NATIONAL MOTOR REPLACEMENT PROGRAMME
INDIA CASE STUDY

ENERGY EFFICIENCY POLICY APPROACH IN INDIA

In 2017-18, India's national electricity consumption was 1130.2 TWh as per Ministry of Statistics and Programme Implementation (MOSPI). The industrial sector used 41.48% of the total electricity consumption i.e. around 468.8 TWh. Based on International Energy Agency (IEA) estimates, energy efficiency is projected to contribute 51%[1] of the cumulative abatement of energy-related emissions up to the year 2035, significantly higher than the shift to alternative sources of energy.

Standards & Labelling Programme

The BEE (India Bureau of Energy Efficiency, www.beeindia.gov.in) flagship Standards & Labelling (S&L) Programme for appliances and equipment was launched in 2006. The scheme targets the display of energy performance labels on high-energy end-use equipment and appliances and lays down minimum energy performance standards (MEPS). Currently, the programme is mandatory for ten appliances and voluntary for thirteen others, including induction motors.

Mandatory Energy Performance Standards

At a country-level, the penetration of energy-efficient induction motors remains low in India and motors below the standard efficiency class (IE1,) as specified by the International Electrotechnical Commission (IEC), have a substantial market share. Around 41 countries have made an effort to transition towards high efficiency motors and motor-driven systems through mandatory regulatory measures and supporting policies. With effect from 1st January 2018, the Department for the Promotion of Industry and Internal Trade (DPIIT) issued a Quality Control Order requiring all imported and domestically manufactured motors to conform to the revised standard, IS:12615-2018, published by the Bureau of Indian Standards (BIS), which specifies IE2 (high efficiency) as the minimum efficiency class.

1 India Energy Outlook, 2010

GENESIS OF THE NATIONAL MOTOR REPLACEMENT PROGRAMME [NMRP] IN INDIA

The industrial sector accounts for around 40% of the electricity demand in India[2], while the share from motor, and motor-driven systems, consumption could be as high as *69% of the industrial electricity consumption.* Therefore, the concept of energy efficiency has immense benefits to offer in reducing energy consumption in motor, and motor-driven, systems and associated greenhouse gas emissions reductions. While the mandatory energy performance standards order is a welcome step, there is still more to be done as the barriers to the adoption of energy efficient motors are complex in nature and span across behavioural, financial and market related aspects.

Currently in its early phase, an EESL (Energy Efficiency Services Limited)-led voluntary motors replacement programme is working to address these issues. It is well-aligned with national level priorities and objectives and will:

- Supplement the energy saving under the present and upcoming cycles of the 'Perform Achieve Trade' scheme for large industries.
- Supplement the efforts under the BEE-SME programme by accelerating the transformation of the installed stock.
- Enable leapfrogging to a higher efficiency (IE3) level than the IE2 level specified by the MEPS, thereby complementing the Standards & Labelling Programme.
- Improve the cost-competitiveness of the Indian manufacturing industry, accelerate the adoption of world-class technologies by Indian motor manufacturers and generate employment in manufacturing and services.

2 ICA White Paper on High Efficiency Accelerated Motor Replacement Programme

HOW THE NATIONAL MOTOR REPLACEMENT PROGRAMME [NMRP] IS ADDRESSING THE MARKET BARRIERS

While the savings opportunity is huge, EESL has also foreseen specific market barriers, for which mitigating steps have been taken. With the objective of ensuring that the programme is structured to give due consideration to the perspectives of all relevant stakeholders, multiple rounds of stakeholder consultations were carried out with multilateral agencies, motor manufacturers, end users and various industries and industry bodies. The key barriers, and the mitigation steps for each, are shown in the table.

BARRIERS	NATURE OF RISK	RISK RATING	MITIGATING ELEMENTS INCORPORATED IN THE MOTORS REPLACEMENT PROGRAMME OPERATING FRAMEWORK
HIGH UPFRONT COSTS FOR CONSUMER/NON AVAILABILITY OF FUNDS FOR CAPEX	Supply side and demand side Affordability and financing		• Targets for price reduction through bulk procurement • Easy and innovative financing options for customer, with EESL taking care of entire upfront cost
APPREHENSIONS ABOUT 'SHARED SAVINGS MODEL' IN CONTEXT OF MOTORS	Technology risk		• Pilot studies for major motor ratings were conducted to establish a deemed savings model • A large number of awareness programmes on technical and commercial aspects conducted with ICA India as the outreach partner
LONGER DELIVERY TIME OF MOTORS AND AFTER SALES SERVICE	Supply side		• Fixed delivery timeline after placing Letter of Intent • After sales service framework developed
LACK OF DEMAND FROM INDUSTRY	Demand side		• Leveraging the existing EESL network with various institutions across India to identify customers who are interested in implementation • Phasing the programme to capture the easier and bigger segment (rating wise) before moving to relatively difficult segments • Inclusion of add-on features, such as extended warranty, after sales support and option for walkthrough audit services, to make the proposition more attractive • Exploring synergies in demand aggregation through empanelled partners • End-user awareness programme to address resistance to change

MOTOR REPLACEMENT VALUE PROPOSITION THROUGH INNOVATIVE BUSINESS MODEL

Through its current business model and approach, the programme aims to address the two main concerns which act as a deterrent for the adoption of higher efficiency motors (HEMs). Firstly, it aims to address the higher first-cost barrier by providing an approximately 20-25% reduction in price compared to market retail price for the end users through demand aggregation and bulk procurement. Secondly, to accelerate the scale of adoption and encourage users with lower financial capability, particularly SMEs, it includes an easy financing option over up to three years with repayment in periodic instalments.

