



Egypt Mandates IE3 Energy Efficiency Standards for Electric Motors

A 5-year collaborative journey implementing motor MEPS in Egypt from May 2022

Jeremy Tait,
Menan Omar
& colleagues

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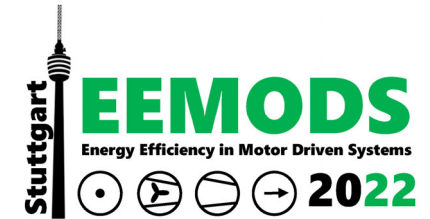
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- Professor Hany Elghazaly, Cairo University
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- Virginie Letschert, Lawrence Berkeley National Lab
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Agenda



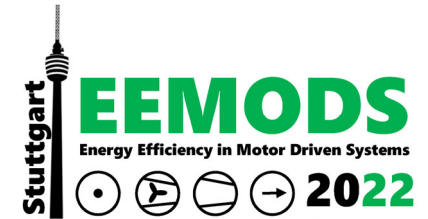
- 1) Introduction and context
- 2) The Egyptian motors market in 2016, and prospects for improvement
- 3) Journey Overview: How MEPS for electric motors were introduced in Egypt
- 4) Key Lessons Learned
- 5) Q&A



3.-5. Mai 2022

1. Overall aim and context

How did the journey start?



- **Key Milestone Achieved:**

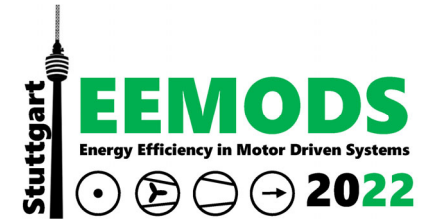
- The Egyptian Ministry of Trade and Industry (MoTI) issued Decree 463/2020 to enforce labelling of motors and mandating higher energy efficiency standards for selected electric motors on 23 September 2020.

- **Why is the introduction of MEPS in industry so significant?**

- Brings the local motor market **into line with other major economies**.
- Creates an opportunity for **local and foreign investments** in a growing energy efficient technology.
- Builds on existing development, including Egypt's highly developed electricity market with **100% of the population** having **access to electricity**
- Complements existing efforts that include **a registration scheme for household appliances** run by national standards body.
- Presents the Government of Egypt with an opportunity to demonstrate its commitment to climate change efforts, which is timely given that Egypt will be **hosting COP27** in November of 2022 and is gearing up national and regional efforts.

1. Overall aim and context

How did the journey all start? Cont'd

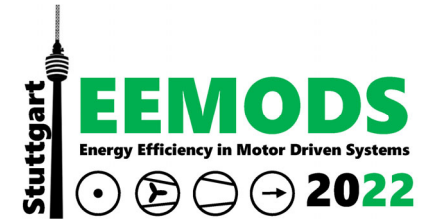


- **Pre-2014/5 Context:**

- The industrial sector represented **more than 35 percent of the GDP** and was responsible for a significant part of the national **energy consumption, reaching 32 percent in 2011.**
- The **energy intensity in Egypt was almost double** that of some neighboring countries like **Morocco and Tunisia, and four times as high as Germany.**
- Egypt faced a significant shortage in energy and power outages were common, yet energy demand was growing and the cost of maintaining energy subsidies in place since the nineteen seventies was becoming a burden on the Government of Egypt (GoE).
- In 2012, **energy subsidies** in Egypt reached approximately US\$16 billion representing **more than 20 percent of the national budget expenditures.** At the time, energy subsidies represented **70 percent of total subsidies**
- The World Bank Enterprise Survey revealed that **36 percent of surveyed firms identified electricity as a major constraint in 2014, compared to 14 percent in 2008,** and nearly **6 percent of annual sales were lost due to electrical outages in Egypt.**

