



Standards & labeling Program for motors in India

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Jiwesh Nandan,
National Coordinator,
Indo German Energy Programme,
Bureau of Energy Efficiency

Bureau of Energy Efficiency

- Established in 2002, under the Energy Conservation Act, 2001.
- Improve energy efficiency through various regulatory and promotional instruments
 - Plan, manage and implement provisions the EC Act
 - Appliance standards and labeling
 - Industrial energy benchmarks
 - Energy Conservation Building Codes
 - Monitor energy use in high energy-consumption units
 - Certify and accredit energy auditors and energy managers
 - Provide a policy framework and direction to national energy conservation activities
 - Disseminate information and knowledge, and facilitate pilot and demonstration projects
 - Establish EE delivery systems through Public-Private Partnerships (PPP).

3 pillars of EE Implementation Program

Regulation

- Policies & its framework
- Standards & Labels to be made mandatory at appropriate time

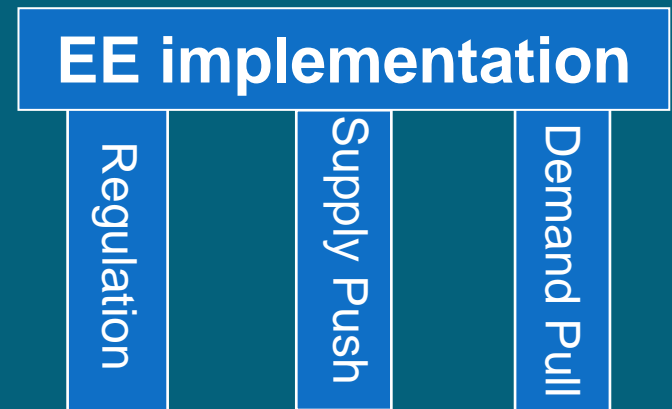
Supply Push

Design & technology developments

- Align with international trends
- Handholding of some segments of manufacturers

Demand Pull

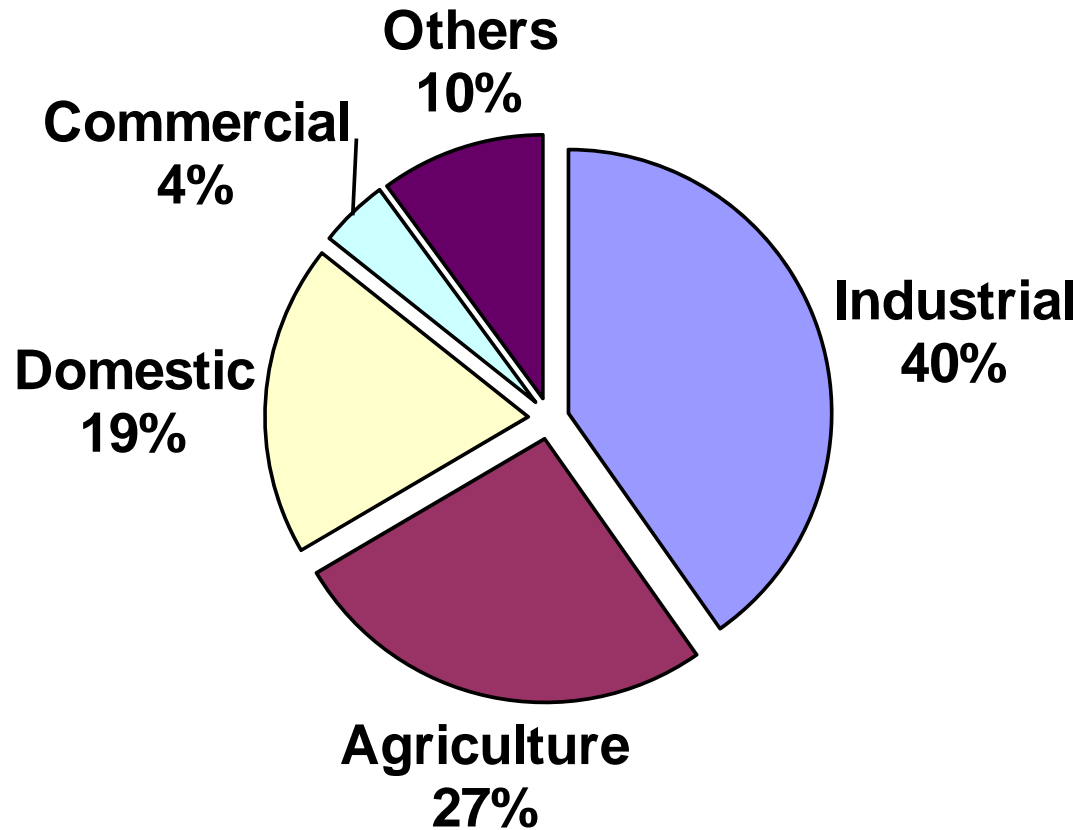
- Awareness & dissemination
- Demand for the EE products



