



Egyptian program for promoting
Industrial Motor Efficiency
SAVE TODAY ... POWER TOMORROW

Policy Recommendations and Implementation Roadmap for Policy tools and guidelines

January 2022



Executive summary

UNIDO, in full cooperation with the Egyptian Ministry of Trade and Industry (MoTI) are implementing the GEF-6 funded project entitled “Egyptian Programme for Promoting Industrial Motor Efficiency” focusing on improving the efficiency of Electric Motor Driven Systems (EMDS) and accelerating the market penetration of energy efficient motors in the industrial sector. Cost-effective motor system optimization measures and the replacement of inefficient motors are expected to result in considerable reduction in their energy use. The objective of the project is to reduce greenhouse gas emissions by facilitating and supporting market penetration of highly energy efficient motor systems in the industrial sector in Egypt as well as developing a conducive legal and regulatory environment for energy efficient motors, building awareness and capacity on energy efficient motor systems, providing technical assistance for technology demonstration and up-scaling, and supporting the development of the Energy Service Company (ESCO) market. The project implementation is expected to result in five outcomes:

1. Develop a conducive policy and legal environment for energy efficient (EE) motor systems
2. Conduct awareness and capacity building on energy efficiency in motors and motor driven Systems
3. Provide technical assistance for technology demonstration and up-scaling
4. Develop ESCO models to provide energy efficiency services to industry piloted
5. Ensuring that adequate monitoring and evaluation mechanisms are in place and facilitating smooth and successful project implementation and sound impact.

This report is part of the project’s document component 1. The main objective of this component is to develop an enabling policy environment to transform the market for EE in electric motor driven systems (EMDS). With the provision of technical assistance throughout the project to the Ministry of Trade and Industry (MoTI) and other relevant stakeholders, operational policy tools and guidelines for the deployment of EE motors will be developed in order to accelerate the phase out of old motors and the adoption of motor systems optimization (MSO) measures. The development of contractual and accreditation frameworks to enable ESCO business models is also one of the objectives of the first component of the project. By working on these policy tracks in parallel, the project will make sure that the new demand for EE MSO measures and EE motors will create new business opportunities for ESCOs. In early October 2020, the MoTI issued a decree [#463/2020](#), which requires producers and importers of electric motors to comply with the Egyptian specification standards for motor energy efficiency levels.

The objective of this report is to present operational policy tools and guidelines for the deployment of EE motors and recommendations which aim to increase the penetration of EMDS in Egyptian industry. The report builds on a previous baseline assessment report which mapped stakeholders, existing policies and regulations (legislative framework related to the Electricity Laws and electricity subsidies), as well as institutions relevant to Industrial Energy Efficiency (IEE) and EMDS. An assessment of gaps (i.e. existing gaps and challenges which hinder the deployment of EE motor driven systems) was conducted in a preceding report (referred to as the baseline report). The baseline report mapped policy gaps and barriers to EMDS penetration in Egyptian industry on the regulatory, factory, and overall market level. The report was developed based on detailed analysis of the wealth of existing literature, benchmarking against international best practices as well primary data collection and validation with key stakeholders.



In total 49 surveys (ANNEX III) covering various stakeholders such as manufacturers, traders, end-users of motors, as well as financial institutions have been conducted. Numerous non-structured interviews were conducted with public stakeholders. The key findings of the baseline report were validated through two working group activities which including all key public stakeholders, financial institutions, independent experts, and representatives of Egyptian industry as well as motor technology suppliers. A long list of policy recommendations was presented to attendees on the 2nd working group (ANNEX VI). Attendees selected a shorter list of policies to be elaborated and for which an implementation roadmap was detailed. The details of this list and roadmap were validated in a 3rd working group meeting leading to endorsement of the output “operational policy tools and guidelines” the following policies (ANNEX VI).

Mainstreaming of motor finance within existing green facilities

Development of EE Motors Specialized Financial Products

Awareness and communication

Registration of EE motor models

Clarification notes to elucidate details and scope of the Decree #463/2020

Effective Market Regulation Framework

Content

Executive summary	2
Content4	
List of Figures	6
List Of Tables	7
List of Abbreviation	8
Acknowledgment	10
Section 1. Introduction	11
1.1 Background	11
1.2 Methodology	12
1.3 The structure of the report	14
Section 2. Market Gaps and Key Policy Interventions	15
2.1 Top-down Approach Market Readiness for EE EMDS	15
2.1 Bottom-Up Determination of Barriers	20
2.3 Consolidation of key Market Gaps and Barriers	26
2.4 Long-List of Proposed Policies	29
2.5 Short-Listed Policies	36
Section 3. Operational policy tools and guidelines for the deployment of EE motors	41
3.1 Access to Finance Catalyze Demand (Economic)	41
3.1.1 Mainstreaming of motor finance within existing green finance facilities	41
3.1.2 Development of EE Motors Specialized Financial Products	42
3.1.3 Fact sheets and Action Plan	43
3.2 Knowledge and Awareness Raising (Informative)	45
3.2.1 Awareness and Communication	46
3.2.2 Integration of EE EMDS in educational programs	47
3.2.3 Registration of EE Motors	47
3.2.4 Fact sheets and Action Plan	49
3.3 Developing Effective Market Regulation and Decree #463/2020 Clarification Note (regulatory)	53
3.3.1 Effective Market Regulation	53



3.3.2	Clarification note to elucidate the details and scope of the Decree #463/2020	63
3.3.3	Fact sheets and Action Plan	65
Section 4.	Summary and Implementation Roadmap	67
ANNEX I:	Decree #463/2020	76
ANNEX II:	Clarification note	77
ANNEX III:	List of Engaged Entities and Interviews Questions	79
ANNEX IV:	List of Green Finance Facilities	87
ANNEX V	International policies	89
ANNEX VI:	Action plans	99
ANNEX VII:	Working group meetings	102

List of Figures

Figure 1: Overview of proposed policy tolls and their impact on the market	12
Figure 2: Overview of proposed approach	13
Figure 3 Radar plot for market readiness reflecting percentage score from the maximum value of 5 in table above	18
Figure 4 Score in various aspects for market readiness include what could be achieved	19
Figure 5 Awareness levels in Egyptian industry of EE in 2014 and 2021	21
Figure 6 Awareness levels in Egyptian industry of EE versus EE EMDS	22
Figure 7 Surveyed factories assessing their decision-making approach when it comes to more replacement	23
Figure 8 Surveyed factories assessing the barriers related to interaction between various departments for IEE investments	24
Figure 9 Surveyed factories awareness of the existence of EE finance facilities	24
Figure 10: Key barriers to the implementation of the decree	25
Figure 11: Key barriers to the implementation of the decree	26
Figure 12 Analysis of 25 relevant EE Motors and EMDS policies in 14 countries (list in ANNEX V)	29
Figure 13 Selected relevant policies which are usually accompanied with motor MEPs worldwide	30
Figure 14 Assessment of policies by attendees of 2 nd working group (1=low – 3=high)	38
Figure 15 Overview of proposed policy tolls and their impact on the market	40
Figure 16 Sample of UK platform for registered EE motors	48
Figure 17 Flow chart of product check at port of entry	56
Figure 18 Examples of types of non-compliance	60
Figure 19 Market regulation frame	73

List Of Tables

Table 1 Assessment of market readiness for EEMDS in Egypt	17
Table 2 Selected international policies and their relevance to Egypt	31
Table 3: Mainstreaming of motors finance within existing green finance facilities Policy Fact Sheet	43
Table 4: Development of EE Motors Specialized Financial Products Policy Fact Sheet	44
Table 5: Policy implementation activities and timeline for access to finance	45
Table 6: Awareness and Communications policy fact sheet	49
Table 7: Integration of EE EMDS in educational programs Policy fact sheet	50
Table 8: Motor registration platform Policy fact sheet	51
Table 9: Policy implementation activities and timeline for knowledge and awareness raising	52
Table 10: Market Channels and Possibilities of Fraud	63
Table 11: Effective market regulation policy fact sheet	65
Table 12: Development of clarification note policy fact sheet	66
Table 13: Roadmap of key activities for each policy and intervention	67
Table 14: Interconnection of operational policy tools	70
Table 15: Operational policy tools impact on market players	72
Table 16: Summary of key market function and activities	74
Table 17: Summary of roles and responsibilities of key entities in policy	75
Table 18: Summary of roles and responsibilities of key entities in policy	88