1. Overall aim and context

How did the journey all start? Cont'd



- **How did the government respond to these challenges?**

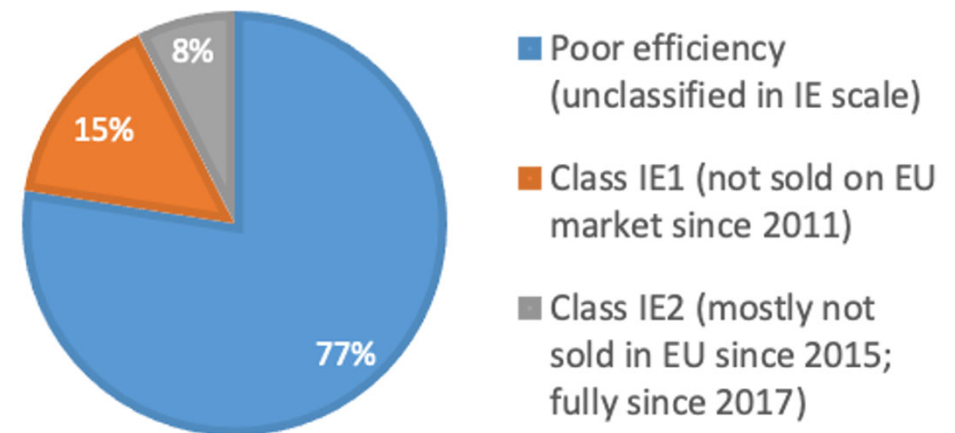
- In 2014, the GoE adopted a policy to gradually phase out electricity subsidies as part of a larger economic reform program.
- The consequent increase in energy costs impacted the competitiveness of the industrial sector, and MoTI requested IFC's support to facilitate this transition and mitigate its impact on industries.
- The **Smart Technology and Energy Efficient Production (STEP)** project, a technical assistance program led by the International Finance Corporation (IFC) and in partnership with MoTI was launched in 2015 to help improve the competitiveness of Egyptian industries.
- STEP comprised two components and today's presentation will only focus on one, which relates to the introduction of Minimum Energy Performance Standards (MEPS) and Standards and Labeling (S&L) program as the policy instrument to deliver a wide range of impact on industry.
- **Decree 463/2020** is the outcome of the policy-level work that was supported by the STEP project and delivered in close collaboration with a consortium led by the US based consultancy E3 International, working with Cairo University's Energy Research Centre (ERC) of Egypt and the Lawrence Berkeley National Laboratory (LBNL) in California, the Danish Technological Institute, and staff of the Danish Energy Agency's market surveillance unit.

2. Status of the Egyptian motors market at 2016 / 2017

Suppliers and users

- Six to 10 Egyptian companies manufacture 5% of Egypt's motors market (including remanufactured) up to c.37kW size; others imported
- Multinational suppliers active; many local dealers & importers
- IE3 rarely sold due to low demand, longer delivery, higher prices
- Rewind after most failures rather than replacement, via grey market workshops

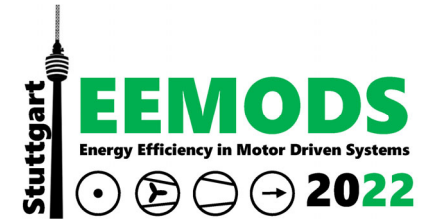
Survey of >100 industrial & commercial motor user sites (engineering, textiles, food, chemicals etc):



- 77% of motors in use of poor efficiency (below IE1)
- 15% IE1, 8% IE2 plus some IE2+VSD
- Majority had no efficiency marking *and* had been rewound
- Half were over 10 years old

2. Status of the Egyptian motors market at 2016/2017

Market failures that the Egyptian Government set out to address



1. Electricity subsidy phase-out requires reorientation towards energy efficiency
2. Buyers need motor energy performance data they can trust for purchase decisions
3. Need much increased availability of high efficiency motors (choice, delivery, price)
4. Education of users and buyers on efficiency impacts and life cycle costing
5. Cut availability of cheap, poor efficiency motors
6. Raise awareness of downsides of rewind versus replacement

In an unregulated market:

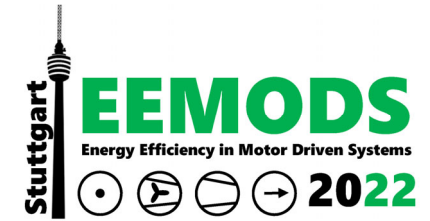
- Sales aim at minimum purchase price
- Meaning minimum amount of copper, simplest design => poor efficiency
- No label / unreliable label, so buyer cannot know how motor performs

In a regulated market with MEPS and label:

- Motors below specified efficiency may not be sold
- Motors marked with efficiency in a consistent way; buyers can compare and decide

2. Status of the Egyptian motors market at 2016/2017

Prospects for improvement and target savings



BENEFITS TO INDUSTRY:

- Access to up-to-date technology increasing the competitiveness of industry
- Reduce industry electricity costs by US\$ 560 million NPV total to 2031
- Better reliability and motors that return \$6 in savings to every \$1 of extra investment
- Export and home sales growth through expansion of local manufacturing.