Institutional frame work for regulation





- **BIS – National Standards Body**
 - Formulation & Implementation of National Standards
 - Production certification, Quality system certification, EMS certification etc.
- **Bureau of Energy Efficiency (BEE)**
 - BEE is established to implement & monitor the Energy Conservation Act, 2001
 - One of the key thrust areas of EC Act, 2001 is Standards & Labeling Programme
 - Formulation of Energy Efficiency Standards.

Sector wise energy consumption



Source : Central Electricity Authority

Sector wise Energy Saving potential

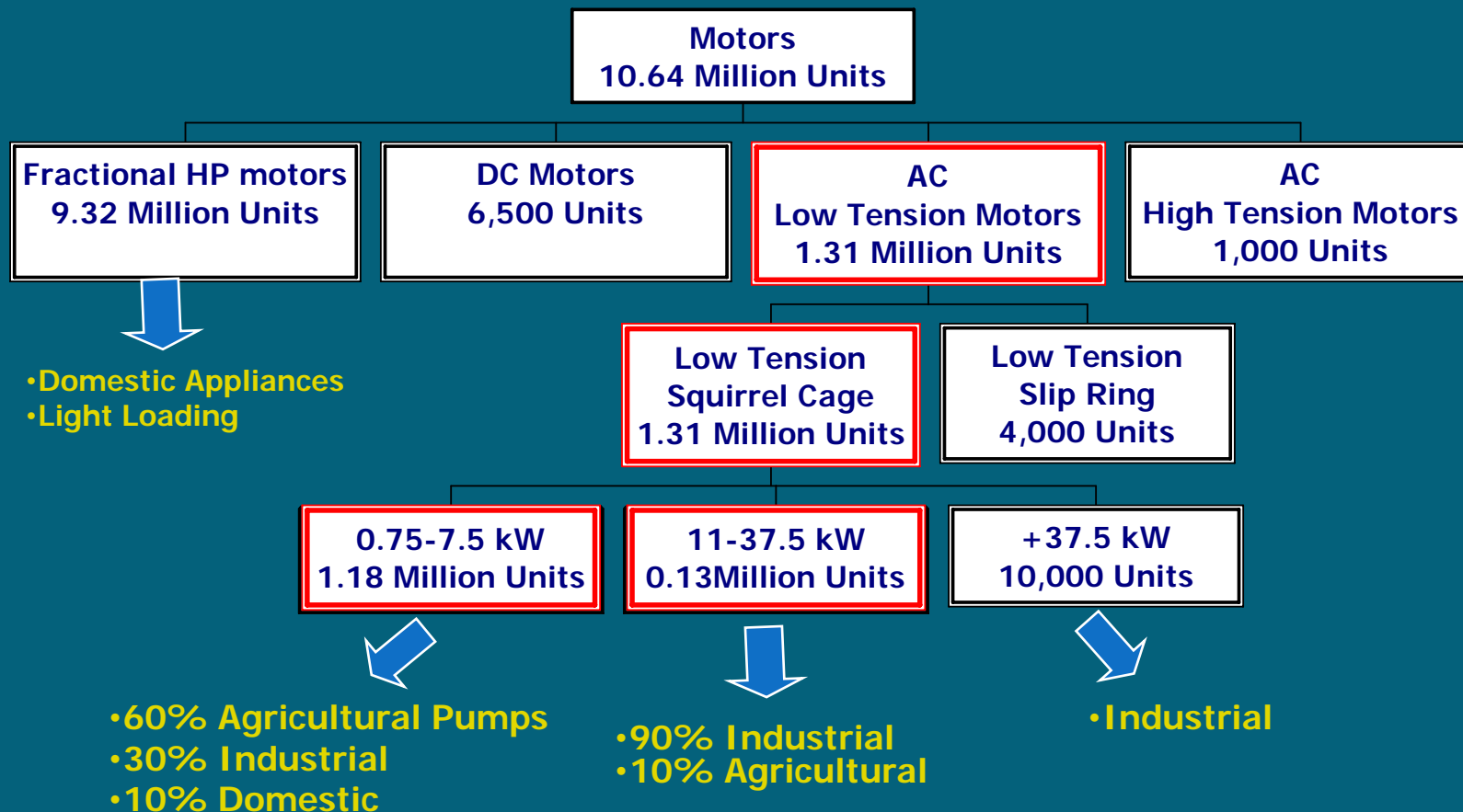
Sector		Conservation potential (%)	Energy Handled by Motors (%)
Industrial Sector		Up to 25	70-75%
Agriculture Sector		Up to 30	20-25%
Domestic Sector		Up to 20	2-3%
Commercial Sector		Up to 30	4-5%