List of Abbreviation

B2B: Business-to-Business service

COP27: United Nations Climate Change Conference in Egypt

CPA: Consumer Protection Agency

EBRD: European Bank for Reconstruction and Development

ECO-FEI: Environmental Compliance Office of the Federation of Egyptian Industries

EE: Energy Efficiency

EGAC: Egyptian Accreditation Council, EGAC

EMDS: Electric Motor Driven Systems

EOS: Egyptian Organization for Standardization & Quality

EPAP: Environmental Pollution Ebatement Program

ESCO: Energy Service Company

EU: European Union

GEFF: Green Economy Finance Facility

GoE: Government of Egypt

GOEIC: General Organization for Export & Import Control

ICA: Industrial Control Authority

IDA: Industrial Development Authority

IEE: Industrial Energy Efficiency

IMC: Industrial Modernization Center

KPI: Key Performance Indicator

KW : Kilo Watt

LCC : Life cycle cost

MEPS: Minimum Energy Performance Standards (MEPS)

MoERE: Ministry of Electricity and Renewable Energy

MoTI: Ministry of Trade and Industry

MSMEDA: Micro, Small and Medium Enterprises Development Agency



MSO: Motor Systems Optimization

NBE: National Bank of Egypt

NREA: New and Renewable Energy Authority

OEM: Original equipment manufacturer

SEFF: Egypt Sustainable Energy Finance Facility

SMEs: Small and medium-sized enterprises

UNIDO: United Nations Industrial Development Organization

V: Volt

VSD: Variable Speed Drive

Acknowledgment

This document comes as part of the “Egyptian Programme for Promoting Industrial Motor Efficiency” by UNIDO focusing on improving the efficiency of Electric Motor Driven Systems (EMDS) and accelerating the market penetration of energy efficient motors in the industrial sector.

This document presents policy Recommendations and Implementation Roadmap for Policy tools and guidelines to adapt the changes in the industrial motors market place. The document is developed by *Chemonics Egypt Consultants*, UNIDO’s consultant for the assignment of “Recommendation and development of operational policy tools, action plans and guidelines to promote the deployment of energy efficient motor driven systems in Egypt”.

The policy Recommendations and Implementation Roadmap for Policy tools and guidelines is based on the consultant’s experience, literature review, desk research and conducted interviews with the main stakeholders for the EE motor in the Egyptian market. The key findings of this report were presented in 2 working groups meeting and discussed with relevant stakeholders for validation.

Section 1. Introduction

1.1 Background

The market opportunity in energy efficiency in Egypt is highly attractive from an investment and end consumers saving point of view. Estimates of possible energy savings in the industrial sector can be put at 8.6 billion USD with 53% of it in electrical energy and the rest in thermal. This would translate into an annual savings of about 923 million USD in industrial electrical energy spending and about 805 million USD in fuel spending for Egyptian Industry with clear positive consequences of sustainability and competitiveness¹. The above saving would represent 5.5% and 6.6% of Egypt electrical energy and thermal energy consumptions per year.

Realizing the opportunity above, Egyptian industry has been moving to invest in EE at a rapid pace. For instance, while Egypt Sustainable Energy Finance Facility (SEFF) EBRD program invested 30 million Euros from 2012 to 2016, its successor the Green Economy Finance Facility (GEFF) targeted investment of 140 million Euros from 2016 to 2020². This signals the intensification of demand due to increased awareness at a firm-level of the benefits of energy efficiency, accentuated by the removal of energy subsidies. Moreover, the feasibility of adopting energy efficient technologies in Egypt is increasing due to the decreasing capital costs of various EE technologies such as economizers, inverters, etc. This is reinforced by the increase of energy prices and the availability of concessional loans in the market. Such intensification of demand has also been supported by a wealth of knowledge and lessons learnt that can be built upon from previous projects. Yet, the rate of disbursement of funds in GEFF and other facilities such as that of ECO-FEI (Environmental Compliance Office of the Federation of Egyptian Industries) and EPAP also demonstrates that only the surface of the opportunity at hand has been scratched and that the EE market in Egypt is still nascent despite its rapid growth.

However, what is encouraging is that various elements of a successful energy efficiency market exist and can be catalyzed to accelerate growth (see the baseline report). The Government of Egypt (GoE) high-level policies are conducive to energy efficiency, despite some gaps at the regulatory and operational levels. For the EE market to flourish such gaps would need to be addressed. This report aims at presenting policies and operational policy tools and guidelines for the deployment of EE motors which can catalyze improvement in the market of energy efficient Industrial Electric Motor Driven Systems (EMDS). With industrial motor electric motors systems typically consuming 70% of industrial electrical energy³, they offer the largest saving opportunity in the industrial electrical energy efficiency market. This potential amounts to 614 million USD annually (3.85% of Egypt electrical energy annual consumption)⁴. This report also proposes operational policies to ensure Decree #463 for 2020 is implemented and achieves its objectives. The decree #463/2020 issued on October 2020 by the Minister of Trade and Industry aims to ensure motors indicate their energy efficiency and other relevant information on rating plates affixed to the motor and with ensuring that key types of motors attain minimum energy performance standards (MEPS) as discussed in the baseline report.

¹ Details of calculations are in Annex 2 of the baseline report

² Out of the 30 million Euros invested by SEFFI, 18 million were due the UNIDO IEE project efforts in connecting industrial facilities with banks.

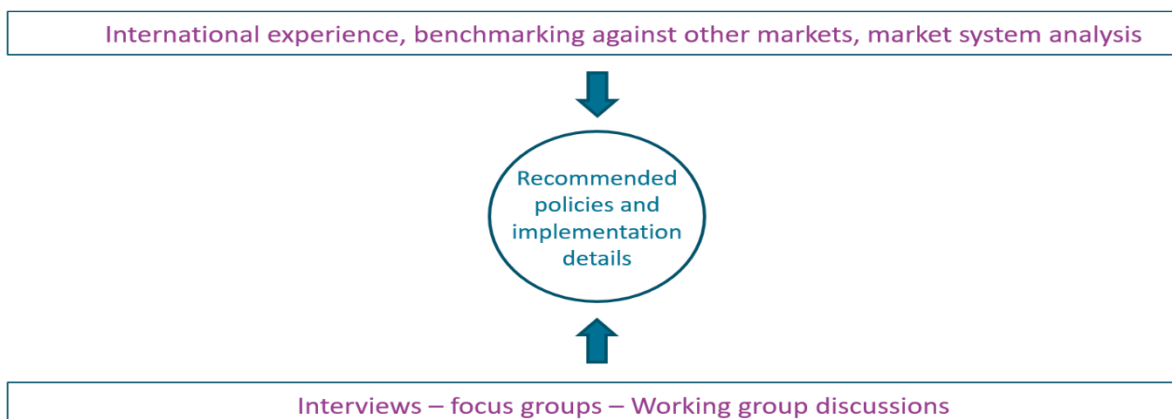
³ Energy efficiency in electric motor systems: Technology, saving potentials and policy options for developing countries, UNIDO, 2011

⁴ Details of market data in this chapter is in Annex 2 in baseline report

3.2 Methodology

The methodology followed in this report includes a mix of desk research and participatory work, with tasks conducted as follows:

- **Identification of barriers:** Based on 49 interviews (ANNEX III) and extensive literature review various barriers and gaps to increasing the penetration of EMDS and accelerate the implementation of the decree #463 for the year 2020 (referred to as “the Decree”) were identified in a bottom-up approach (interviewees and interview questions are in ANNEX III). Barriers and gaps were also identified through benchmarking the market system against those of EU and China, institutional and regulatory analysis of IEE framework in Egypt, as well as international experience in top-down approach. Both led to a consolidated list of barriers and gaps. These findings were validated in the first working group (more details are in the baseline report. The working group was formed early on during the assignment to guide implementation and included all relevant public stakeholders and regulatory bodies, suppliers, manufacturers, research institutes, industry representatives and banking sector representatives)
- **Initial list of policies:** Based on international experience and stakeholders’ recommendations a long list of possible policy tools was identified to overcome such barriers. These recommendations were described briefly and discussed in the 2nd working group to analyse their success factors (ANNEX VII).
- **Short list of opportunities:** In the 2nd working group (ANNEX VII). attendees were asked to short list the policy recommendations into a concise list and assess whether they are ready for implementation or require further analysis before endorsement. The top-down bottom-up approach ensured a mix of analytical results are combined with stakeholders’ opinion effectively.

