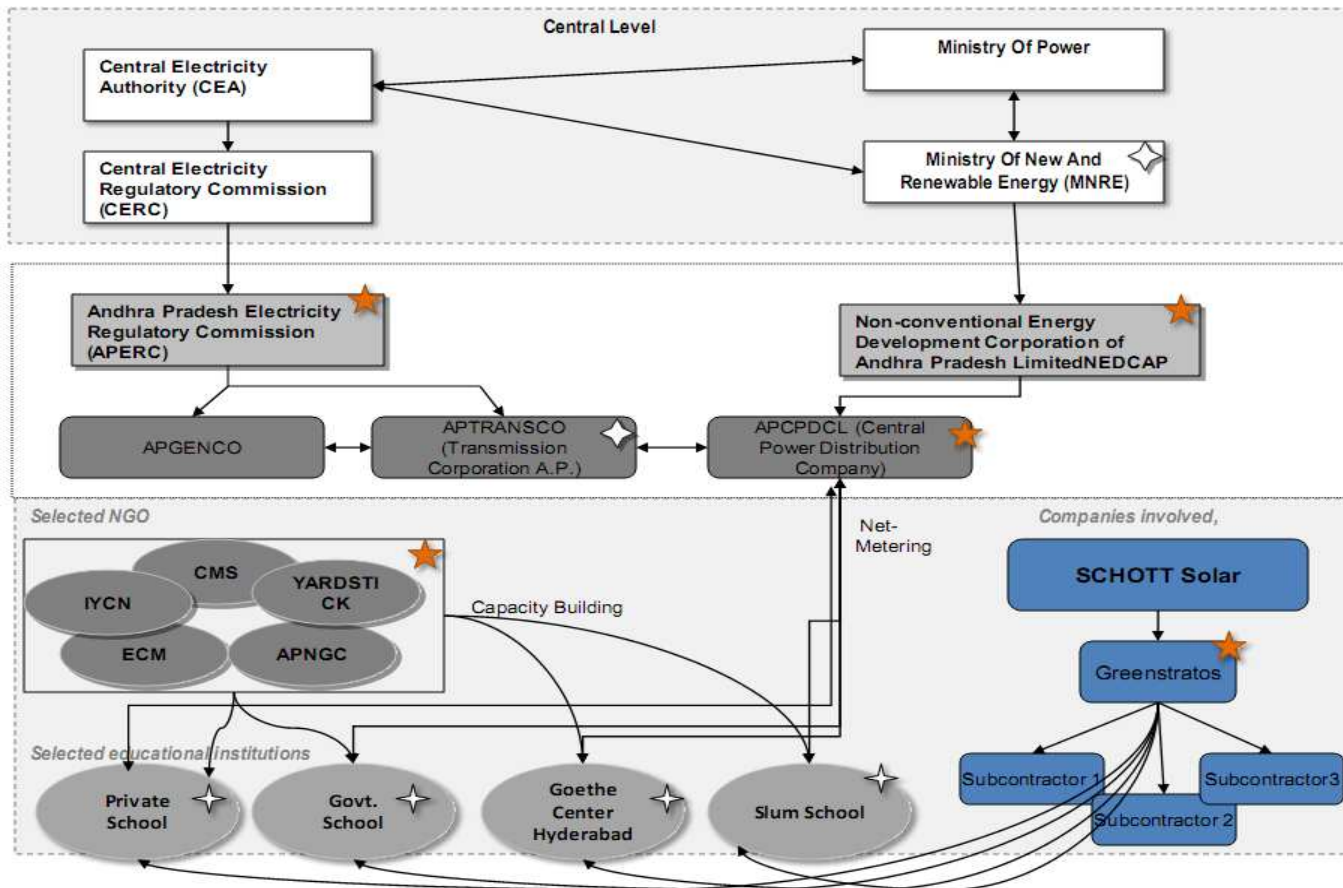
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nexus Project structure

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Project team
„Sustainable
Hyderabad“

2nd phase of the project: Mahatma Gandhi Memorial Government Girls High School (MGMGGHS)

- Location: Nampally/Hyderabad
 - Students: 550 students
 - School timings: 8am – 4pm (8 hours)
 - Electricity consumption: approx. 250 units/month; Rs. 2000/month
 - Contribution by school: no own funds
- Business model : investor finances the installation, while school is repaying the loan by paying the usual electricity cost to investor.

nexus Project details

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- **Beneficiaries**
 - Private schools (e.g. Sri Aurobindo)
 - Goethe Centre
 - Government school with investor (as a next phase)
- **System Details**
 - Solar PV roof top system with provision of gross/net metering (presently 3kWp, upscaling possible)
- **Modalities**
 - Power Purchase Agreement (PPA) to be signed with APCPDCL, selling entire energy at a FIT determined by APERC
 - Solar energy utilized during power cuts
 - SCHOTT Solar AG supplies the PV system by viability gap funding which would depend on FIT as decided by APERC

nexus Sri Aurobindo International School

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- Private school
 - Location: Vidya Nagar/Hyderabad.
 - Students: 1200
 - School timings: 8am – 4pm (8hours)
 - Average electricity consumption: approx. 2286,33 units/month;
Rs.13 887,75/month
 - Tariff: non domestic/commercial - Rs 6.20/unit
 - Contribution by school: coverage of Rs. 340 000 of the initial cost by a loan
- The 3kW system would be used for the computer lab, which runs approx. 5h/day as well as for several rooms on the ground floor of the building without direct sunlight.



- The Association for German Culture/Hyderabad
- Location: Banjara Hills/Hyderabad
- Office hours: 6/6:30 am to 6 pm-8 pm(12 - 14 hours)
- Average electricity consumption(current building): approx. 1637,42units/month; Rs.10167/month
- Contribution by institution: loan for initial investment Rs. 340 000
- The Goethe Centre/Hyderabad and the Alliance Française establish a one of its kind cooperation in India and will jointly move to a new (green) building in 2010/2011, which is built by APIIC → Building to be completed by end of 2010



Area of the roof to be utilised: 465m²

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