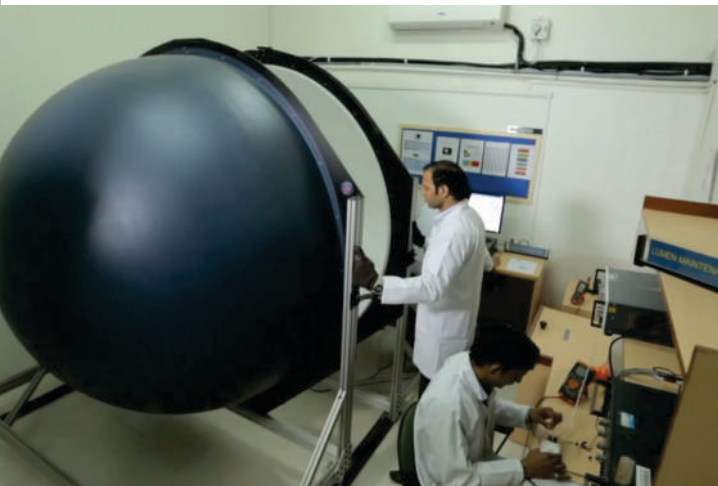


Improving Quality of Off-grid Products

Building Lab Capacity and Providing Training Infrastructure



Nearly 400 million Indians do not have access to grid electricity as their main source of lighting. According to the Census of India 2011, 43 percent of rural households still use kerosene for lighting. Traditional kerosene-based lighting devices are poor sources of light and negatively impact health and the environment.¹ A variety of modern off-grid electric lighting technologies have emerged globally over the last decade. These technologies are popular because they are cost-effective, robust, and use less energy.

The emergence of these technologies has led to efforts to develop the market for them. IFC's Lighting Asia/India program plays an active role in transitioning users from fuel-based traditional lighting to clean off-grid lighting by supporting development of the market for solar off-grid lighting technologies in India. A strong quality assurance and testing regime will build consumer confidence, improve quality of products in the market, and increase adoption of solar off-grid lighting. To achieve this, the program has introduced the Lighting Global² quality assurance framework in India, adapted to be relevant in the Indian context.

¹ Health Impacts of Fuel-Based Lighting - The Lumina Project, Technical Report 10, Evan Mills, Lawrence Berkeley National Laboratory, University of California, Berkeley, October 2012. Available online here: <http://light.lbl.gov/pubs/tr/Lumina-TR10-health-impacts.pdf>.

² Lighting Global is IFC/World Bank Group's platform to support sustainable growth of the international off-grid lighting market. Lighting Global supports the growing global market for modern off-grid lighting with a widely applicable, rigorous quality assurance (QA) framework. Key QA activities include measuring, benchmarking, and communicating information about product quality and performance. For more information on the Lighting Global quality assurance framework please visit <http://www.lightingglobal.org/>

The Lighting Asia/India program has partnered with The Energy and Resources Institute (TERI), New Delhi, to create a testing hub for solar off-grid lighting products in South Asia. The program supported the development of TERI's solar lighting laboratory by investing in laboratory infrastructure and providing in-depth technical training and continuous techno-commercial assistance to scale up the laboratory.

“This is a world-class test lab! It ensures that a product is stable and reliable, which gives us that much more confidence to go out and sell it. We are confident that we will have very few problems in the field,” Ramendra S. Baoni, Founder, ECCO Electronics Private Limited, speaking of TERI's solar lighting laboratory in Lighting Asia/India program's video on quality assurance standards for off-grid lighting products (<http://lightingasia.org/index.php/resource-library/gallery-image>).

Building Laboratory Infrastructure

IFC's Lighting Asia/India program helps TERI upgrade and expand its Solar Lighting Laboratory by:

- Equipping it with the latest technology and know-how
- Designing it in line with international best practices
- Increasing its testing capacity
- Supporting capacity-building.

The laboratory can test products as specified in the International Electrotechnical Commission's (IEC) quality assurance framework for off-grid lighting products.³ These test methods were jointly developed by IFC and the World Bank and adopted as IEC Technical Specifications 62257-9-5.



Equipment-Battery capacity test bench



Equipment-runtime test bench

³ The International Electrotechnical Commission (IEC) is the world's leading organization that prepares and publishes international standards for all electrical, electronic, and related technologies. For more information on IEC please visit <http://www.iec.ch/index.htm>.

