Evaluating the Impacts of Mandatory Policies and Labeling program for Appliances in India

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Labeling Program in India

2001-2002
Energy Conservation Act and establishment of Bureau of Energy Efficiency

2006
Voluntary Labeling program launched for refrigerators and ACs

2009
Mandatory Labeling for four products

2011
Endorsement Label Launched

2019
23 appliances under labeling, of which 10 under mandatory phase

Source: Bureau of Energy Efficiency
Key Achievements of S&L Program

Electricity saved till 2017-18

245 TWh

Co2 emission reduction of

201 million tonne

equivalent cost saving of

USD $18.3 Billion

Source: Bureau of Energy Efficiency
India’s projected electricity requirement in 2022 is 1566 Billion Units.
It is estimated that in 2022, share of Domestic sector will escalate from 24% to 30% compared to the 2016 level.

* Source: Central Electricity Authority (CEA) Report on India Electricity Growth 2017
## Status of Labeling program

<table>
<thead>
<tr>
<th>S.no</th>
<th>Appliances/Products</th>
<th>Year Standards First developed</th>
<th>Nature of Labeling program</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Frost Free Refrigerator (FFR)</td>
<td>2006</td>
<td>Made Mandatory in 2009</td>
</tr>
<tr>
<td>2</td>
<td>Tubular Florescent Lamp (TFL)</td>
<td>2006</td>
<td>Made Mandatory in 2009</td>
</tr>
<tr>
<td>3</td>
<td>Room Air Conditioners-RAC (Split, window)</td>
<td>2007</td>
<td>Made Mandatory in 2009</td>
</tr>
<tr>
<td>4</td>
<td>Direct Cool Refrigerator (DCR)</td>
<td>2007</td>
<td>Made Mandatory in 2016</td>
</tr>
<tr>
<td>5</td>
<td>Pump Sets</td>
<td>2008</td>
<td>Voluntary</td>
</tr>
<tr>
<td>6</td>
<td>Distribution Transformer</td>
<td>2009</td>
<td>Made Mandatory in 2009</td>
</tr>
<tr>
<td>7</td>
<td>Color Television (CTV)</td>
<td>2009</td>
<td>Made Mandatory in 2016</td>
</tr>
<tr>
<td>8</td>
<td>Electric Geysers</td>
<td>2009</td>
<td>Made Mandatory in 2016</td>
</tr>
<tr>
<td>9</td>
<td>Ceiling Fans (CF)</td>
<td>2009</td>
<td>Voluntary(to become Mandatory in 2020)</td>
</tr>
<tr>
<td>10</td>
<td>Induction Motors</td>
<td>2010</td>
<td>Voluntary</td>
</tr>
<tr>
<td>11</td>
<td>RAC (Cassette, Floor Standing)</td>
<td>2011</td>
<td>Made Mandatory in 2015</td>
</tr>
<tr>
<td>12</td>
<td>Washing Machine</td>
<td>2011</td>
<td>Voluntary</td>
</tr>
<tr>
<td>13</td>
<td>Computer (Notebook/Laptops)</td>
<td>2011</td>
<td>Voluntary</td>
</tr>
<tr>
<td>14</td>
<td>Solid State Inverter</td>
<td>2013</td>
<td>Voluntary</td>
</tr>
<tr>
<td>15</td>
<td>Ballast (Electronic/Magnetic)</td>
<td>2013</td>
<td>Voluntary</td>
</tr>
<tr>
<td>16</td>
<td>Office Equipment’s</td>
<td>2014</td>
<td>Voluntary</td>
</tr>
<tr>
<td>17</td>
<td>Domestic Gas Stoves</td>
<td>2014</td>
<td>Voluntary</td>
</tr>
<tr>
<td>18</td>
<td>Diesel Generator Sets</td>
<td>2014</td>
<td>Voluntary</td>
</tr>
<tr>
<td>19</td>
<td>Room Air Conditioners –RAC (variable speed)</td>
<td>2015</td>
<td>Made Mandatory in 2018</td>
</tr>
<tr>
<td>20</td>
<td>Diesel Engine Mono-set Pumps</td>
<td>2015</td>
<td>Voluntary</td>
</tr>
<tr>
<td>21</td>
<td>LED Lamps</td>
<td>2016</td>
<td>Made Mandatory in 2018</td>
</tr>
<tr>
<td>22</td>
<td>Chillers</td>
<td>2018</td>
<td>Voluntary</td>
</tr>
<tr>
<td>23</td>
<td>Microwave Oven</td>
<td>2019</td>
<td>Voluntary</td>
</tr>
</tbody>
</table>

Source: Bureau of Energy Efficiency
Since the introduction of the mandatory program, the average share of the products registered under the mandatory phase is **87%** while the voluntary segment is limited to **13% from 2011-2016**.

Source: Bureau of Energy Efficiency
MEPS Improvement of Mandatory Products

Source: Bureau of Energy Efficiency

- MEPS of frost-free refrigerators were improved by almost 60%, followed by direct cool refrigerators by 49%, televisions and electric geyser by 40% each, RAC by 35% and transformers by 33%.

- The lowest MEPS improvement is seen in the case of TFLs, which increased by only 7%.
Market Transformation Towards More Efficient appliances from mandatory policies

Room Air Conditioner labeling program

- Production-Weighted Average EER/ISEER of RACs, 2011-2017
  - The production-weighted average EER/ISEER of RACs has increased from 2.8 in 2011-12 to 3.70 in 2017-18.
  - Which represents a 32% increase in efficiency due to tightening of standards and further introduction of a labeling program for variable speed RACs in 2015.

Refrigerator labeling program

- Average Annual Energy Saving in Refrigerators, 2011-2017
  - The average annual energy saving by each refrigerator (frost free) has increased from 595 kWh in 2011-12 to 764 kWh in 2017-18.
  - In case of direct cool type, similar progressive trend is observed with 373 kWh in 2011-12 to 445 kWh in 2017-18.
  - These represents a 28% increase in market average energy saving in frost free and 19% in direct cool type since 2011.
In 2016-17, the overall production registered under the labeling program was close to 136 million for 21 product categories, in which 88% of registrations were recorded for mandatory segments for eight products.

In comparison, only 12% of voluntary products were registered for LED lamps and ceiling fans together.

Source: Bureau of Energy Efficiency
While in 2016-17, the overall models registered for 21 product categories increased to 14,209, of which 44% accounted for mandatory segment (that is room air conditioner, refrigerators, geyser, transformer, television).

56% for voluntary products (for Pumpset, LED lamps, ceiling fans and domestic LPG stove etc), as seen in Figure.
Impact of Labeling Program

Since the inception of S&L program, 197 TWh of electricity has been saved by 2016-17, with the equivalent carbon emission reduction of 162 Million tons CO2.

The majority share of 89% of energy savings accrued is from products under the mandatory labeling, whereas in share of 11 % is constituted by energy savings from products under the voluntary
The S&L program in India has come to be considered as BEE’s ‘flagship’ program.

Program been instrumental in transforming the market towards efficient appliances.

Based on analysis and data, the voluntary phase prepares the market for transitioning to the mandatory phase.

While the efficiency improvements in some appliances such as refrigerators, TV, water heater, AC and transformer has been very aggressive.

There is a huge potential for efficiency improvements in agricultural pumps and ceiling fans.

The products in the voluntary phase such as pumps, motor, domestic LPG stove, etc should be transitioned to the mandatory labeling program in order to realize the huge potential of energy saving.

Considering the growth trajectory, it is vital to continue increase the energy efficiency performance of the appliances and equipment as well as coverage of the labeling program.
Thank you