



# International Workshop on Standards & Labeling for Consumer Appliances Oct 13 - 14, 2004, Bangalore



The International Energy Agency (IEA) in association with the Ministry of Power is organizing a two day Workshop on **'Energy Efficiency Standards and Labeling'** to be held on **October 13-14, 2004 at Hotel Le-Meridien, Bangalore (India)**. The purpose of this two day event is to bring together domestic and international participants and speakers from government, private sector and Non-Governmental Organizations to stimulate discussion on the key issues and regulatory mechanism for achieving the objective of 'Energy Efficiency' in general and standard and labeling of electric appliances in particular. Since the Institutional arrangements under the Energy Conservation Act, 2001 are being finalized, the deliberations on international experiences would be timely and relevant in the Indian context. A detailed background note and the preliminary programme details are annexed. No participation fee is required for this programme. All those interested to participate in this programme may send their request to the following address for registration.

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Annexure

## STANDARDS & LABELLING WORKSHOP

### BACKGROUND PAPER

#### 1. Background

##### India's Growing Concern with Energy Efficiency

Energy conservation has emerged as one of the general issues in India in recent years. Per capita energy use in India is relatively low at 479 kg oil equivalent (kgoe) and non-commercial biomass is still the dominant source of primary energy. The country faces the enormous task to increase availability of commercial energy to a large part of its population, about 70 percent of rural households are not yet electrified. India's demand for commercial energy in 2020 is expected to increase by about 2.5 times from today's level. Coal accounts for about 50% of primary commercial energy today and is expected further increase its share. At the same time, energy intensity in India, measured as TPES per unit of GDP is substantially higher than in countries at a similar development stage.

Government is therefore interested to gain a systematic understanding of energy consumption patterns in each sector with a view to developing a strategy to supply energy more efficiently. The Indian Government is also more and more concerned about the social and environmental costs resulting from energy generation and consumption such as emissions of Carbon Dioxide (CO<sub>2</sub>) and other pollutants and depletion of scarce fuel resources. With the size & fast growth in energy demand, the significance of coal in its fuel mix, India has become contributor to global GHG emissions. Despite its low per capita CO<sub>2</sub> emissions of less than 1 ton, India contributed over 4% of world total CO<sub>2</sub> emissions in 2000.

With the background of high energy saving potential and its benefits, bridging the gap between demand and supply, reducing environmental emissions through energy saving, and to effectively overcome the barrier, Government of India has enacted the Energy Conservation Act 2001. The Act provides the much-needed legal framework and institutional arrangement for embarking on an energy efficiency drive.

Under the provisions of the Act, Bureau of Energy Efficiency (BEE) has been established with effect from 1st March 2002 by merging erstwhile Energy Management Centre of Ministry of Power. The Bureau would be responsible for implementation of policy program and coordination of implementation of energy conservation activities.

#### 2. Bureau of Energy Efficiency (BEE)

BEE is created as a corporate body and general direction and management of the affairs of the Bureau is vested in its Governing Council. The Chairperson of the Governing Council is the Minister of Power and Director-General of BEE as the Member-Secretary.

The mission of BEE is to institutionalize energy efficiency services, enable delivery mechanisms in the country and provide leadership to energy efficiency in all sectors of the country. The primary objective of BEE would be to reduce energy intensity in the economy.



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The broad objectives of BEE are to:

- i) provide leadership and a policy framework and direction to national energy conservation activities and efficiency programs.
- ii) co-ordinate policies and programs on efficient use of energy with stakeholders.
- iii) establish systems and procedures to measure, monitor and verify energy efficiency results in individual sectors as well as at a macro level.
- iv) leverage multilateral bilateral and private sector support in implementation of the Act.
- v) demonstrate delivery of energy efficiency services as mandated in Act through private public partnership and
- vi) interpret, plan and manage energy conservation programs as envisaged in the Act.

