Rooftop Solar in Grassroots Environment
(SOLAR-ROOT)

Steinbeis

GREEN SCHOOL AWARD 2012

National Green Corps

Indo-German Project

Proposed by

TU Berlin/ Nexus Institute, Berlin

And

Steinbeis GmbH, Stuttgart

(Steinbeis Centre for Technology Transfer India)

TU Berlin

nexus
Institut für Kooperationsmanagement und interdisziplinäre Forschung

no2co2
realise. minimise. neutralise.

SUSTAINABLE HYDERABAD PROJECT

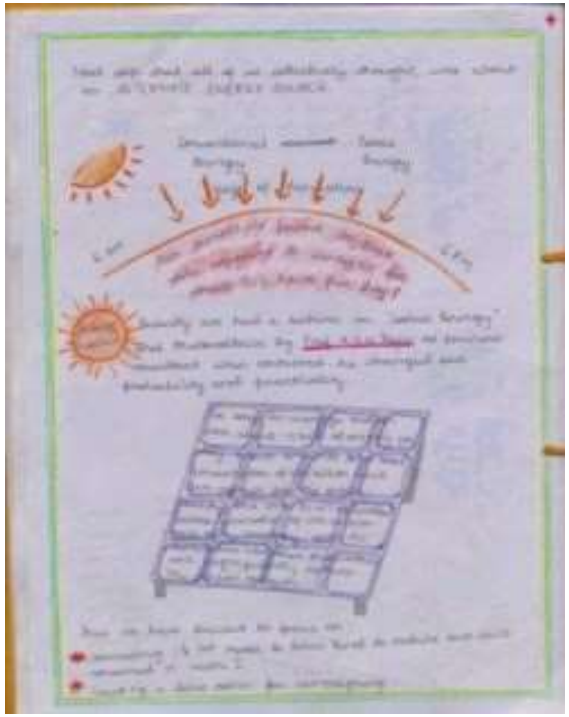
National Solar Mission:

- Establish India as a global leader in solar energy, by creating the policy conditions for its **diffusion across the country** as quickly as possible
- Promoting **off-grid systems to serve populations** without access to commercial energy and modest capacity addition in grid-based systems
- **Promote programmes for off-grid applications**, reaching 2000 MW by 2022

Solar… what?!

- The Project brings Awareness to Grassroots-level (schools and local communities)
- ➢ In a playful way the decision-makers of tomorrow, their teachers and parents learn about climate-change and the assets of Renewables