Source : AFF report

Methodology used for formulating the scheme

- Market Survey
- Select Sample ratings & make of motors
- Purchase of Standard motors
- Test for performance in NABL accredited laboratories.
- Assess constructional features, quantity & quality of active materials
- Techno-commercial analysis
- Finalize recommendations with all the stakeholders
- Launch of scheme after due approvals

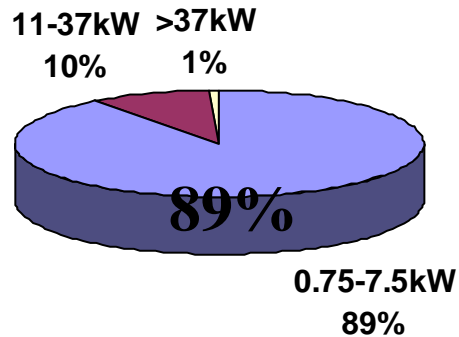
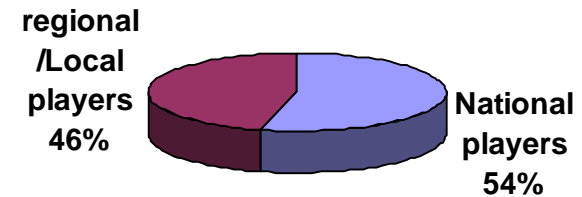
Motor Market Segments



Source: AFF Estimates, IEEMA Statistics, Primary Survey

Market Size & break up

Manufacturing sector break up
Induction motors (2003-04)



Rating wise break up for
3 ph sq cage Induction motors
(2003-04)