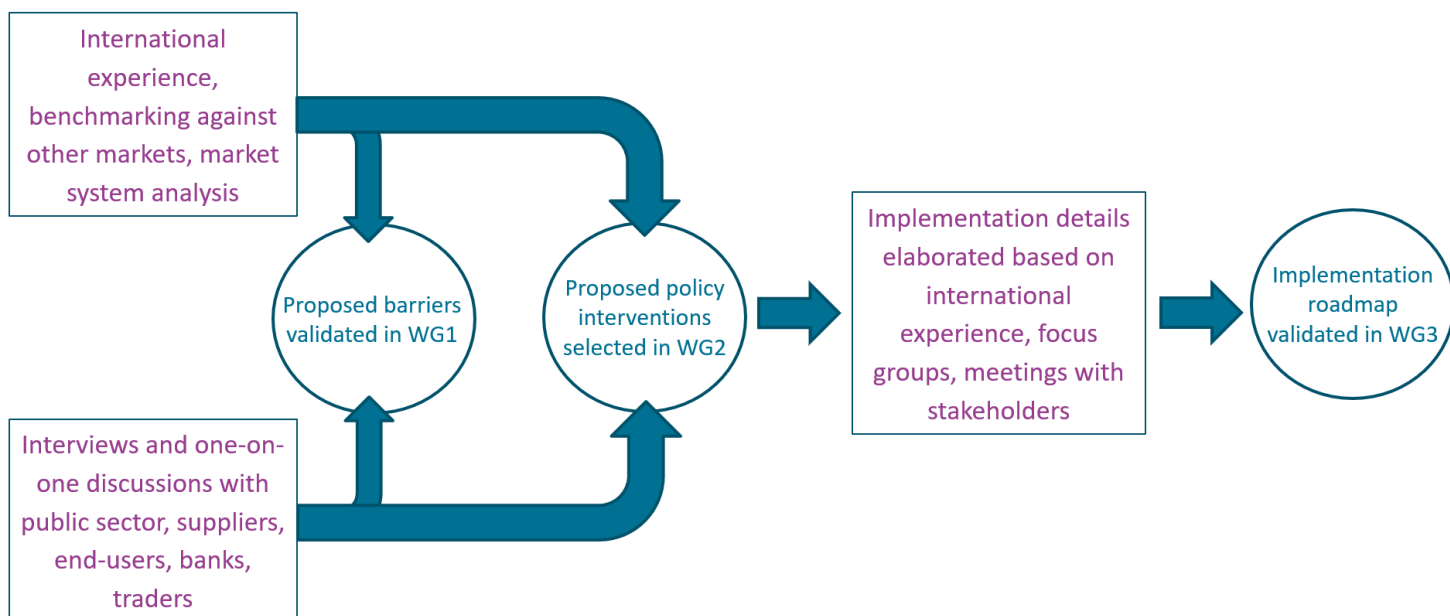


- **Elaboration of policy implementation details:** Policy implementation details were elaborated by considering their implementation needs, success factors, key responsible organizations, etc. This built upon national experience in similar policies and was conducted in a participatory manner through one-on-one meetings and discussions with key stakeholders (GOEIC, EOS, ICA,

MSMEDA, NBE, suppliers and manufacturers). An operational level coordination meeting was conducted between GOEIC, ICA, and EOS.

- Validation and endorsement of policy implementation details:** Based on the above, selected policy operational policy tools and guidelines s were presented at the 3rd working group meeting, which endorsed the implementation details and plans operational policy tools and guidelines for the deployment of EE motors.

The above followed a mix of a bottom-up and top-down approach, both barriers and interventions were generated from interviews and discussions with stakeholders as well as generated from analysis of the market, benchmarking against other markets, analysis of finance condition and regulator frame in addition to international experience. This approach can be summarized in the figure below in a simplified manner.



developed are operational and can be implemented effectively, various public sector players had to be effectively engaged. From the onset of the process of operational policy tools public stakeholder were engagement on every step along the way using mix of one-one one interviews, focus groups and discussions, as well as wider dialogue facilitation. Coordination amongst various public sector players was also a must. The operationalization of the decree and increasing penetration of EE EMDS is a complex process requiring the contribution and coordination of various public stakeholders. Public stakeholders were divided into two main groups; those that are core to the implementation of the decree and those which can play a supporting role. This was in addition to IMC as the IMEP implementing partner with UNIDO. The core stakeholders are under the MoTI and include GOEIC, EOS, and ICA. These were engaged through early one-on-one presentations and meeting with core teams of each institution. Numerous meetings, discussions and interviews took place to mainly craft the role of each. Follows, coordination focus group was carried between the three organization with IMC and MoTI



representatives leading to developing action plans for their roles and responsibilities in recommended policies. This gradual and intensive process was critical to shape recommendation implementation action plan effectively. The organizations were also present in all working group. Other public sector organizations such as IDA, NREA, MoERE, and EGAC were engaged through working group discussions.

3.3 The structure of the report

The report begins by reviewing the market gaps mapped in the baseline report as well as the long list of proposed policies and the short list on which implementation will focus in **Section 2 Market Gaps and Key Policy Interventions**. In **sections 3** the **policies to be implemented** is elaborated upon, implementation tools and steps are elaborated upon and implementation steps are presented and a brief roadmap for all the policy frame is presented. In **Section 4**, Summary and implementation roadmap, which give reflection on the recommended policies collectively presented.

Section 2. Market Gaps and Key Policy Interventions

2.1 Top-down Approach Market Readiness for EE EMDS

A comprehensive approach to market readiness to ensure deep penetration of EE EMDS a market it is necessary to conduct an assessment of all aspect of the market system and understand its dynamics when it comes to EE motors and EE EMDS in Egypt. Our market readiness frame will follow an adapted from that recently used to develop Egypt national roadmap for local manufacturing of solar water heating systems as well as frames commonly used by the World Bank Group in assessing sustainable energy markets⁵. We will use it to benchmark the Egyptian EE market against the European and Chinese one when it comes to EE EMDS (reflecting on EE motors, inverters and system optimization). This analysis allows determining gaps and strengthens. A semi-quantitative analysis using composite indicators for a market system approach is followed. The frame itself and the weights of the score was developed in consultations through discussion with 5 representatives of key stakeholders and validation in a working group meeting⁶.