Solar powered Schools

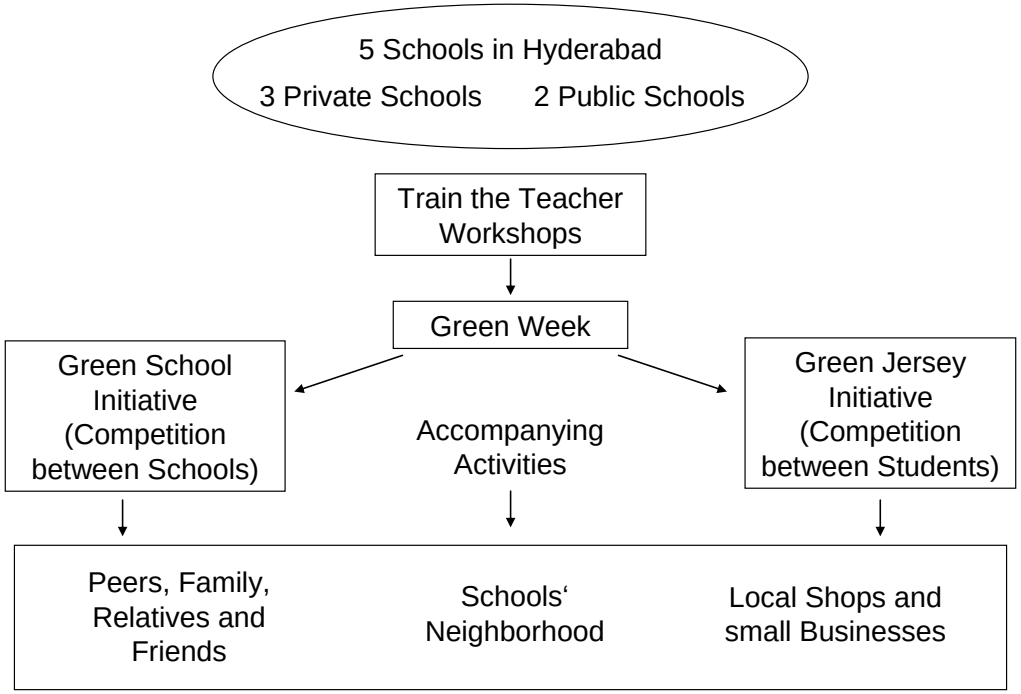


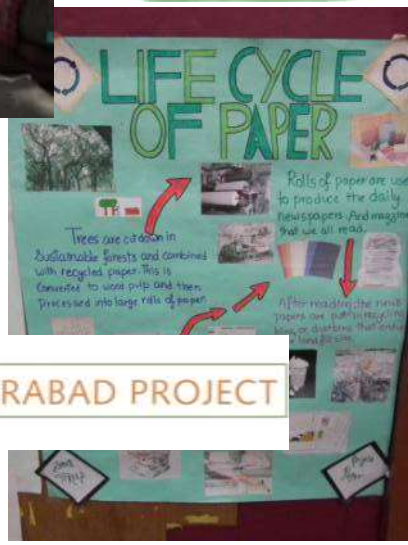
- Make Solar Energy visible and usable and enhance demand-side energy efficiency
- Learning by doing: Students, teachers, families involved in implementation, maintenance of solar systems

Demand-side Management

- Explore and promote the opportunities of Solar on community level (also in urban areas)
- Enhance technical feasibility and policy implementation of small-scale rooftop (from off-grid to grid-connected)
- Analyse financial feasibility (e.g. ESCO, DG replacement)

Our expertise: (not only) experience





SUSTAINABLE HYDERABAD PROJECT

- Established Indo-German co-operation
- Partners from Research (TU Berlin), Cooperation Mgmt (nexus Institute), Solar Industry (Solon, tbd), Tech-transfer (Steinbeis), Project Implementation (No2CO2, NGC)

What did we learn?

- Schools are keen to support change-making and innovation: for a **better future of the children**!
- They provide a perfect environment for raising **awareness** on climate change, sustainability, **green energy**
- Children develop remarkable enthusiasm towards **holistic learning approaches** and self-initiated, group-based activities
- School management and teachers encouraged to change everyday practices (and even the curriculum)
- Concrete examples (e.g. implementation of solar systems) **transform knowledge into action** and combine social change with technical know-how (**life-skills**)
- The children's ideas spread out: their activities bring about **change** into the **families and neighboring community**

National Solar Mission

- “The Mission will support various activities for successful implementation of the Mission”
  - R&D, Human Resource Development
  - Technical Assistance, training
  - Publicity and Awareness etc.

➢ This can be provided by us.

➢ Thanks for making us part of the Mission!

Or

stay with low-tech solutions:

cheapest light bulb made of just a plastic bottle

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Project execution: nexus Institute
Project partner (Germany): TU Berlin
Project partner (India): Steinbeis Center for Technology Transfer India, National Green Corps (a programme of the Ministry of Environment and Forests, GoI), Indian Youth Climate Network (NGO), No2CO2 (NGO)

Thematic focus: Renewable Energies, Energy Efficiency and Climate Change Awareness

The envisaged project aims to:

- Gain experience with the implementation of solar-rooftop policies on local (small-scale) level,
- Make Renewables visible and usable and enhance demand-side energy efficiency,
- Bring climate-change awareness to local communities: focus on a climate-friendly lifestyle of the citizens of tomorrow.

Project type: Up-scaling of pilot project (capitalization), awareness raising and capacity building

Measures:

- Build a network of schools and their communities (ready to co-operate and compete),
- Implement rooftop-solar in 50 schools in India, 5 schools in each of 10 cities,
- Run an awareness-raising program, learning experience and youngsters' competition in the schools and with the community on climate-change, renewables and energy efficiency,
- Accompany the activities with PR-work,
- Evaluate the technical and financial feasibility of small-scale solar systems and develop a sustainable business model that can be adopted in the surrounding community,
- Build structures for organizational sustainability after the project's end.

Comments: The partners have carried out a pilot in three schools in Hyderabad city in 2012 ("Solar powered schools"). The project was carried out under the "Sustainable Hyderabad" megacities project funded by the Bundesministerium für Bildung und Forschung, BMBF (www.sustainable-hyderabad.de).