Source: AFF Estimates, IEEMA Statistics, Primary Survey

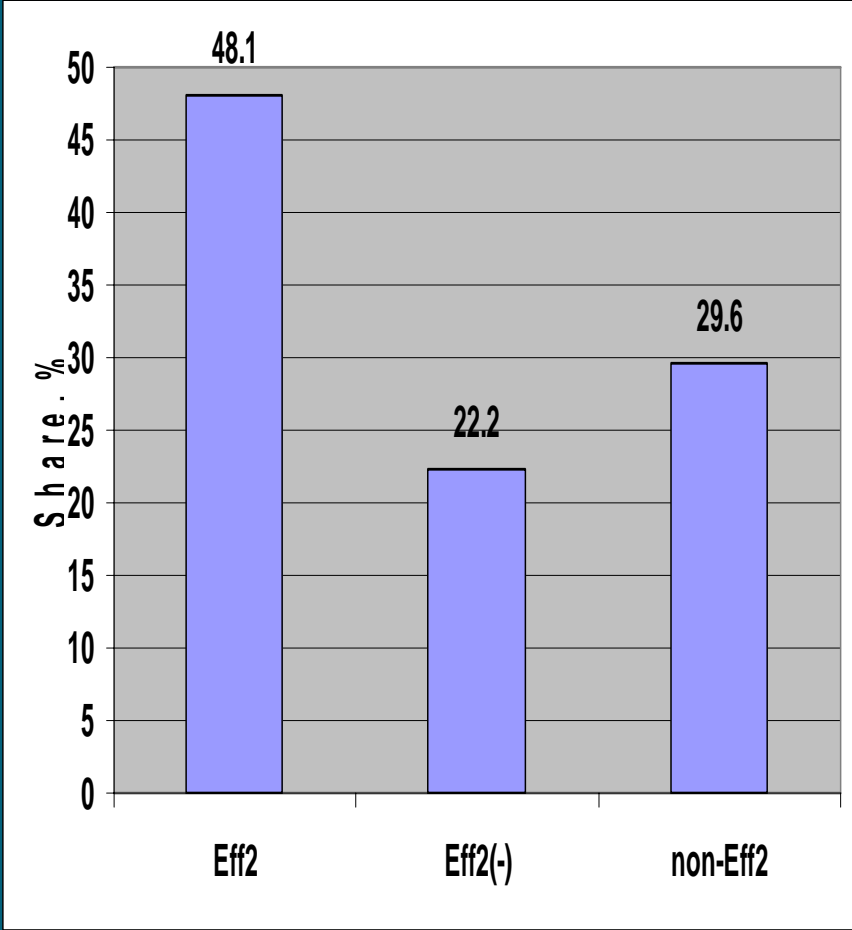
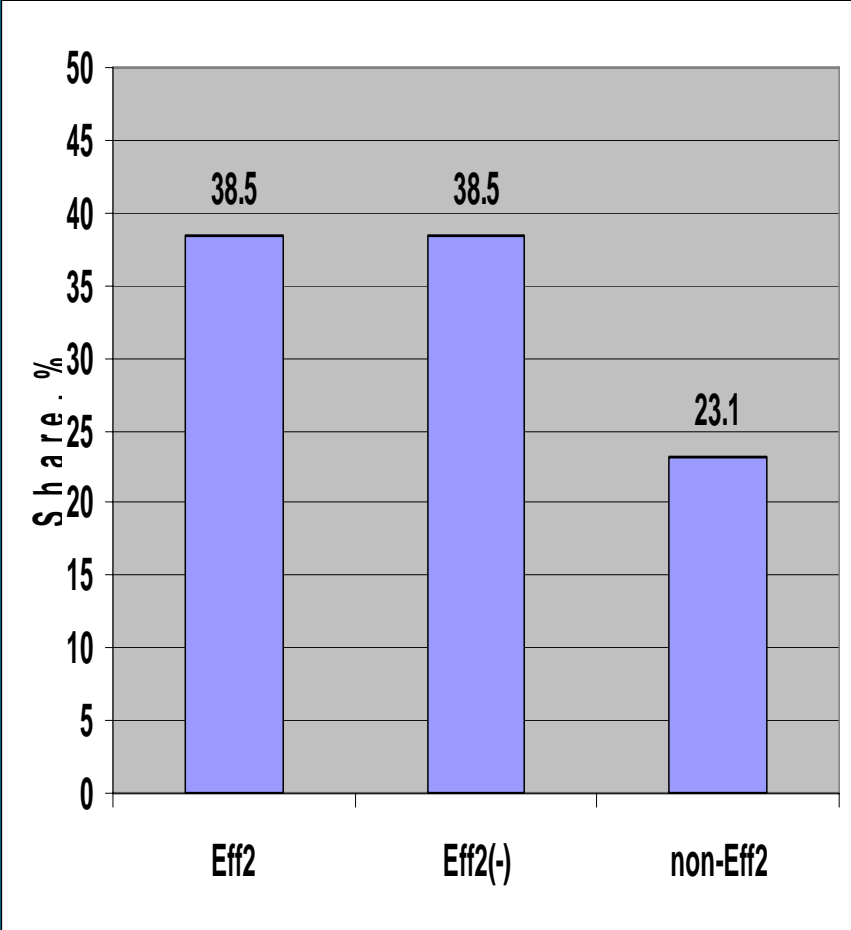
Sample Plan for techno-commercial study

- 3-phase 4 pole squirrel cage induction motor: 2.2 kW (26 motors), 3.7 kW (27 motors)
- 8 national manufacturers
- 18 regional/local manufacturers

