

Solar driven LED street lighting in Guiyang villages

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http://www.newscenter.philips.com/main/standard/news/press/2010/20100802_solar_led_china.wpd

<http://www.theclimategroup.org/our-news/news/2010/7/9/philips-joins-the-climate-groups-global-coalition-of-leading-businesses>

Project Background

Location: Asia, China, Guiyang Municipality

Date project established: August 2009

Philips Lighting participated in the Guiyang project which is part of the 'Solar LED Lighting 1000 Villages Program' – an initiative launched by The Climate Group and the One Foundation – and provided rural communities in China with solar powered LED street lighting.

Solar LED street lighting provides a high quality, sustainable lighting solution for people in remote areas who don't have access to the conventional electricity grid. This solution extends their day after the sun has set at an affordable cost, increasing the level of safety on roads and streets and allowing for more economic and social activity. The solution is also valuable in the "sun-rich" cities in and around the equator that can take advantage of the many hours of sunlight to supplement the capacity of their conventional electricity grid, addressing growing concerns about their ability to meet the steep increase in energy demand.

The aim of the 1,000 Villages Project is to explore effective policy measures and financial mechanism in rural areas. It is a five years project that was kicked off in August 2009.

There are 400 demo villages in China in the first two years and other 600 villages in China, India and Africa countries in the later three years.

The project aims to bring all stakeholders including governments, technology providers, research institute and related agencies together. All the results obtained from the project will be shared and communicated with the public.

The objectives of the project:

- To analyze social and economic effect of demonstration including carbon reduction and life quality improvement
- To provide policy recommendation of solar LED lighting technology scale-upping
- To recognize and solve the technical obstacles of solar LED lighting
- To explore new financial model and scaling up plan
- To explore a dialogue mechanism and business model bringing all stake-holders together

The first 100 installations in the Guiyang project were donated and installed in 13 villages in 3 districts around Guiyang city (Guiyang is the capital city of Guizhou Province).

After the first experience with Philips and its solar street lighting solution, Guiyang government (through the Guiyang Municipal Engineering Administration Department) purchased other 150 sets for a wetland park around some of those villages.

TCG's role in the project is to:

- Identify demonstration villages and determine project demonstration area on the basis of a number of criteria
- Engage technical partners
- Conduct local training for maintenance and protection
- Follow, collect and analyze related data for solar LED road lighting technology, policy, social and economic effects
- Hold seminars, round-tables and forums round solar

Mitigation and/or Adaptation

- Solar road lights are installed in more than 400 villages in China in first 2 years (2010-2012)
- Over 1.3 million tons carbon are reduced in first 2 years

Measurement:

- Solar driven LED street lighting provides high-quality, cost-efficient lighting using sunlight instead of conventional electricity.
- During the day a solar panel converts solar energy into electrical energy that is stored in a battery. When night falls, the battery discharges, releasing enough power for the LED luminaire to light the road.
- As this lighting solution does not consume any conventional energy, its carbon emissions during use are zero.

Social Benefits

- Lighting up the road and streets in remote areas that do not have access to the conventional electricity network, literally lights up the lives of the people who live there. Light after sunset enhances the quality of their lives in many ways: it makes their living environment a safer place; it gives them the opportunity to continue economic activity after dusk and engage more in (outdoor) social activities. In short: it increases their sense of well-being.

- In addition, the project also includes local training for maintenance and protection
- All of the respondents in the research into the Guiyang project indicated that the solar driven LED road light brings safety to them. Snakes and thieves are the most unsafe aspect at night in Xiao Xichong.
- Villagers believed the newly added visibility from the brighter Philips LED street lighting light will increase safety at night. They also perceived the effect of solar LED road light as pleasant and comfortable.

To gain insights into the (social) benefits of the project Philips conducted qualitative research on site has taken place through interviews with villagers about their experience with the new lighting solution.

The aim of the research was to learn the key parameters of road lights in rural areas that villagers care about (frequency of road light usage

- Lights on/off schedules
- Satisfaction with the outdoor environment before solar light installation

To validate with potential end users in rural China whether the prototype is suitable or good enough in terms of its functions

- Illuminance perception
- Comfort perception
- Safety perception
- Overall satisfaction

Potential for scaling-up of project

- By August 2012, there are 400 demo villages in China where solar driven LED will be applied.
- In the last 3 years, another 600 villages in China, India and Africa countries will be targeted.

Potential for replication of project

- The highly sustainable, off-grid solutions can not only make a difference to people in remote areas who don't have access to the conventional electricity grid, but is also especially valuable in the "sun-rich" cities in and around the equator. These cities can take advantage of the many hours of sunlight to supplement the capacity of their conventional electricity grid, addressing growing concerns about their ability to meet the steep increase in energy demand.
- Philips has therefore also working with selected partners in other countries in the ASEAN region (Indonesia, Philippines, Thailand, Vietnam) and is looking for partnerships and alliances in Africa (e.g. in Algeria, Morocco, Nigeria, Ghana).