In carrying out its work, BEE is expected to cooperate with national and international private sector experts, non-government organizations, research institutions and technical agencies. For the efficient discharge of its function, BEE is also empowered to constitute Advisory Committees. Based on its objectives as enumerated above, BEE has developed an Action Plan consisting of ten thrust areas. Industry Programme for Energy Conservation, Demand Side Management, Energy Efficiency in Building and Establishments, Energy Conservation Building Codes and a Standards & Labeling Programme form part of these ten thrust areas.

BEE has successfully mobilized financial international support for its activities. It has obtained close cooperation with GTZ of Germany and USAID in the implementation of its work program and has started to engage more bilateral development partners into its work.

## **BEE's Standards & Labelling Programme**

BEE's power and functions regarding Standards & Labeling are specified in the Act as follows:

- (i) Notifying specified equipment and appliances:
- (ii) Directing mandatory display of label on notified equipment and appliances;
- (iii) Specifying energy consumption standards for notified equipment and appliances not conforming to standards;
- (iv) Prohibiting manufacture, sale, purchase and import of notified equipment and appliances; and
- (v) Developing testing and certification procedures and promote testing facilities for certification and testing of energy consumption of equipment and appliances.

**The key activities under the S&L program would include:**

- a) Situation analysis: This exercise is required to be carried out to assess the current Indian S&L program (voluntary program of Bureau of Indian Standards).
- b) Testing (agreed testing procedures and testing protocol is a must for a good S&L Program)



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- c) Labeling Program should precede standards program.

Labeling program would educate consumers to make educated and informed choice at the point of purchase.

Labeling program when in place would provide the much needed market pull for transferring from lower energy efficiency level to higher level efficiency.

- d) Minimum Energy consumption and Performance Standards (MEPS).

MEPS states lower limit for energy consumption for a defined purpose. After a transition phase, which may be 2-3 years during which manufacturers are required to convert their facility to produce equipment which conform to MEPS.

In other words MEPS ensures that after the kick-off date, no manufacturer can sell specified product if it does not conform to the minimum standards.

This ensures level of efficiency increases in domestic appliances and engineering products.

## Labeling and Efficiency Standards for Household Electrical Appliances

### Introduction:

Household electricity consumption is increasing dramatically in both industrialized and developing countries, with an increase in the use of lighting and rising ownership of household appliances and electronic equipment. In industrialized countries, saturation in the ownership of larger appliances is offset by the continual diffusion of new appliances, for example, personal computers.

To slow down and even reverse this trend, many countries have introduced energy efficiency programs. Among the different instruments available, labeling programs and minimum energy performance standards (MEPS) have proved to be very effective.

### Objective of Labeling:

Energy Efficiency labeling means providing information to consumers on the energy efficiency performance of new appliances. Labeling programs aim at drawing the attention of consumers to the energy consumption of their appliances.

Labeling programs may differ from one country to the next, although two general approaches exist: "*comparison labels*" and "*endorsement labels*".

Comparison labels enable consumers to compare the energy efficiency of all the appliances on sale (e.g. European Label, or Energy Guide in the USA). *Endorsement labels* simply identify appliances, which are particularly energy efficient (e.g. Energy Star in the USA). Comparison labels are usually mandatory, which implies regulation. Indeed, it is only meaningful if all manufacturers provide the information, and if the information is expressed in a similar way. Manufacturers usually implement endorsement labels on a voluntary basis.

Labels can be considered a first step towards efficiency standards.



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## Efficiency Standards:

Performance standards for electrical appliances, usually known as minimum energy performance standards (MEPS), impose a minimum energy efficiency rating or a maximum consumption for all the products on the market. In some countries, they aim at a sales-weighted average energy efficiency ("target values" in Switzerland, or the "Top Runner Program" in Japan). Some programs rely on the voluntary participation of manufacturers (e.g. washing machines in Europe, Iran, Brazil).

Efficiency standards levels may be set in a number of different ways. In Europe, a statistical approach is used - the energy efficiency of appliances already on the market is used as a basis and the standard is drawn up so as to obtain an improvement of 10-15% in the average energy efficiency of new appliances. In other countries, regulations are based on a cost-benefit evaluation (e.g. in the USA, to raise the energy efficiency of appliances to a level, which corresponds to a return on the investment in 3 years).