Distribution by Efficiency Class

2.2 kW

3.7 kW

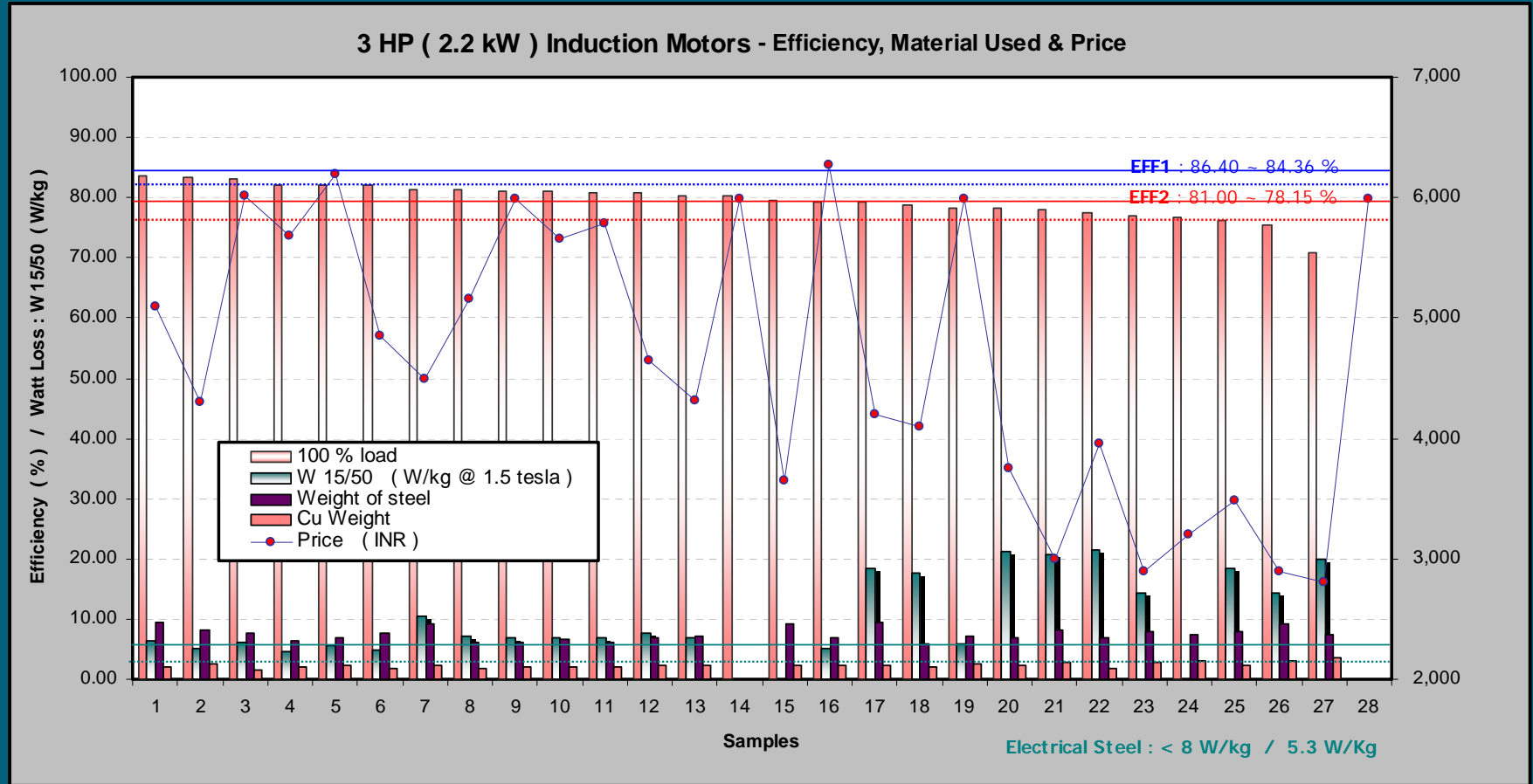


Source: AFF Estimates, Primary Survey

Efficiency Improvement Analysis

- Efficiency improvement will involve
 - motor design changes / redesign
 - manufacturing practices changes
 - manufacturing equipment changes.
 - Material optimization