Project volume: approx. 490.000 Euro

Rooftop Solar in Grassroots Environ-ment (SOLAR-ROOT)

How everything started - Participants of the Kick-Off Workshop in October 2011 at Saraswatha Academy Trust Highschool, Hyderabad

Volunteer from „Let‘s Unite for a Greener Tomorrow (LUGT) explaining the concept of Carbon Footprint át Erramanzil Govt. Highschool

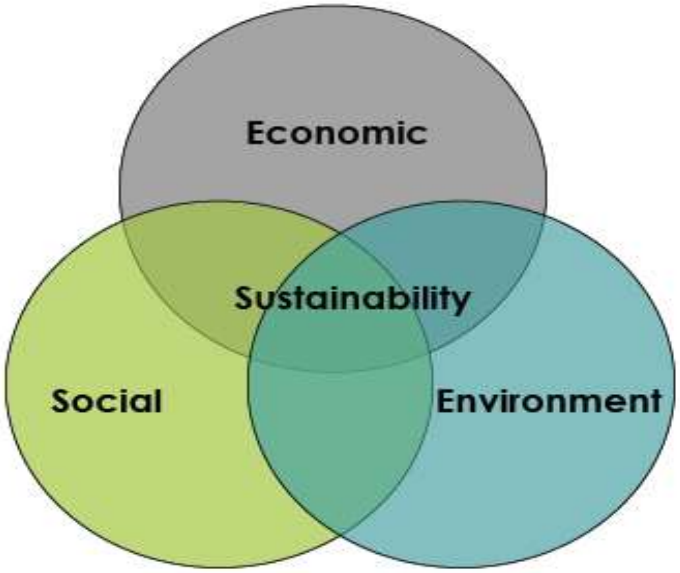
Ambika Balraj from EcoSlate explaining the Carbon Cycle and the Green House Gas Effect

Students during Green Week conducting energy audit in their school

Students playing a competion on Green Adventure Day at Landscape Gardens, Osmania University

Students during Green Week calculating their school‘s Carbon Footprint

Training on Lifecycle Thinking to Sustainability



Life Cycle Thinking to Sustainability

Implementation Methodology – **Green Energy**

In order to make all the change towards a greener school and a greener community visible for all (students, teachers, community), the schools will be supported in the implementation of solar panels and solar water-heaters on their rooftops.

Installing a rooftop solar system ensures a sustainable and reliable energy / water supply and helps in improving the learning and living conditions by bridging power-cuts.

Implementation Methodology – **Green Energy**

The installation of solar systems on the project schools should lead by example and encourage the community to learn about the positive effects of renewable energy.

The project will contribute to awareness raising and capacity building by involving the school (children, teachers, parents) in the project so that they understand the use and advantage of renewable energy and that they convey it to their own social environment.

The project envisages training a local entrepreneur and empower him to maintain the solar system of the school as well as promote this as his own enterprise.

Implementation Methodology – **Green Energy**

It helps households or even business people realize that they can use solar power as an effective power-source while making-up the deficiency in power-supply and at the same time contributing to significant improvements of the ecological situation.

A functional network between schools, governmental agencies and solar corporations ensures a vivid information flow and a quick reaction to every challenge in the future.

Implementation Methodology – **Green Energy**

The system installations could also be used for providing practical exposure to the participants of the Solar PV Training Courses organized by some Vocational Training Organisations - who may not have similar facilities of their own.

Implementation Methodology
Green School Award

Green School Award aims to also involve the overall school management. During the Green Week, students will calculate the overall sector-wise emissions of the school. Based on this and through the tool of energy auditing, students develop a comprehensive minimization strategy for the school, for example suggesting the exchange of regular light bulbs with energy saving lamps. With this strategy, the school management is provided with a detailed plan of emission reduction options, which are specifically developed for the particular school itself. Additionally, measures that help the school to become greener will be proposed by the students, as for example through a school gardening project or through the promotion of walking and cycling.

Implementation Methodology
Green School Award

Towards the end of the first year (about nine months later), the school's footprint will be calculated again. With this result, the school competes with the other schools of their group and the school with the lowest per student GHG emissions (the overall amount of emissions will be divided by the number of the schools' students) will win the Green School Award.

Implementation Methodology
Green School Award

By adopting the Green School and Green Community concept, a new dimension is added to the regular curriculum. The project therefore contributes to improved learning and an enhanced human capital of the city's economy.

Often social and technical innovations come up as part of the creativity phase and also offer the potential of emerging niche markets: Students potentially develop green business ideas (c.f. students who have earlier organized themselves in the Hyderabad based organization "Let's Unite for a Greener Tomorrow"; now some of them have started their own green businesses).

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