The development frame addresses the common elements of market system which is often used by UNIDO in various value chain development studies⁷. The frame addresses the following elements

- **Regulatory aspects** including technical standards, complementary policies, laws and regulations: the completeness of the regulatory frame ensures fair competition and protects the rights of consumers leading to stronger market development, it ensures quality of products and services and hence increases the market confidence enabling a faster transition to EE EMDS
- **Information and knowledge sharing aspects:** availability of knowledge and information allows improved decision making leading to sound investments. It improves access to finance and allows healthy product differentiation
- **Technology accessibility access:** the availability of technology in the market, means consumer can choose and have access to the most suitable option for their facility or operations leading to best possible payback and investments, this increases the consumer confidence in the market and increases uptake of targeted products
- **Skills availability aspects:** skills availability ensure the best technology is chosen and that it is deployed in the optimum manner. It ensures efficient and sustainable operation increasing the trust in the market and its sustainable growth, the right skills need to be available at both suppliers and client side to ensure best market conditions are realized
- **Social and cultural aspects:** cultural and social aspects can affect markets positively or negatively, social and cultural aspect influence decision making and hence clients choices either positively or negatively, for instance, in EE technologies the market culture to investment and whether it considers long term impacts or not could be critical

⁵ UNIDO, *Solar Heat in Industrial Processes Egypt Project, "Roadmap for strengthening the quality of locally manufactured products and components related to solar water heaters and solar thermal technologies in Egypt"*, 2018

WB, *"Local Manufacturing Potential for Solar Technology Components in Egypt"*, World Bank, 2015

⁶ The working group consists of 5 representatives of public sector; GOEIC, NREA, EOS, EGAC, IMC, ENPC, and IDA, it includes 3 representatives of financial institutions; MSMEDA, NBE, and EBRD, from private sector it includes 5 key organizations representing local motor manufacturers (2), local OEM, 2 international motor suppliers with largest market share, two representatives of academia; the electronics research center and Cairo University Energy Research Center, and representative of industrial end-user (the FEI-ECO)

⁷ Dunn, E. G. (2012). *Facilitating systemic change in value chains: Lessons learned for strengthening country systems. Background Paper for the USAID Experience Summit on Strengthening Country Systems*

- **Provision of services aspects:** for markets to develop, certain services are required such as consultancy or energy audits, the limited access to services can hinder growth of certain markets
- **Access to finance aspects:** access to finance is critical to growth of any market particularly in EE applications, EE options usually require high up-front cost on the promise of future savings, having access to finance reduces the burden of up-front cost on clients leading to faster uptake of EE technology

The completeness of the above aspects would usually mean a market system is operating effectively leading to best impact on clients and growth of the industry of relevance. The deficiency of any aspect is going to hinder the market growth. How each aspect is translated into a set of sub-indicators is discussed further below. Each element receives a score of zero, half or one reflecting absence of an element, its partial availability or full presence. Some indicators only receive a score of zero or one based on their nature. In the frame below (as indicated Table 1). The assessment results are shown in Figure 3 reflecting scoring for EU, China, and Egypt both in the current status and on “to be” reflecting changes which can be achieved in short to medium term (less than 3 years) as percentage of the maximum score against each aspect in Table 1 (each aspect can get a maximum score of 5). The scoring was done with due to reference to literature as well as interviews conducted (list of interviews in ANNEX III). In the table, black cells are aspects where the scoring was high, red cells are ones where scoring is low and can’t be improved on short/medium term and grey are ones where scoring is low but can be improved in short/medium term. Gaps in the market frame appear in red and grey in the table below.



Table 1 Assessment of market readiness for EEMDS in Egypt

Aspect	Element 1	Element 2	Element 3	Element 4	Element 5
Technical standards*	Standards are in place (1)	Suppliers are aware of standards (0)	End-users are aware of standards (0)	Conformity rules are clear (0)	Verification laboratory exists (0)
Complementary policies*	Energy efficiency incentives (0)	Energy Efficiency mandates (1)	Subsidies removed (1)	Energy management requirements (1)	EM enforced (0)
Laws and regulations*	MEPs exists (1)	MEPs enforced (0)	Information requirements (0)	Labels exist (1)	Labels enforced (0)
Information and knowledge*	Mainstream in Education (0)	End users can calculate saving (0)	Suppliers have access to information (0)	Banks have access to data (0)	Courses exist (1)
Technology^	IE3 available in the market (0.5)	IE4 available in the market (0)	IE3 frame sizes are available (0.5)	IE4 frame sizes are available (0)	Inverters are available (0.5)
Skills^	Engineering skills exist in operation (1)	MSO exist (0)	Maintenance skills (0.5)	Financial skills (0.5)	Proper sizing (0.5)
Social and culture^	Asset management (0)	Long term investments (0)	EE management (0)	Integrated decision making (0)	LCC conducted (0)
Related services^	Energy audits (0.5)	Feasibility studies (0)	Rewinding (0.5)	System optimization (0)	Resale (1)
Access to finance*	Energy efficiency loans exist (1)	energy efficient motors financed (1)	special motor finance programs exist (0)	ESCO offered (0)	Finance mainstreamed in the market (0)

* Indicates elements which are scored as (Yes=1 and No=0) - ^ Indicates elements which are scored as (1 = widespread - 0.5 exist but not common - 0 doesn't exist) – black element exists in the market – grey element doesn't exist now but can be achieved in short/medium term – red element currently doesn't exist and is difficult to put in place in short/medium term





Figure 3 Radar plot for market readiness reflecting percentage score from the maximum value of 5 in table above

Egypt market readiness for EE motors and EMDS is limited in general compared to EU and China. The overall readiness score of EU, China and Egypt, are 84%, 73%, and 36% respectively. However, with interventions which can be achieved on the short/medium term, Egypt can improve its readiness to 63%. EU and China have same score when it comes to most aspect with EU slightly leading in related services and significantly leading in access to finance and skills. Egypt best readiness aspect comes in complementary policies and skills and worst ones are in social and cultural, information and knowledge, as well as technical standards (see Figure 4). The limited access to information appearing in the situational and policy assessment is again reflected on a limited market readiness.

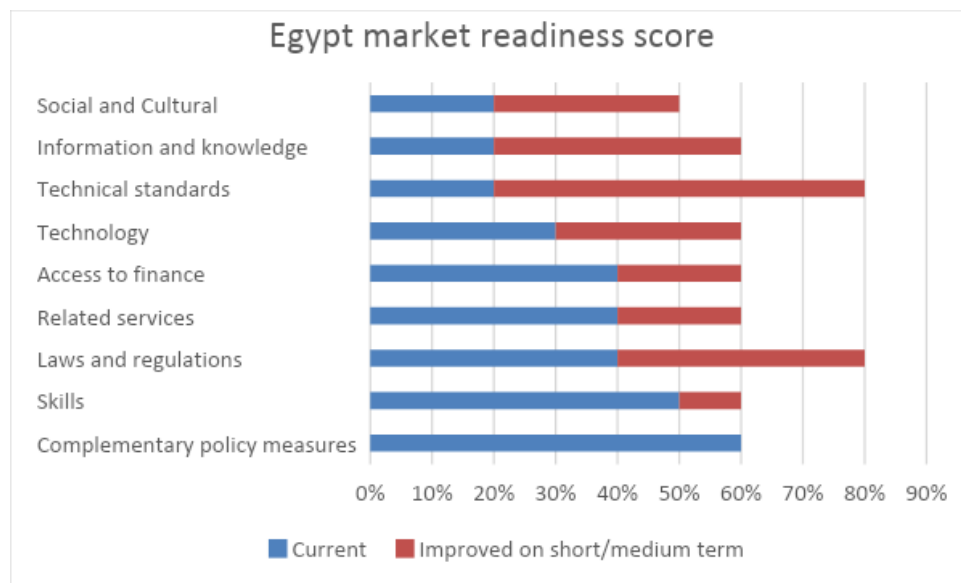


Figure 4 Score in various aspects for market readiness include what could be achieved

Egypt can improve significantly in the following (gaps which can be addressed on short/medium term)

- **Technical standards**, by raising awareness of suppliers and end-users on the standards as well as establishing laboratories for IE testing
- **Laws and regulation**, by enforcing MEPs and labels as well as enforce information announcement requirements by suppliers
- **Information and knowledge**; mainstream EE EMDS in education, raise awareness of end-users on EE Motors savings calculations, ensure suppliers and banks have technical and financial information on EE motors and EMDS
- **Technology**, by suppliers have IE3 with all frame sizes and ratings available in the market as well as wide range of VSD
- **Skills**, promote motor systems optimization skills, proper maintenance skills, financial skills to assess feasibility on investments in EE motors and EMDS as well as ensure proper sizing
- **Social and cultural**, adopt energy management and integrated decision making in factories with coordination between different departments, as well as promote LCC.
- **Related services**: expand in audits, improve rewinding and system optimization services
- **Access to finance**, develop motor specific financial products, promote ESCO, mainstream EE motors lending in Egyptian banks

The above reflects, carefully the institutional assessment in previous sections. The institutional gap in verification and evaluation is reflects on enforcement aspects of laws and regulations. There institutional gap in information dissemination leads to limited penetration of information.