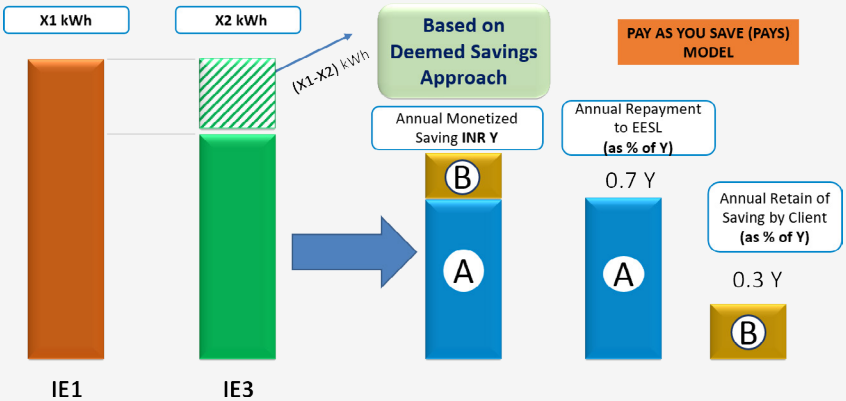
Model 1: Supply Contract/Project Management Consultancy (PMC) Model

In this model, the end user shall bear the entire investment cost, which is mainly the product cost as set through open competitive bidding completed by EESL. EESL shall provide PMC support to the end users. The PMC support includes the following:

- **Inventory collection:** Estimation of baseline inventory and energy consumption through structured and scientific approach.
- **Finalization of the scheme for replacement:** Number of motors to be replaced, technical specifications, estimation of energy saving, investment requirement etc.
- **Procurement of motors:** Transparent and fair procurement process carried out on behalf of end user through an open competitive bidding model.
- **Supply of motors to user site:** Facilitation/ management of supply of motors to the user site with due co-ordination with the supplier.
- **Warranty obligation:** Ensuring a three-year warranty obligation from the manufacturer.

Model 2: Shared Saving, Energy Servicing Company (ESCO) Model

In this model, the entire upfront investment cost will be undertaken by EESL, in addition to the PMC activities as described above. Here, the project cost will include material cost, plus PMC fees, plus the interest rate on the debt and the return on equity of the EESL investment. The repayment to EESL by the user can be through equated quarterly instalments (EQIs) for a maximum three-year period. It is observed that the repayment amount to EESL by the end-user is about 50-70% of the monetized savings accruing through the improvement in efficiency of the motor.



PROGRAMME IMPACT

The first phase of the National Motors Replacement Programme [NMRP] was aimed at understanding the market's acceptance of IE3 motors and using the lessons learnt to prepare for the subsequent phases of the programme. Looking at the outreach achieved through NMRP 1.0 during 2018-19, the industries which have participated have seen positive results from replacing their old, lower efficiency motors (IE1 and below), with premium efficiency (IE3) motors.

Overall, the programme could create a moderate impact in terms of sensitising the industrial users to the benefits of IE3 motors as well as influencing the business-to-business market to adopt efficient motor technology through its innovative business model. The overall estimated savings, in terms of energy, cost and emissions reduction, through replacement of approximately 5,000 motors in both larger companies and the SME sector, are illustrated below.

Annual Energy Savings

9,150 MWh

Annual Cost Savings

902,112 USD

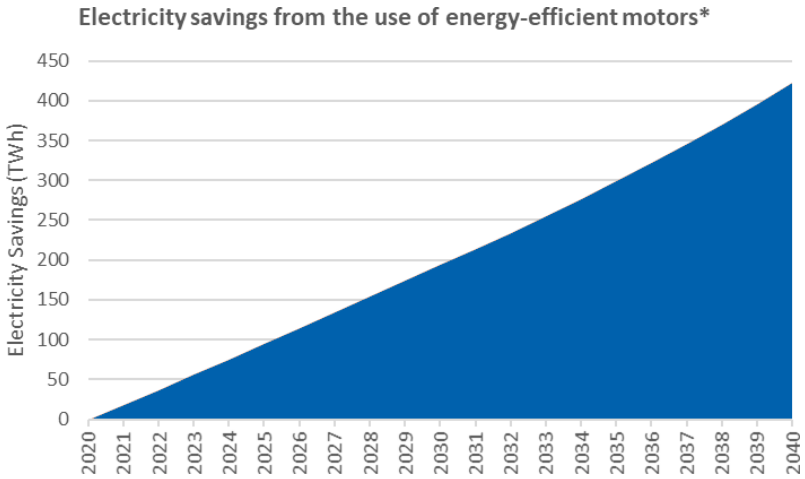
Annual CO_2 emission reduction

8,050 Tonnes

SAVINGS AVAILABLE FOR OTHER COUNTRIES

This savings potential is not unique to India. The Country Saving Assessments produced by U4E show that developing countries and emerging economies can save significant amounts of electricity by transferring markets to more efficient motors. The graph below shows the total estimated annual savings across all 156 assessed countries.

These electricity savings are equal to the generation capacity of 193 500 MW power stations, with a saving of 430 million tonnes of CO_2 and 35 billion USD through reduced electricity bills.



*The graph refers to the High Ambition Scenario and to all 156 assessed countries.

OTHER PROJECT PARTNERS

International Copper Association India
Copper Alliance

INSTITUTE FOR Sustainable Communities

ADB

P4G Partnering for Green Growth and the Global Goals 2030

More information on the Country Savings Assessments and the individual country savings that could be achieved can be found on the Country Savings Assessments pages of the U4E website.