BENEFITS NATIONALLY:

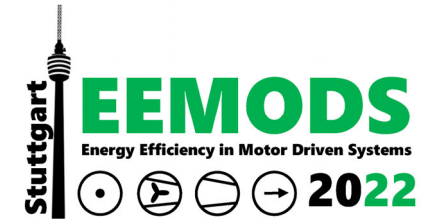
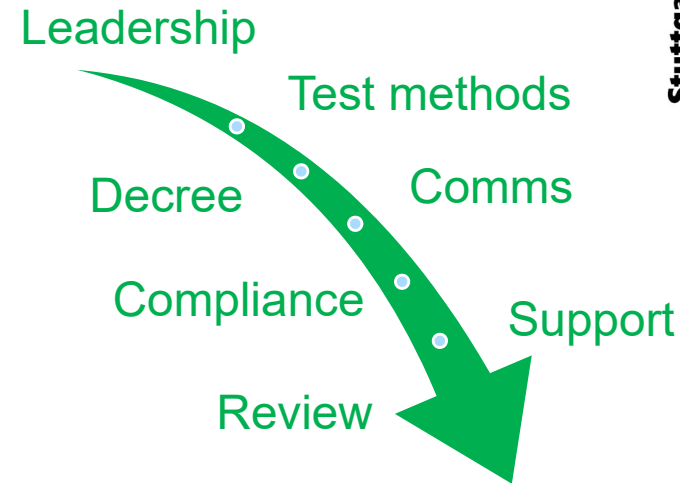
- Prevent Egypt being a dumping ground for poor motors
- Unlock new market opportunities for local manufacturing & component industries
- Save 3 TWh and 9Mt CO₂ annually at 2031
- Reduce stress on electricity grid through energy savings
- Avoid investment in 1,100 MW generating capacity by 2031.



3. The market reform journey

Consensus on a seven-step roadmap

1. Overall political and organizational leadership
2. Motor test methods and testing capacity
3. Develop and publish Decree
4. Communication campaign to prepare market and support Decree
5. Implementation: Support and monitor compliance, enable enforcement
6. Supporting policies to ensure success
7. Review of programme performance

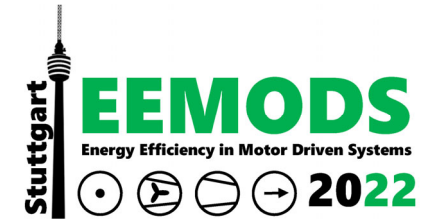


Details of the roadmap steps are explained in an IFC World Bank photo-article accessible at this [link](#)



3. The market reform journey

Stakeholder engagement was a major priority



- Over two dozen workshops with motor suppliers, users and authorities: Federation of Egyptian Industry, business associations
- Introducing technology and economics of efficient motors
- More than 500 stakeholders engaged in and around Cairo and Alexandria
- Summary guides published for users and for dealers



3. The market reform journey

Preparation with authorities: Training; Testing; Market surveillance

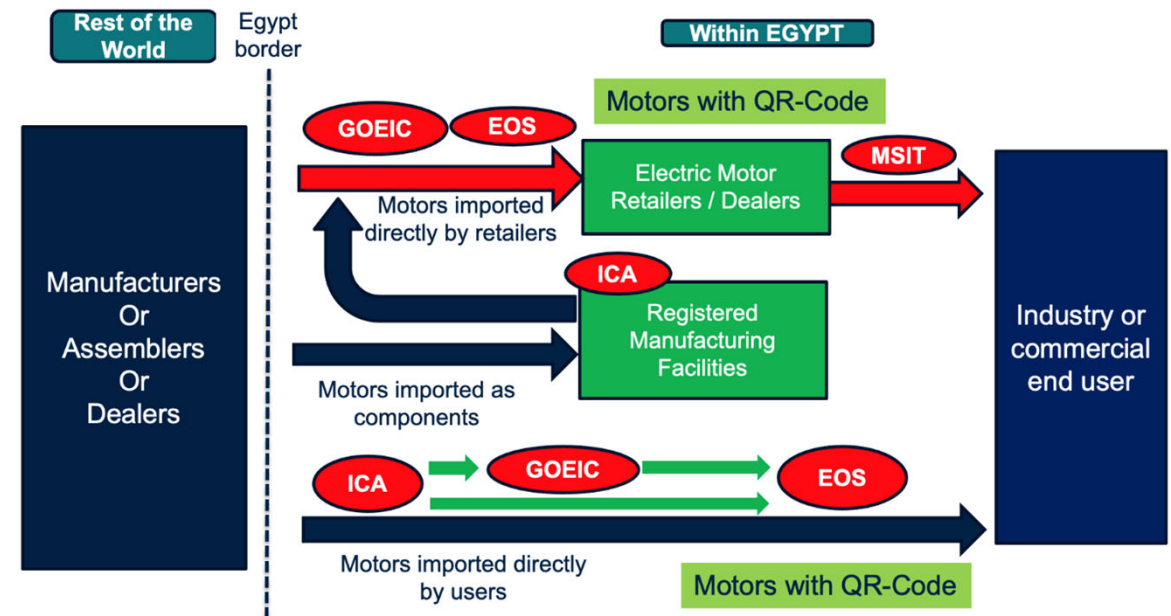


3. The market reform journey

Challenges and proposed approach for market surveillance

- Responsibility split between four Government authorities:
 - At Egypt's borders (GOEIC)
 - Industrial facilities (ICA)
 - Dealers & retailers (CPA)
 - Standards & testing body (EOS)
- Separate management, lacked coordination and with limited resources
- No independent accredited motor test lab

Proposed approach for market surveillance:



GOEIC: Performs the tests according to the Egyptian Standards; issues a certificate with the type and serial numbers of the motors and issues a list of pre-approved testing labs.