1.1 Bottom-Up Determination of Barriers

Over the past two decades and particularly the past 5 years, barriers to industrial energy efficiency have changed significantly in the 2000s the main barrier to IEE was mainly the low energy prices which meant that most of EE investments were not financially feasible. One should remember that at the end of the day industrial facilities mainly aim at improving their profitability and take decisions to invest in EE technology based on financial returns. For instance, at electricity prices of the 2000s working with IE1 motors would offer better return on investment than working with IE3 motors. Similarly investing in heat exchangers and inverters at 2000s electricity prices would usually not be financially feasible. As the electricity prices started to gradually increase in 2014 within Egypt wider energy sector reform, energy prices stopped being a barrier to investing in IEE. On the contrary, it became a trigger and driver for investments in IEE. Starting 2014, the key barriers shifted from energy pricing to become the awareness of factories of energy management concepts, access to high quality energy audits, and knowledge of possible saving opportunities. UNIDO IEE project after 2014 addressed these critical barriers by training national energy auditors, promoting and assisting factories in expanding in energy management systems as well as raising awareness on various IEE technologies including EEMDS. Subsequently UNIDO SWITCHMED MEDTEST II project contributed to this endeavor within the wider resource efficiency concept. As shown Figure 5, these efforts have led to a considerable impact⁸ on the awareness of Egyptian industry on EE. In the figure below, the awareness of industrial facilities in surveys conducted in both 2014 and 2021 was assessed. While in 2014, about 45% of industrial facilities indicated that they are not aware of technologies or measures related to IEE, the percentage has dropped to 11% in 2021. On the other hand, facilities which self-assessed their awareness of IEE technologies and measures as medium, high or very high rose to 59% in 2021 from 17% in 2014.

⁸ The results of 2021 are based on surveys conducted in this study with a sample of 37 industrial facilities and for 2014, the data are based on CE internal research on a survey conducted with 31 industrial facilities

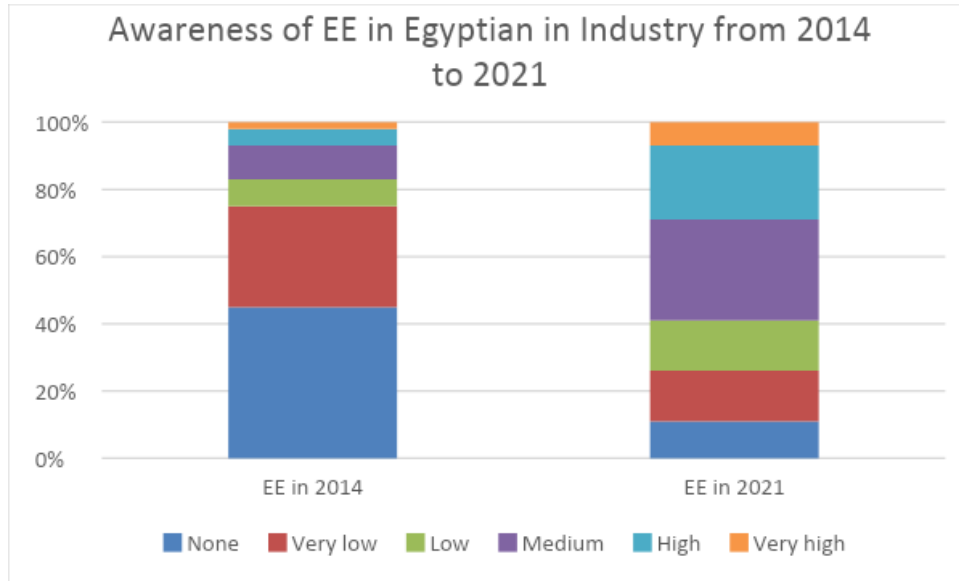


Figure 5 Awareness levels in Egyptian industry of EE in 2014 and 2021

The awareness of EE EMDS in industry is less than EE (see Figure 6). The surveyed industrial facilities (list in ANNEX III) were asked about their self-assessment of their awareness of IEE technologies and measures in general versus those related to EE EMDS. The figure demonstrates a generally low awareness on EE EMDS compared to IEE (for instance those who indicated that they have no, very low or low awareness on IEE technologies and measures were 41% compared to 67% in the case of EE EMDS technologies and measures. This could be related to various reasons. For instance, motors are usually seen (and rightfully so) as high efficiency equipment. This can mask that the EMDS can be of low efficiency due to for instance, bad coupling, operating far from rated load, or limited optimization and coordination in the system as whole beyond the motor. Despite motors being high efficiency equipment, since the operate for extended hours a slight improvement of efficiency could lead to considerable savings in operations. It is also true that some technology interventions in EE EMDS such as intelligent pump controllers, sequencers, booster compressors, etc. have less market visibility in Egypt.

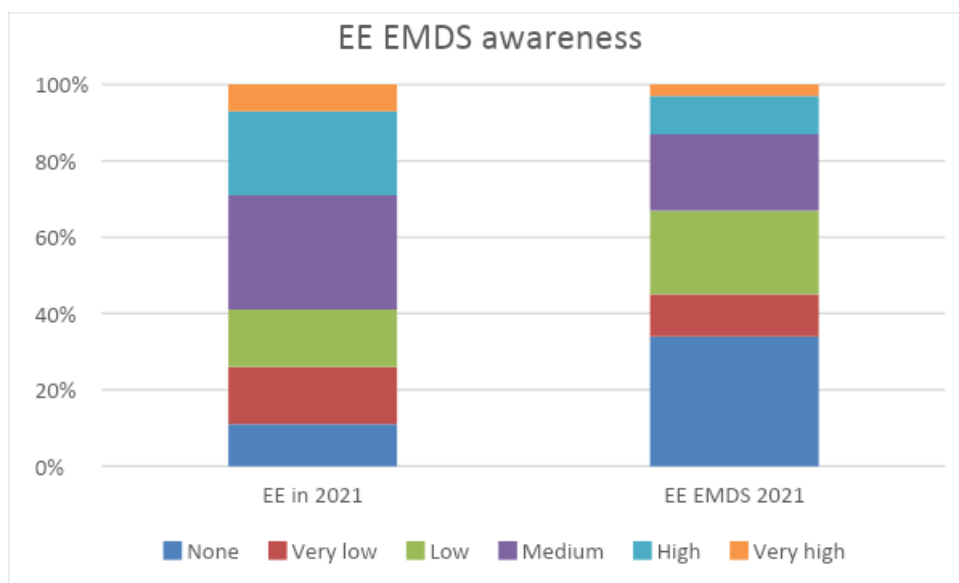


Figure 6 Awareness levels in Egyptian industry of EE versus EE EMDS

The recent increase in green finance facilities in the Egyptian market helped minimize barriers related to access to finance which was intense from 2014 to 2017 in Egypt. Currently, with the increased awareness of EE technologies and measure in Egyptian industry and the presence of numerous green credit facilities in the market (ANNEX IV), the barrier limiting access to finance became in the limited penetration of such EE facilities at industry level and limited access to information and knowledge which allows industrial facilities to assess and select in which technologies and measures they should invest.

Information and data, as well as systematic decision making is needed to translate awareness into deep penetration of EE. Despite industrial clients being aware of the EE measures and technological options, they usually lack the information and processes to translate this awareness into healthy decision making. For instance, as can be seen below, only 23% of industrial clients mentioned that they are capable of conducting a sufficiently accurate financial analysis to guide their decisions on motors replacement. The challenge is usually related to lack of capacity to determine the exact sizing and rating (technical details of intervention needed, for instance, how many inverters and their ratings, or proper design of heat exchanger) and lack of confidence in the cost estimates provided by suppliers or technology providers.