## **Labeling and efficiency standards are complementary:**

Labeling programs need to be complemented by minimum performance standards. Standards are necessary to remove inefficient but cheap products from the market. Basically, labeling stimulates technological innovation and the introduction of new and more efficient products, while standards complement this development by organizing the gradual removal from the market of the least energy efficient appliances.

Standards are also needed in markets where the selection criteria of consumers totally exclude energy efficiency (for example, televisions), or when the economic options for the consumers are very limited.

It would be possible to introduce standards, and to gradually make them stricter, without a labeling program, but it would be more difficult to impose such standards on manufacturers. On the other hand, the introduction of efficiency standards will be less disruptive if the market has already been significantly transformed by the introduction of a labeling program to stimulate competition and technological innovation (such as in EU countries).

## **Problems faced in reinforcing labeling and standards programs:**

Labels are generally difficult to interpret by the consumers. Therefore label formats and content should not be determined by engineers alone but also by marketing experts, thereby ensuring that the label is appropriate for the target public, so that consumer not only recognize the label but are able to interpret it. The European label, for example, is easy to understand and was recently adopted in several developing countries (Brazil, Iran and Mexico). Thailand has adopted the Australian model.

In general, appliance manufacturers tend to be opposed to the introduction of efficiency standards, which they claim, impose costly adaptation measures, and burden consumers with additional costs.





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The same labeling programme may not produce comparable results in all countries, as consumers may react differently depending on the culture of the country and the diversity of the product ranges available, especially in developing countries.

Lack of information/education about energy efficient appliances and their benefits is generally considered to be one of the main barriers to improve energy efficiency.

## Impact of Measures and Programs

Generally speaking, experience has shown that labeling programs and performance standards are effective instruments both for governments (low-cost energy savings) and consumers (lower expenditures).

## **Comparison labels are more effective than endorsement labels:**

By helping consumers identify the most energy efficient products and choose more efficient models, comparison and endorsement labels encourage manufacturers to focus on improving energy efficiency. Although these two types of labels can be complementary (e.g. in Brazil for refrigerators), comparison labels are considered to be the most effective since they enable comparison of all the appliances on the market rather than simply identifying the most efficient ones. That is why comparison labeling is generally mandatory. Nevertheless, voluntary comparison labeling programs also exist, and some have proved their effectiveness (e.g. in Thailand). In India compulsory comparison labeling is being followed which is based on the Australian model.

## Voluntary versus mandatory standards:

Some countries have negotiated voluntary energy efficiency standards with manufacturers. But there have been cases where the inefficient models were not withdrawn from the market. E.g. Brazil. However in some cases, voluntary agreements have produced more convincing results like in Switzerland and Japan.

India is following the case of mandatory labeling. But the fixation of minimum standards of energy consumption is in consultation with the manufacturers of refrigerators, air conditioners, agricultural pump sets, and motors etc.

## A need to adapt the labels and standards over time:

Efficiency standards must be regularly reinforced to take into account changes in the market, and manufacturers must be able to anticipate these periodic reviews. Energy efficiency classes on the labels must be revised regularly to take into account technical progress, otherwise, as in Australia, most products will be near the top of the scale and it will be impossible to identify the most efficient model.

Enforcement of Rules and Regulations for energy efficiency framed by BEE, including those related to Standards & Labeling, would rest with the Central Government through issuance of notification and other means. However, BEE is empowered to make regulations on matter specified in the Act, including the particulars required to be displayed on label and the manner of their display.



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BEE has adopted a phased approach towards development and implementation of its standard and label programme. As an initial step, BEE identified equipment and appliances to be covered by the standard and labeling programme based on the set of criteria. Those criteria include energy intensity, contribution of electricity usage in the specified category and the potential for savings, in terms of energy consumption and against total peak energy demand. On this basis BEE prepares a list of eight type of equipment and appliances, ranging from pure consumer appliances like refrigerators, single unit room air conditioners, electrical water heaters to agricultural pumps set up to 15kw, industrial fans and blowers and air compressors up to 100kw, and electric light sources, control gears and luminaries.