Technical Training and Capacity Building



In-depth training at TERI's Solar Lighting Laboratory

The Lighting Asia/India program provides training and technical support to staff at TERI's Solar Lighting Laboratory. An in-depth week-long training on IEC test methods and setting up equipment was held in March 2013. The training combined classroom sessions and hands-on lab training sessions for maximum impact. The laboratory is the first in India to be accredited by the National Accreditation Board for Laboratories (NABL) for IEC 62257-9-5 standards, applicable to standalone lighting for rural electrification. The Lighting Asia/India program continues to provide technical assistance to the laboratory on testing and equipment-related issues.

Continued Techno-commercial Support

The Lighting Asia/India program also helps TERI's Solar Lighting Laboratory develop into a commercial solar off-grid lighting test facility. The program provides business development support by coordinating with solar manufacturers and the Lighting Global team, ensuring that the laboratory receives a continuous supply of solar off-grid lighting products for testing. The laboratory now conducts tests according to IEC's Initial Screening Method (ISM) and Market Check Test Method (MCM). Soon, the laboratory will also begin testing products according to the IEC's Quality Test Method (QTM).⁴



Product testing at TERI's Solar Lighting Laboratory

With IEC/TS 62257-9-5, test laboratories that are not currently part of the Lighting Global network can provide product-testing services to off-grid lighting manufacturers according to IEC standards. However, results from a particular test laboratory are not considered valid by Lighting Global unless the laboratory has been pre-approved by it. Four other laboratories in the Lighting Global network test according to the IEC test methods. These are the Schatz Energy Research Center (California), Fraunhofer Institute of Solar Energy Systems (Germany), Lighting Research Center (New York), and The Lighting Laboratory Institute for Nuclear Science and Technology, Nairobi (Kenya). TERI's Solar Lighting Laboratory is the first in the South Asia region within the Lighting Global network. This gives manufacturers of off-grid lighting products in the region affordable access to the most up-to-date and globally relevant quality standards.

⁴ Lighting Global has developed and institutionalized three complementary sets of standardized test methods to evaluate the performance of off-grid lighting products through IEC Technical Specification 62257-9-5. These include Initial Screening Method, Market Check Test Method, and Quality Test Method. The Quality Test Method is used to determine whether products meet the program's minimum quality standards. The Initial Screening Method is used to generate rapid feedback for manufacturers and – in some cases – to determine if products are eligible for a subsidy for QTM testing. The Market Check Test Method is used to determine whether the manufacturer of a product that has met minimum quality standards during QTM testing maintains the same level of quality and performance over time.

With the launch of the testing laboratory in India and the introduction of international quality standards, the Lighting Asia/India program is helping scale up the use of quality-assured, off-grid lighting products in the Indian sub-continent. TERI's Solar Lighting Laboratory will emerge as a testing hub for the South Asia region and become one of the handful of labs worldwide designed to test products in line with IEC's processes.



Once fully developed, the lab will be among the few in Asia that will be accredited to test solar lighting products according to global benchmarks, taking forward our work of developing quality and long-performing solar lighting systems,” Dr. R.K. Pachauri, Director-General, TERI, at the Clean Energy Ministerial 2013, New Delhi, where the lab initiative was showcased.

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About IFC

IFC, a member of the World Bank Group, is the largest global development institution focused exclusively on the private sector. Established in 1956, IFC is owned by 184 member countries, a group that collectively determines our policies. With a global presence in more than 100 countries, a network of nearly 1,000 financial institutions, and more than 2,000 private sector clients, IFC is uniquely positioned to create opportunity where it's needed most. We use our capital, expertise, and influence to help end extreme poverty and boost shared prosperity. **For more information, visit www.ifc.org.**

About Lighting Asia/India

IFC's Lighting Asia/India program is a market-transforming program aimed at promoting, both in value and presence, modern off-grid lighting among the off-grid population in rural India. Modern off-grid lighting includes solar lighting appliances, home systems and connections to renewable energy mini-grids. The program is designed with a series of interventions to alter market behavior by removing specific barriers that include market spoilage created by poor products, lack of information on distribution channels, lack of financing for companies and consumers, and lack of awareness that quality solar appliances are affordable, viable solutions.

For more information, visit www.lightingasia.org

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