Does your facility decide on EE motor replacement through sufficiently accurate financial analysis?

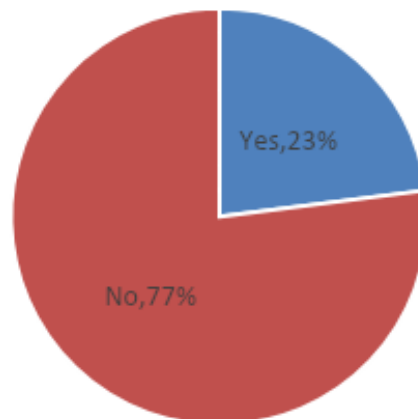


Figure 7 Surveyed factories assessing their decision-making approach when it comes to more replacement

Another critical barrier to IEE investments is **harmonized decision making among various departments inside the facility.** To translate EE awareness into investments, numerous departments in the industrial facility needs to be involved. To name a few, beside operations, maintenance department needs to be included to determine for instance options available in repair. More

importantly, finance and procurement play the ultimate critical role in the investment. About 89% of factories interviewed indicated that internal communication between the above 4 departments is a major barrier in materializing investments in EE in general. This is expected in absence of energy managers, or energy management systems as well as limited availability of accurate financial and technical data on IEE. This indicates that the current challenge in EE is not general awareness of EE options but rather the culture of decision making at factory level and absence of the right type of data needed for decision making.

Is internal decision between various departments a barrier to IEE investments in your facility?

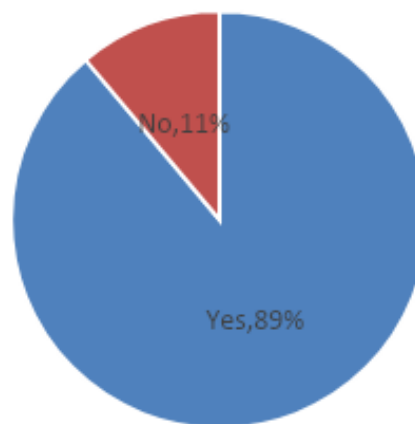


Figure 8 Surveyed factories assessing the barriers related to interaction between various departments for IEE investments

Limited awareness of access to finance options is another critical barrier: as discussed in the access to finance section, despite the presence of EE finance facilities in the Egyptian market, there is limited penetration of their services in the Egyptian industry. As can be seen in Figure 9, only 35% of industrial facilities surveyed are aware of any EE finance facility. This, coupled with limited access to sufficient information and non-streamed line internal communications in industrial facilities hinders the Egyptian industry capacity to capture the enormous opportunity in EE.

Are you aware of the existence any EE finance facility?

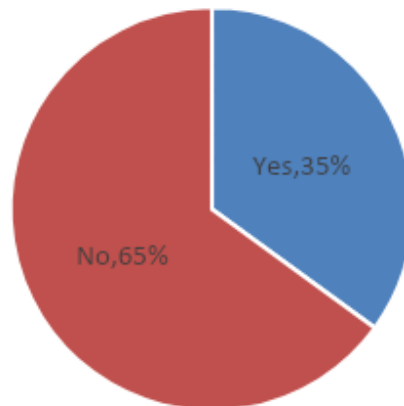


Figure 9 Surveyed factories awareness of the existence of EE finance facilities

Low awareness and absence of operational regulations are the highest barriers – The key barriers against the implementation of the decree are low awareness of the decree and the IEE practices, absence of data and operational regulations, weak enforcement and monitoring of the decree, as well as the high cost of EE motors with lack of access to finance. Figure 10 presents the perception of the surveyed stakeholders of the severity of the key barriers. The highest barriers are the low awareness and absence of data and operational regulations.

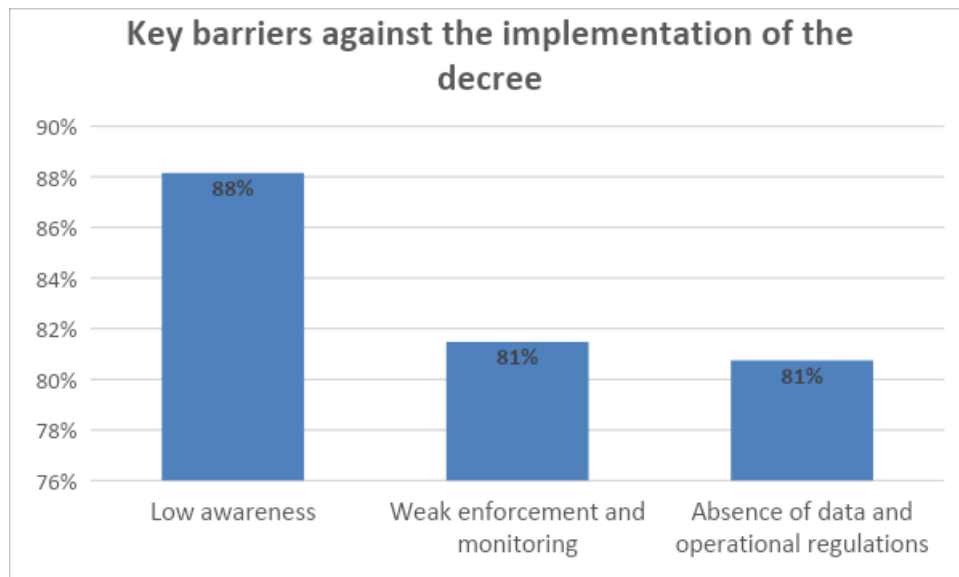


Figure 10: Key barriers to the implementation of the decree

Misunderstanding of stakeholders – The absence of a technical memorandum to illustrate the details of the decree and harmonize the requirements of labeling versus the MESP leads to misunderstanding of the stakeholders to the articles of the decree #463/2020. For instance, a manufacturer of white goods who integrates imported fractional HP motors (1-phase induction motor with rating <0.75 kW) in his products claimed that the period of 6 months is not enough to

find an alternative supplier of IE3 motors, although the IE3 MEPS requirements apply only for motors 3-phase induction motors with ratings > 0.75 kW to 375 kW.

Generally, barriers revolve around the following three pillars from point of view of stakeholders interviews which are generally a higher (less detailed) description of the findings of the market readiness frame assessment

- Limited trust in effective implementation of the decree
- Limited access to finance
- Limited knowledge and communication on feasibility assessment, decree scope and implementation

The figure below shows the percentage of stakeholders in interviews mentioning each of the above as “the key barrier” to EE EMDS penetration