For the selected equipment and appliances, energy labeling will be introduced first followed by the setting of minimum energy performance standards. The labeling programme, when in place, is expected to provide a much needed market pull for transition from the current low level of energy efficiency to a higher level. Minimum energy performance standards will ensure that after the kick-off date, no manufacturer can sell a specified product if it does not conform to the minimum standards. This will assure increase in efficiency level of domestic appliances and engineering products.

The potential for saving in India, in terms of both energy consumption as well as peak demand is high. BEE states that initial estimates for India show a cumulative reduction in green house gas emissions of 4.03 MMT of CO<sub>2</sub> for air conditioner and 3.71 MMT of CO<sub>2</sub> for refrigerators over a timeframe of 10 years. These figure correspond to a cumulative reduction in energy use by 3450 GWh and 3180 Gwh for air conditioners and refrigerators respectively over this period.

### ***IEA's support to India's Energy Efficiency Programme***

As a direct outcome of the IEA-India conference on "Coal and Electricity in India" held in September 2003 in New Delhi, the Union Ministry of Power, Government of India and BEE have requested the IEA Secretariat for assistance in the implementation of its Energy Efficiency Program. The Ministry and BEE are keen to learn from the IEA member countries considerable experience with standards and labels as summarized in the IEA study on "Energy Labels and Standards" published in 2000 and the 2003 publication on "Cool Appliances – Policy Strategies for Energy Efficient Homes".

The Ministry and BEE requested the Secretariat to organize a workshop on Standards and Labels focusing on consumer appliances, especially on air-conditioners and refrigerators that have been prioritized within a group of eight types of equipment. The Ministry sees this workshop as an initial step in IEA-India collaboration on energy efficiency and conservation. Subsequent cooperation may focus on Energy Efficiency in Buildings, Energy Conservation Building Codes and Industry Programme for Energy Conservation, areas that are all identified as priority in BEE's ten thrust areas of Action Plan. However, the next steps should be identified and agreed by both sides following the workshop on Standards and Labeling.



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During subsequent missions to India, the Secretariat met with the officials of BEE and the Ministry of Power to discuss the broad objectives and outline of the proposed workshop as well as general logistical arrangements. At the occasion of the visit of the Secretary, Ministry of Power to the IEA Secretariat in early April 2004 and the subsequent participation of officials of the Ministry of Power in an IEA workshop at the Secretariat later in the same month, more detailed discussions

with the NMC/DAL and the Energy Technology Division (ETP) on the scope of the proposed workshop took place. During the meetings the Indian side reiterated their request to organize the joint workshop on Standards and Labeling.

### 3. Key Objective and Scope

Based on the programme proposals prepared by BEE, Indian experts are currently debating the two possible approaches and their practical implications for standard and labeling system. Under the first approach India would introduce international standards right at the beginning of the programme with a view to increase the export potential for Indian manufactures.

The second approach would follow the Thai model in which standards would be set at a level more in tune with current Indian efficiency standards but would be adjusted in three-year intervals and labels a adjusted and changed accordingly. However, this raises the question whether the India administration is equipped to update the standards and labels every years and how to cover the resulting costs.

Other issues, like best practices for enforcement, and the necessity to develop, collect and establish appropriate data system for testing and testing procedures and protocols, are also being discussed between BEE and relevant stakeholders in India. Thus, at this state programme development, Indian policy makers, manufactures and other stakeholders will greatly benefit from sharing international experiences made with different standards and labeling programmes, to review their individual strength and weaknesses and to identify the most suitable approach within the Indian context.

The main objectives of the workshop are to

- (i) Provide participants with a comprehensive overview of key issues and perspective on appliance standards and labeling in IEA countries,
- (ii) Discuss successful case studies (ii) and share lessons learned from implementation of standards, labeling, enforcement and testing procedures in IEA and non- IEA countries; and
- (iii) Promote further cooperation between India and international institutions on the development and implementation of energy efficiency programme in India.



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**Note:**

**The updated programme will be posted on BEE website  
[www.energymanagertraining.com](http://www.energymanagertraining.com) and [www.bee-india.com](http://www.bee-india.com)**