



# HOW STANDARDS CAN IMPROVE **ACCESS TO ENERGY**

**A**ddressing the lack of access to clean, reliable, and affordable energy services is a critical development challenge. Access to energy enables workers to increase productivity, preserves foods and medicines, enables water to be pumped for crops, and creates a more predictable environment for businesses to flourish.

In recognition of the crucial role energy services can play in powering economic and social development, governments and industry are pursuing innovation in energy products and investment in deployment to larger populations. As part of this process, governments

are creating associated regulatory frameworks, including product and process standards that affect the innovation and adoption of new energy technologies.

Energy regulation, based on standards developed by consensus and approved by a recognized body, can encourage home-grown innovation, knowledge sharing, more efficient use of resources, and the proliferation of successful technologies. However, when regulation fails to meet consensus standards, or standards are adopted in a way that restricts competition, is non-transparent, or impedes market access,

it can prevent the most effective and innovative energy solutions from reaching at-risk communities.



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## THE POTENTIAL OF STANDARDS FOR DEVELOPING COUNTRIES

### CASE STUDY:

#### PACIFIC ISLAND RENEWABLE ENERGY INSTALLATION CERTIFICATION

In the Pacific Islands, quality is being addressed for all renewable energy technologies through the development of a certification scheme for installers. The Sustainable Energy Industry Association of the Pacific Islands has developed a certification program to ensure the competency of installers of renewable energy systems. The scheme covers businesses offering products, systems, and services and will assess competency against pre-approved courses. The scheme includes 13 island countries and is aiming to increase the quality of installations across most of the energy technology areas in the region.

*Source: Initiative for an International Renewable Energy Agency*

**A**doption of effective consensus standards can play a key role in helping developing countries with limited resources broaden access to energy.

### IMPROVING THE EFFICACY OF ALTERNATIVE ENERGY TECHNOLOGIES

As governments, donors, and individuals invest in new technologies to provide energy in communities without access to grid power, it is critical that technologies perform to expectations. However, many developing countries are flooded with sub-standard products that perform poorly, or worse, that fail. Product failure is especially detrimental in low-resource environments, where alternative energy technologies are expensive but may be the only option. Governments can help to control the quality and efficacy of new energy technologies by adopting consensus standards that require that energy technologies perform to expectations, thereby effectively addressing the needs of vulnerable populations.

### MAXIMIZING SCARCE RESOURCES

In energy-scarce environments, energy efficiency is a critical strategy for serving expanding populations. Many developing countries are challenged by the question of how to fuel economic growth while also ensuring more affordable energy access for all.

Consensus standards on energy-efficient materials, components, and production methods can provide guidance to developing country governments on how to regulate economic activities to reduce waste, encourage more efficient manufacturing, and lower energy usage.





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## BUILDING LOCAL CAPACITY TO ADOPT ALTERNATIVE ENERGY TECHNOLOGIES

Appropriate design, installation, operation, and maintenance of renewable energy systems is critical to the successful deployment of renewables. While access to new technologies is important, improper installation, usage, and maintenance can reduce effectiveness and longevity. Although some developing countries might lack the expertise to support the adoption of alternative energy technologies, professional standards or certifications that reflect state-of-the-art global expertise can catalyze the transfer of knowledge and thus help to build local capacity. Since consensus standards incorporate advances in science, technology, and experience, they reflect the latest expertise, and can help governments guarantee that the most innovative and effective processes and product requirements are deployed to meet energy needs.

## CASE STUDY: SOUTH AFRICA ENERGY MANAGEMENT

The South African economy is largely based on minerals extraction and processing, which is very energy intensive. In order to make energy more affordable for all, the South African Bureau of Standards distributed a range of South African National Standards on energy efficiency and management, wind turbines, alternative fuel vehicles, electrical vehicles, household appliances, and bio-diesel. In addition, the government launched the Industrial Energy Efficiency Improvement Project to introduce an energy system optimization approach for pumping; compressed air, fan, electric motors, and steam systems for agro-processing; chemical and liquid fuels; mechanical engineering; the automotive sector; and mining. One of the core standards implemented was the ISO 50001-aligned energy management system at each plant. Through adoption of these energy standards, the participants have collectively achieved a total energy saving of more than 87 million kilowatt hours per year. *Source: International Standards Organization*



## OPPORTUNITIES TO ENGAGE

International consensus standards are a critical tool for regulators seeking to address access to clean and affordable energy for growing populations. Donors can play a key role in working with developing country partners to ensure that standards are effectively integrated into programs to achieve their access-to-energy goals. Potential interventions include:

- Improve energy efficiency by encouraging regulators developing energy conservation policies to base regulations on international standards that reflect the best practices recommended by global experts.
- Enhance the quality of new energy technologies by working with governments to adopt regulations based on consensus standards that address quality and performance requirements.
- Build local capacity to install and maintain new renewable energy technologies by encouraging the adoption of professional certification standards.
- Increase access to new, state-of-the-art energy technologies by ensuring national regulations do not discriminate against products from specific countries or producers and are based on how technologies perform rather than how they are designed.

### CASE STUDY: OFF-GRID LIGHTING SOLUTIONS IN AFRICA AND ASIA

Battery-powered lights are increasingly used by people in developing countries who do not have access to grid power. Unfortunately, the quality of these devices is often poor due to inappropriate design and poor manufacturing quality. Yet, poor quality off-grid lighting products have been entering African and Asian markets in large numbers.

To address high failure rates that could spoil a promising market for clean, modern, affordable lighting many years ahead of access to grid power, the joint World Bank-International Finance Corporation (IFC) Lighting Global program has developed harmonized quality standards for off-grid lighting products for rural consumers in Africa and Asia. These standards set a baseline level of quality, durability, and truth-in-advertising to protect consumers. Lighting Global develops and implements quality standards through laboratories in Africa, Asia, and the United States. Most recently, the Lighting Global Quality Test Methodology has become the world standard for clean off-grid lighting products, following its recent incorporation into an International Electrotechnical Commission technical specification.

The Lighting Global Minimum Quality Standards have benefited buyers, governments, and institutions that need to ensure product quality and performance to protect consumers and effectively regulate the marketplace. Lighting Global reports that close to seven million people in Africa without electricity now have access to quality, clean lighting as a result of its program. *Source: World Bank/IFC*