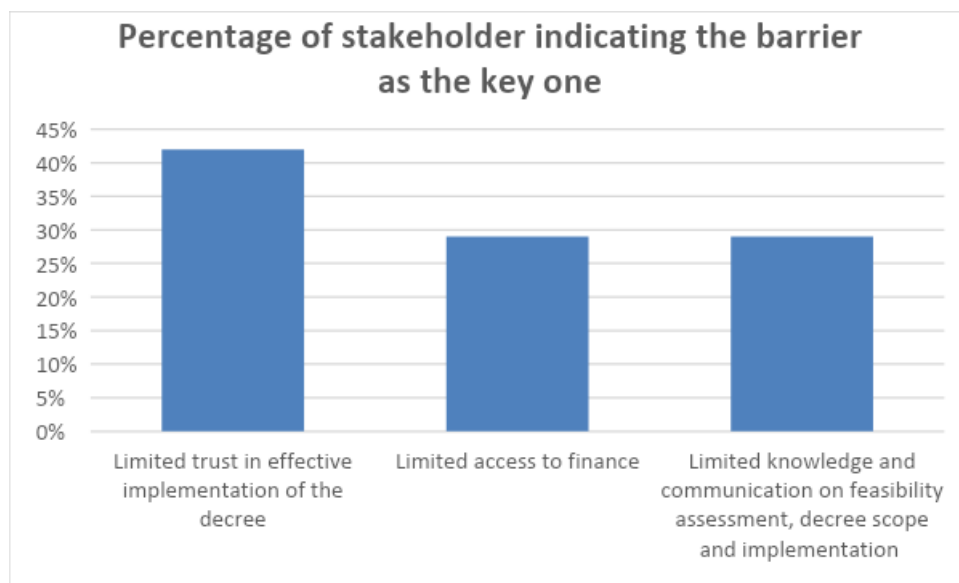


Figure 11: Key barriers to the implementation of the decree

2.3 Consolidation of key Market Gaps and Barriers

The main market gaps and barriers towards developing an energy efficient EMDS market as well as the implementation of the Decree #463/2020 are summarized below. The barriers were identified in the baseline report through interviews with various industrial facilities and stakeholders (over all 49 interviews as detailed in the baseline report), analysis of the regulatory and institutional framework for IEE, benchmarking the EE EMDS market in Egypt against international markets (in particular the EU and China), as well as working group discussions. Each barrier is briefly described in addition. The above barriers are consolidated and reformulated as have been redefined and validated by stakeholders in working group 2 (ANNEX VII).

- **Weak market regulation due to incomplete clarity on roles and responsibilities, coordination between various entities, and actions to address possible non-compliance:** as has been demonstrated in the baseline report, the implementation of IEE regulation is

distributed between numerous public organizations. In the market system assessment frame, the regulatory aspects scored at 40%. It was indicated as the top barrier in the view of 40% of interviewees for penetration of EE EMDS. Its impact on preventing the implementation of the decree was scored at 81% (the second most impactful barrier to successful implementation of the decree). There are numerous organizations that should play important roles in implementation including GOEIC, EOS, ICA, MoITS which means stronger emphasize is needed. on coordination. Each organization is supposed to regulate part of the market and hence overlaps or gaps could either complicate compliance or fail to achieve it. Sometimes the limited coordination between such organizations and limited clarity on their roles and responsibilities leads to gaps in market regulation, weak enforcement, and cumbersome conformity and compliance procedures. This burdens compliant parties and on the other hand allows non-compliant ones to put sub-standard products in the market. This can become a barrier to implementing the Decree #463/2020. The Decree itself, as with most decrees, has high level statements which don't detail non-compliance possibilities, roles of various organization and other details of implementation. When compliance is difficult to achieve, this leads to limited trust by private sector as well as possibilities of failed investments in for instance motors that are less efficient than claimed. At large this slows down the transition to efficient motors.

- **Limited clarity on the scope of the decree no 463:** The Decree discusses both nameplate requirements for AC motors as well as MEPS for a special class of AC motors. The Decree refers to multiple standards and specifications, the details of which can reveal the scope of the Decree. Articles referring to the nameplate (rating plate) have a different scope of those referring to MEPS. For private sector end-users and suppliers, there was confusion over what is in and out of scope of the nameplate and MEPS aspects. Only 6% of interviews have read the necessary standards and specifications. None of the interviewees nor working group attendees had full understanding of the scope of the decree including what it is requirements, which motors it applies to, which motors it doesn't apply to, as well as other aspects. This creates challenges for suppliers in conforming with the decree and also delays procedures at the port of entry due to mismatches between importer expectations versus the regulations imposed by GOEIC. It creates a general confusion in the market and hence resistance by suppliers and manufacturers to comply. This confusion creates the room for misinformation which generally slows market uptake of EE motors. Few stakeholders understood that the decree purpose is to force industrial users to change their current motor base and does not only apply to new purchases. Stakeholders including suppliers had a positive reaction to the decree when they understood which motor types and ratings it applies to (76% of interviewees) shifting from a highly negative opinion when they misunderstood the scope to applies to all AC motors.
- **Limited awareness of market regulations and investment opportunities in EE EMDS:** Generally, there is limited awareness of the Decree and its content both at the supplier and end-user side. This has led to misconceptions including an incorrect notion that the decree #463/2020 forces end-users to change their existing operating motor base or that the decree applies to all motor types. While the point above addresses the clarity of the decree, this points the awareness aspect of it. Even if the decree is clarified, the absence of a formal

process to raise end-users and suppliers' awareness with its content leads to same challenges associated with lack of clarity. Generally, there is no specific channel through which the decree content and implications are discussed or conveyed to stakeholders. No online or in person communication has taken place regarding the decree and its implications thus far. In fact, while none of the stakeholders, suppliers and end-users who have heard about the decree understood it correctly, only 22% of end-users and 75% of suppliers have heard about it (as indicated in the interviews, details in baseline line report).

- **Limited access to information for investment (procurement) decision-making:** Interviews with end-users and suppliers reveals that there is limited availability and knowledge on saving opportunities in EMDS from the motor optimization perspective, the operations and replacement with higher IE motors. There is also limited information on how to calculate savings and to assess feasibility of various EE EMDS saving opportunities. Suppliers usually are not aware of such information and hence can provide it to their clients. Most consultants also do not provide such information to their clients. Needless to say, end-users themselves (clients) do not have access to such information. This limits the impact of clear regulation and decree #463/2020. Without proper communication and awareness about the regulations, confusion remains. This leads to less investments and vague decision making with regard to EE EMDS. It also limits the capacity of suppliers to promote high IE class motors or solutions related to EE operation on EMDS and assist their clients to comply.
- **Limited uptake (demand) of EE motors due to higher upfront costs and limited access to green finance facilities:** EE motors as well as investments in improving EMDS efficiency usually require a higher upfront cost compared to less efficient options. Each higher IE level costs 30% higher than the lower one. Rewinding of old motors is usually 20% to 30% lower than purchasing a high efficiency motor. Other technologies which optimize motor use also requires an upfront payment. This limits uptake and demand on high IE class motors as well as EE EMDS solutions such as sequencers, intelligent pump systems, variable speed drives, etc. At the end of the day, this is seen as an extra financial burden to the end-users. Even if there are future savings, the decision to commit capital which can be avoided is still a less favourable one by end-users. When this is combined with limited capacity to calculate savings (as discussed above), this means that higher EE EMDS investments are unlikely to happen. In case end-users have access to finance programs which are tailored to EE EMDS this could remove the barrier of the upfront cost. While there are numerous relevant green finance facilities in the market (ANNEX IV), industrial facilities have low awareness on their existence and motor investments are not mainstreamed within these facilities. The Baseline report provides a list of such facilities. None of such facilities has sub-credit lines or financial product tailored to motors and none of the interviewed banks or those participating in the working groups were aware of the EE EMDS market or saving opportunities despite having credit lines dedicated to EE. Coupled with difficulty of Egyptian SMEs to access such facilities and that only 35% of industrial facilities are aware of the existence of such facilities, the possibility of financing EE EMDS for industrial facilities and particularly SMEs becomes limited and hence constraining demand on higher IE motors and other EE EMDS technologies. This in pushes industrial facilities to rewind motors more or invest less in EE EMDS options.

1.2 Long-List of Proposed Policies

International experience was reviewed on EE EMDS policies through mapping and analyzing 19 policies in 14 countries as well as 6 cross country or international policies (ANNEX V). Policies were categorized by type, method of implementation, barriers addressed, year of launch and current status. International policies were also analyzed in parallel with relevant EE policies in Egypt (detailed in the Baseline report).

International policy analysis shows that MEPS as well as Codes and Standards are the most prevalent policy tools in EE EMDS. However, these are usually coupled with technical assistance and access to finance as well as other operational policy tools which have proven necessary to ensure their success

As can be seen in the figure below, knowledge and communications policies are almost as prevalent as regulatory ones. This emphasizes the importance of an integrated policy package. International experience in countries such as China, Germany, India, Turkey, and United States demonstrates that it is rare for MEPS and rating plate requirements (with standards and codes), such as those in decree #463 in Egypt, to succeed without being coupled with strong knowledge building and communication activities. Policies usually address all the market elements from distributors, to financing entities, to end-users.

