

Energy Labeling, Standards and Building Codes: A Global Survey and Assessment for Selected Developing Countries

This is not a full text report.

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Executive Summary

Energy efficiency in developing countries plays an important role in global sustainable development. Energy consumption is growing rapidly in these countries, yet energy efficiency remains far below levels in developed countries. Energy efficiency improvements can slow the growth in energy consumption, save consumers and countries money and reduce environmental impacts, especially greenhouse gas emissions. On their own, the market and planned economies of these countries will generally fail to exploit their energy efficiency potential due to the presence of a number of market and bureaucratic barriers. Explicit government policies are necessary to overcome these barriers and achieve cost-effective energy efficiency improvements, along with their associated economic and environmental benefits.

Energy labeling programs, minimum efficiency standards and building energy codes are one class of policies that the International Institute for Energy Conservation (IIEC) and the U.S. Agency for International Development (USAID) promote in developing countries in order to further sustainable economic development. Promoting these policies consistently requires certain information, including the status of these policies in other countries, the record of successes and failures with these policies and the potential impacts of standards and building codes on energy consumption and the environment in the particular country and on export markets of developed countries. This report is intended to serve as a foundation for work by IIEC and USAID in this area.

Status of Labeling Programs, Building Codes and Efficiency Standards

At least 11 countries and the European Union have energy labeling programs. Most programs allow consumers to compare the energy efficiency of similar products and most of these are mandatory and operated by government agencies. Only the United States, Canada and the European Union have endorsement labeling programs that indicate those products which meet a certain minimum level of energy efficiency. These endorsement labeling programs are operated by both government agencies and non-government organizations.

A 1992 survey of 57 countries around the world found thirteen countries without any building energy codes, four countries with codes for residential buildings only, nine countries with codes for non-residential buildings only, and 31 countries with codes for both residential and non-residential buildings.

At least nine countries have efficiency standards for household appliances. Standards in the U.S. and Canada cover the greatest number of products, followed by Switzerland and China. The standards issued by all countries except Japan and Switzerland are mandatory. Japan's standards are voluntary but widely met. Switzerland's standards are target values that must be met to avoid the introduction of mandatory standards.

At least six countries have efficiency standards for industrial and commercial equipment. Again, standards in the U.S. and Canada cover the greatest number of equipment types. No European country has efficiency standards for this class of equipment while Japan has a standard for only one class of product (fluorescent lamps).

Only two countries have efficiency standards for office equipment, Japan and Switzerland. Even then, these standards are voluntary target efficiency values. The Japanese target values are widely met and the Swiss target values are target values that must be met to avoid the introduction of mandatory standards.

At least five OECD countries and Korea have motor vehicle fuel economy standards. The U.S. has mandatory standards for passenger cars and light truck vehicles while Canada and Korea have mandatory standards for cars. Japan has fuel economy targets for cars. Like target efficiency values for appliances and office equipment, these targets are voluntary but widely met due to the strong cooperation between government and manufacturers. Sweden and Australia have voluntary fuel economy standards for cars.

Assessment of Existing Labeling Programs, Building Codes and Efficiency Standards

In practice, labeling programs, efficiency standards and building codes have had a mixed history of successes and failures. Success stories include refrigerator testing in Brazil and the U.S. Energy Star labeling program appliance efficiency standards. These policy efforts have all met or exceeded their goals in terms of saving energy and money. Failures include harmonized European energy labels, the initial U.S. government energy labels, most building codes, early efficiency standards in Europe and U.S. motor vehicle efficiency standards. These efforts have failed to meet expectations.

A few obvious lessons can be derived from this experience. First, effective implementation is a prerequisite for successful efficiency measures and requires careful consideration of technical, marketing, bureaucratic and political factors. Second, periodic updates of standards are necessary to realize the full benefits of efficiency standards. Obsolete standards fail to provide new energy savings and related benefits. Third, regionally harmonized standards add an extra layer of political and bureaucratic obstacles, yet offer economies of scale at the same time. Fourth, building codes are more difficult to implement than standards.

Impacts from the Introduction or Expansion of Efficiency Standards and Building Codes in Selected Developing Countries

The report presents preliminary estimates of energy savings, carbon emission reductions and export market impacts from the introduction or expansion of efficiency standards or building codes in selected developing countries, including India, Indonesia and the Philippines in Asia and Brazil and Mexico in Latin America. Over a 20-20-year period, efficiency standards and building codes could save five to ten times as much electricity as is currently consumed in these countries in a single year. Total primary energy savings could amount to between two and four years of current annual consumption. Over 20 years, these energy savings would contribute to reductions in carbon emissions equal to between three and five years of current annual emissions. Finally, these policy measures would expand the global market for energy-efficient products. By the year 2010, increased annual sales of energy-efficient products would total in the hundreds of thousands to millions of units.