Analysis background



Source: AFF Report

Classification of Motors

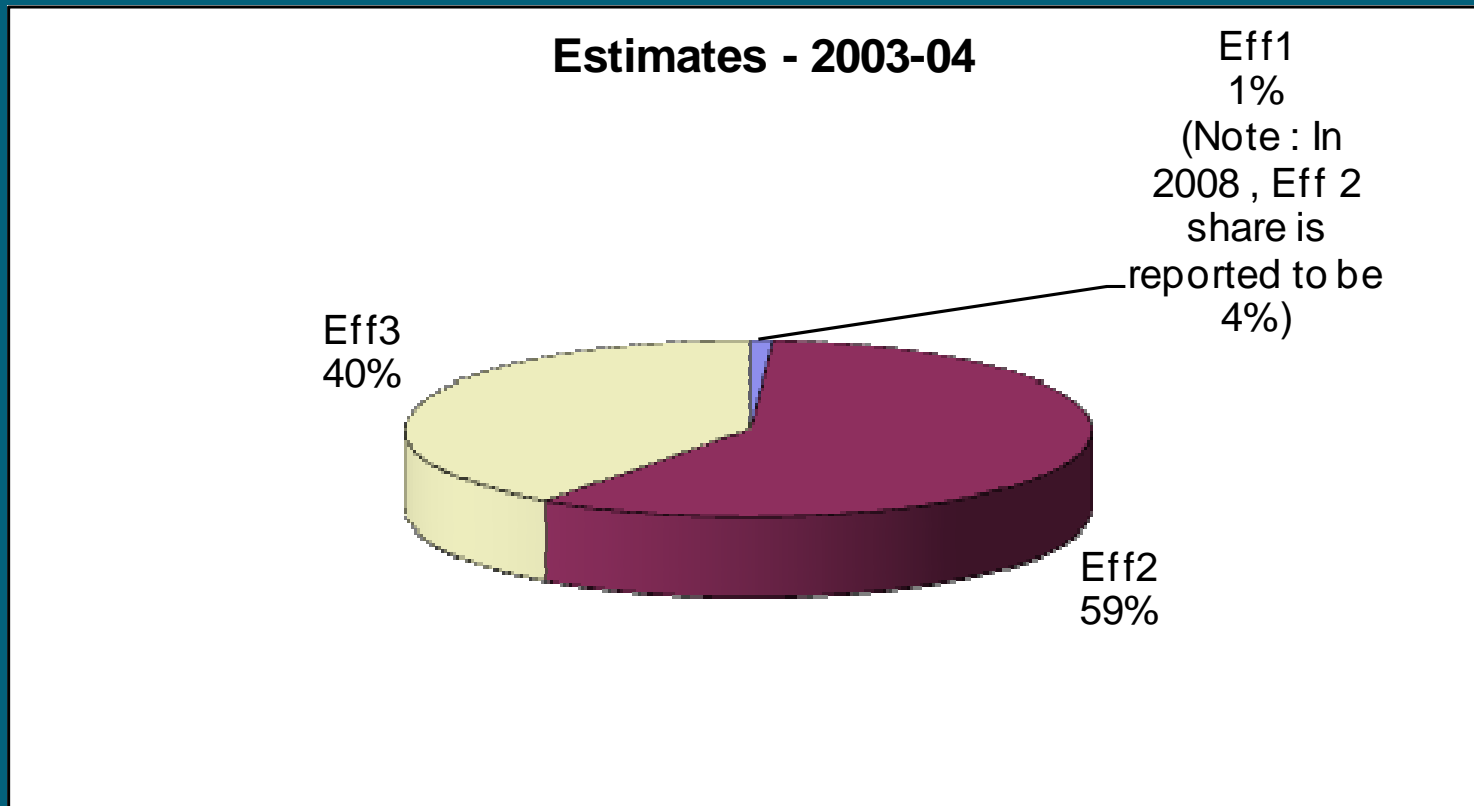
Motors were classified into efficiency classes depending on full load efficiency:

Following options were considered

- Eff 1 and Eff 2 for motors having efficiency as per efficiency class in IS 12615 but without the allowed lower tolerance
- Eff 1(-) and Eff 2(-) for motors having efficiency up to the allowed lower tolerance
- Non-Eff 2 for motors having efficiency lower than the Eff 2 value with allowed tolerance.

It was agreed that Eff 2 is well-established efficiency levels by virtue of being specified in IS 12615.

Market Share of Energy Efficient Motors



Benefits of Eff2

	Eff 2(-)	Eff 2
Savings, GWh/yr	30.6	102.2
Savings, Rs crores	15.29	51.11
Affected Production, %	18.9	53.7

Source: AFF Report

Scope of motors covered

- General purpose, S1 duty, 3 phase squirrel cage induction motors
- Motors up to 15kW, 4 & 2 pole considered
- Governing standard-
 - IS 12615: 2004
 - IS 325: 1996

Final labeling plan

- MEPS should be at Eff2 level
- Eff1 would be an endorsement label
 - Consider efficiency at 100% loading
 - Include 2 pole motors also on addition to 4 pole motors
- Label contents –
 - Parameters spelt out in clause 20.1a of IS 325 : 1996
 - BEE logo, license number & Efficiency class marking
- Mandatory process to be initiated after positive market transformation.

Future plans

- Launch labeling scheme for motor driven systems – pumps
- Undertake DSM initiatives with the end users
- Develop programmatic CDM methodology
- Review the plan after one year to up grade & align with international standards & norms



Thank you