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A Roadmap to Sustainable Lighting

- Dr Nadarajah Narendran & Ramani Nissanka

Powering LEDs from Coin Cell Batteries

- Fabien Franc

Courtesy: Lighting Research Center

A Roadmap to Sustainable Lighting

As South Asia becomes more industrialized and the population continues to grow, so does the region's demand for power. This increased demand is pushing the existing regional power generation facilities and transmission capacity to the brink. The problem is fueled, in large part, by inefficient lighting, which accounts for a significant portion of the electric load. The demand will only increase as millions of people in rural areas living "off the grid" await access to power.

Interestingly, however, lighting may be the key to lifting the burden on power generation facilities and leading the way to regional transformation, economic growth and energy security.

In April 2009, the US Agency for International Development's (USAID's) South Asia Regional Initiative for Energy (SARI/E) program partnered with the Sri Lanka Sustainable Energy Authority (SLSEA) and Rensselaer Polytechnic Institute's Lighting Research Center of Troy, New York, USA, to create a Regional Center for Lighting (RCL). The RCL's purpose is to advance sustainable lighting and make it affordable in South Asia as a means to improve the well-being of citizens and countries within the region. Headquartered in Colombo, Sri Lanka, the RCL is designed to support collaborative initiatives with Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Sri Lanka and Pakistan. Through these efforts, the RCL hopes to bridge the vital pathways of science and education with manufacturing and quality assurance to create a commercial infrastructure designed to offer energy security and promote economic development throughout the region.

Improving consumer lighting is a priority in South Asia, where a low to middle-income family's highest household expense may be electricity for lighting. In some cases, this expense is passed on to the government, which may provide subsidies or even free electricity to permit families to have access to lighting. And other options, like using kerosene for lighting, are sometimes even more expensive than electricity. Solid-state lighting (SSL) technologies, particularly light-emitting diodes (LEDs), hold promise for alleviating the region's energy problems while also cleanly and efficiently providing lighting to those living "off the grid" without access to

electricity. Properly designed LED lighting systems can work fluidly with off-grid or on-site renewable energy power generation systems to meet the region's lighting needs, as well as reduce energy demand and costs from homes and businesses that are connected to the grid.

While SSL technology is a sustainable alternative that has made its way to the marketplace in most parts of the world, South Asia remains an untapped region for this technology. Through the RCL, the region has a champion to help steer the course toward development of a new, vibrant lighting market in South Asia and, ultimately, energy security.

In its first year, the RCL established the necessary building blocks, an outreach education network, testing and demonstration programs on which to construct an improved energy infrastructure and commercial network. The goal is to increase the knowledge of those who can lead the region's transition to sustainable lighting.

Education and Training

In order to establish the necessary building blocks, the RCL works closely



Courtesy: Regional Centre for Lighting

with Rensselaer's Lighting Research Center (LRC), which was selected to be RCL's "knowledge partner." In this role, the LRC provides information,

technical training, and guidance, and works to bring together public and private enterprises to focus on solutions to increase consumer accessibility to safe and energy-efficient lighting.

The LRC is the leading university based research center devoted to lighting and offers the world's premier post-graduate education in lighting, and provides training programs for government agencies, utilities, contractors, lighting designers, and other lighting professionals. Since 1988, the LRC has built an international reputation as a reliable source for objective information about lighting technologies, applications, and products. LRC programs cover a range of activities, including both laboratory testing of lighting products and real-world demonstration and evaluation of lighting products and designs, while also conducting research into energy efficiency, new products and technologies, lighting design, and human factors issues.

In the last year, the RCL has held regional training sessions in South Asia led by professors from the LRC, including a five-day Sustainable Lighting Institute and a three-day LED Lighting Seminar for Manufacturers. These sessions were held in Sri Lanka with manufacturers, engineers, architects, designers and planners attending from throughout South Asia and beyond. In total, nearly 60 participants from thirteen different countries attended these two sessions and, upon successful completion, earned continuing education units from Rensselaer Polytechnic Institute along with a Continuing Education Certificate from Rensselaer's Lighting Research Center.