

Issue EE # 20

A call for better statistical data

There has been extended discussion regarding which appliances and industrial equipment is actually contributing most to the electricity consumption of India. A rating list seems to be important because under the EC-Act, the Bureau of Energy Efficiency will label and set standards for various appliances and industrial equipment. An overview is given in the attached list.

Considering the efforts necessary to set up a labeling and standard delivery mechanism, including infrastructure, it is important to look into the contribution of each gadget to the national electricity consumption. There is no need to focus efforts and resources on gadgets which do not contribute a lot or the estimated electricity conservation potential is small.

Furthermore introducing labeling and standards for equipment where a very high percentage of manufacturing firms belong to the informal sector will be difficult, because enforcement is going to be more difficult.

From the list it is obvious that, based on annual electricity savings potential, agricultural pump sets, fluorescent tube lights and industrial motors should be tackled first, while CFL's and compressors are at the end of the list.

The trouble with such lists are the GiGo effect. Garbage in means Garbage out. Readers may notice that there are a number of question marks where data is missing. Moreover data shown in the table sometimes comes from unknown sources, or are not validated. In other words, the best one can hope is that the data is $\pm 30\%$. For instance, whoever knows how the consumption of agricultural pump sets is collected and computed may immediately point out the deficiencies and accuse us of window dressing. We are very well aware of it. However, a long journey starts with the first step. We therefore ask our readers to improve on this table, instead of hiring another consultant who may as well only cite official or unofficial data. Whoever can provide us with better data or fill in the gaps will earn between Rs. 1000 and Rs. 5000 depending on efforts and quality of references. A total of up to Rs. 1,00,000 of professional fees will be offered to improve this table over a period of six months. Take notice of the conditionality up to! There may be no awards if submitted data and reference are as shaky as some of our references.

Happy data hunting!

STANDARDS & LABELLING PROGRAMME – ELECTRICITY SAVING POTENTIAL PRIORITY

Equipment (1)	Annual electricity consumption of equipment GWh ¹ (2)	Annual sales of equipment in 2002-03 millions (3)	Annual electricity consumption of new stock GWh ² (4)	Electricity consumption of new stock to total electricity % ³ (5)	Estimated improvement in efficiency of new stock % ⁴ (6)	Annual electricity savings GWh ⁵ (7)	Organised sector ⁶ % (8)	Informal sector ⁷ % (9)
Agricultural pump sets ⁸	118,059	0.8	6,000	1.1	38	2,280	55	45
Fluorescent tube lights	?	190	16,720	3.0	10	1,672	90	10
Industrial motors	119,273	4,103 MW	24,618	4.4	5	1,231	98	2
Refrigerators	25,550	3.4	2,172	0.4	32	695	100	0
Air conditioners	12,113	0.8	2,100	0.4	21	441	85	15
Ceiling & table fans	?	12.5	1,313	0.2	21	276	?	?
Industrial pumps ⁹	18,906	20% ¹⁰	3,781	0.7	7	265	90	10
Ballasts	?	30	720	0.1	31	223	30	70
Industrial fans	18,167	15%	2,725	0.5	8	218	85	15
Distribution transformers	12,709	16,600 MVA	843	0.1	24	202	50	50
Geysers (hot water)	?	0.8	864	0.2	17	147	?	?
CFLs (60 W incandescent lamp replacements)	?	1.75	158	0.03	80	126	?	?
Compressors	13,137	12%	1,576	0.3	5	79	95	5
Total			63,590			7,855		

¹ Energy Consumption was 562,572 GWh in 2002-03

² Yearly energy consumption of new stock on business as usual basis including replacement.

³ Percentage contribution of new stock to total energy consumption of 562,572 GWh

⁴ Estimated improvement potential in % over old stock by moderately efficient products.

⁵ Estimated annual savings if all new stocks would have been more efficient by the % indicated in column 6.

⁶ Percentage of equipment manufacturers in the organized sector, meaning large and medium enterprises

⁷ Informal Sector refers to equipment manufactured in small scale sector, unorganized assembly sector such as kit pump manufacturers in agriculture pump sets.

⁸ Sample calculation for agricultural pump sets is given below. Similar estimates were made for other equipment.

Column 4 = Annual electricity consumption of new stock = column 3 * 1500 hours per year * average 5 kWh consumption per hour = 6000 GWh

Column 5 = Electricity consumption of new stock to total electricity = Column 4 / 562572 * 100 = 1.1%

Column 6 = Estimated improvement in efficiency of new stock = 5kW pump replaced by 3.1 kW high efficiency pump delivering the same quantity of water = 100 * (5-3.1)/5 = 38%

Column 7 = Annual electricity savings = Column 4 * column 6 / 100 = 2280 GWh

⁹ For industrial pumps, fans and compressors the efficiency improvements are only due to equipment and not motors, to avoid double counting.

¹⁰ Figures in % in these columns represent sales growth rate of the equipment