ICA: Takes samples from local manufacturing and sends it to GOEIC for testing.

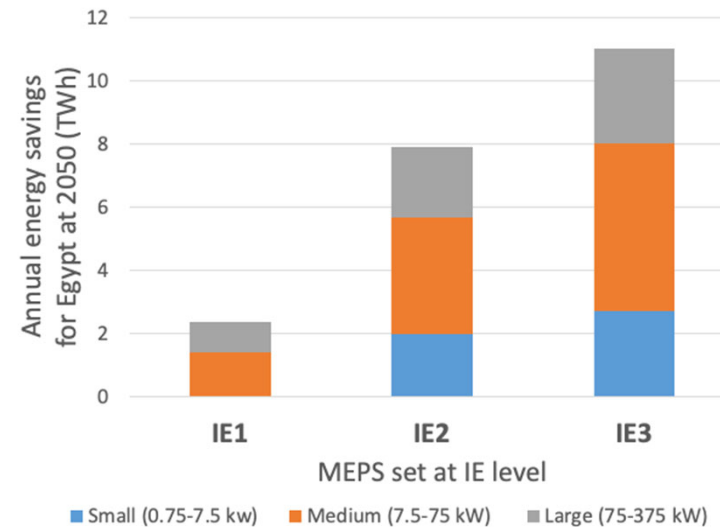
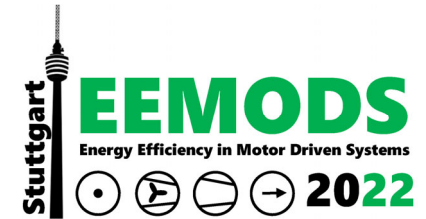
EOS: Registers the certified motors and issues a barcode for each motor for inspection.

MSIT and ICA: Inspect motors through the barcode in the markets or industrial facilities respectively.

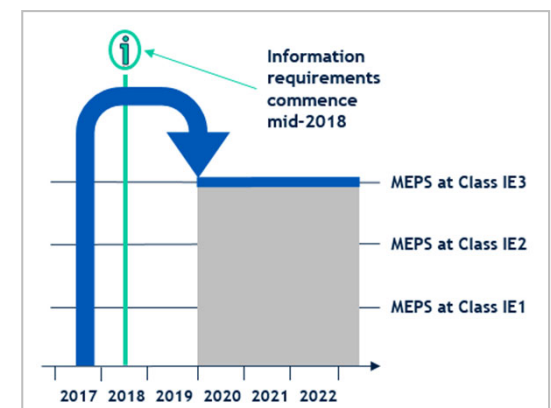
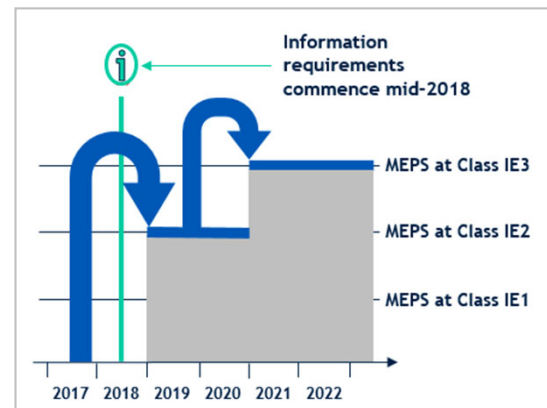
3. The market reform journey

Agreement on MEPS scenario

- Consensus on mandatory MEPS at IE3 within a few years, but concern over transition and market disruption
- Stakeholder engagement, scenario analysis, listening to concerns and reviewing options with the Ministry & authorities took over one year
- Time for industry to adapt resulted from the 2018 presidential election which delayed adoption; MoTI decided for mandatory IE3, 18 months from publication of the Decree.
- **IE3 MEPS come into force 5 May 2022.**



• Energy savings supported IE3



4. What are some of the key lessons learned?

- 1) Invest time to explain to stakeholders what is being planned and why.
- 2) An evidence-based approach with high transparency and credibility secured the confidence of stakeholders.
- 3) Engage with stakeholders early in the project to build consensus, to gain credibility and to support the standards, so they are not imposed only from the top down.
- 4) Government organizations have their own operating procedures and may not routinely work together.
- 5) What works in one economy may not work in another, due mainly to context and culture - requires flexibility to adapt.



Thank you.

We would be pleased to answer questions.



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