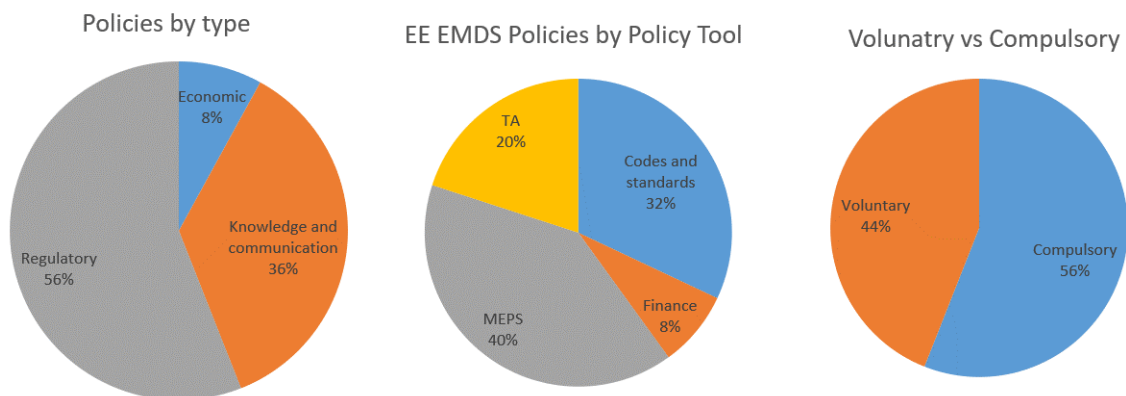


Figure 12 Analysis of 25 relevant EE Motors and EMDS policies in 14 countries (list in ANNEX V)

Also, international experience usually couples voluntary measures with compulsory ones. Finance and economic policies are usually voluntary where willing end-users can get access to subsidized loans or grants or easy access to finance for certain technologies such as EE motors. Some policies are geared towards SMEs, for instance. Selected policies which are relevant to Egypt are highlighted in the figure below reflecting policies from North America, Europe, Africa and Asia. Such policies are also reflected in other countries. The figure demonstrates how there is almost complete conversion and high reliance on technical assistance, trainings, and access to finance.

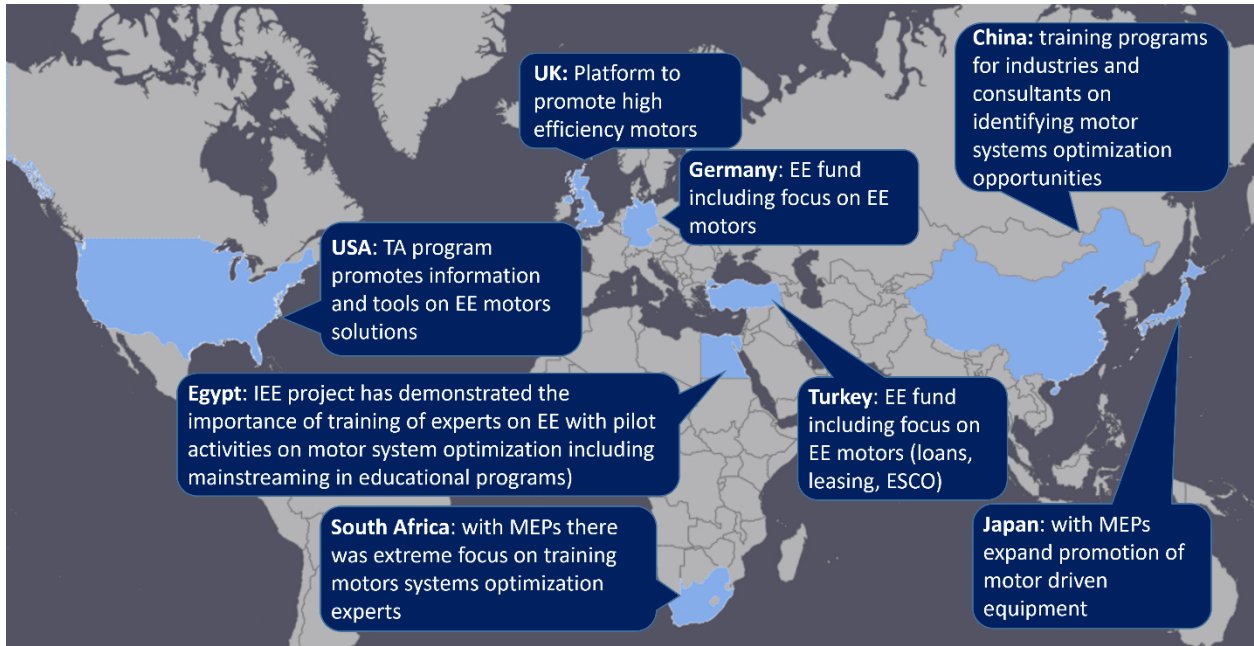


Figure 13 Selected relevant policies which are usually accompanied with motor MEPs worldwide

The table below includes an elaboration on the selected policies shown in the figure above with a reflection on their relevance to Egypt. Relevant successful policies in Egypt are also discussed in the table below. The policies in the table below and the figure above are also replicated by numerous other countries as can be seen in (ANNEX V). All the countries discussed below are ones with motors MEPs in place already.

Table 2 Selected international policies and their relevance to Egypt

Country	Policy and Impact	Relevance to Egypt
China	<p>Policy Notably couples its motor MEPS with a wide technical assistance program to train factory personnel and consultants to identify and assess saving opportunities in EE motors. Impact these technical assistance programs and trainings ensures factories are aware of saving opportunities in EE motors and can find assistance to determine feasibility of switching to higher EE motors as well as implement solutions in motor system optimization. This ensures factories are not only forced to abide by MEPs policy but also understand the financial returns of compliance. Success factors included highly tailored assistance as well as the inclusion of both end-users and consultants.</p>	<p>The policy is highly relevant to Egypt since the baseline report has identified a major deficiency in factories knowledge of saving opportunities in higher EE motors and in optimized motor driven systems. This demonstrates the importance of technical assistance and availing knowledge and information even in a country like China with strong market regulation structures</p>
Egypt	<p>Policy there are few relevant experiences in Egypt which can advise the way forward for EE motors. For instance, energy labelling for home appliances received traction when end-users' awareness increased. UNIDO's IEE (Industrial Energy Efficiency Program for Egypt) demonstrated that awareness and knowledge sharing as well as energy audits where critical for driving demand in agreement with government strategies and policies of driving energy efficiency if not the main driver behind success. The IEE project piloted trainings on motor systems optimization with great success. This was also mainstreamed in Universities educational programs. Success factors included relying on standardized capacity building modules coupled with practical implementation and highly tailored awareness raising.</p>	<p>The policies focusing on end-user awareness and expanding knowledge as well as effective communication can be effectively leveraged in the EE motors market policies.</p>
Germany	<p>Policy Energy efficiency fund which is active since 2011 also has a technological focus including EE motors and preferences towards SMEs. Impact the above accelerates the shift towards EE motors. This demonstrates that even in advanced markets where access to finance is undoubtedly easier than the case of Egypt specialized EE finance focused on certain technologies is needed. This highlights also the importance of focusing on SMEs specialized programs. Success factors include highly tailored and specialized finance program on the motor technologies and focus on SMEs rather than large entities.</p>	<p>The policy is highly relevant to Egypt. As indicated above, limited access to specialized motor finance is a major gap in the market. In Egypt, where information and experience of banks on EE finance is limited, this policy becomes highly needed. Furthermore, SMEs in Egypt are underfinanced. Hence, a focus on SMEs is extremely important.</p>



Country	Policy and Impact	Relevance to Egypt
Japan	<p>Policy along with motor MEPs, Japan provide guidelines for motor driven equipment efficiency along with promoting it such in the case of compressors. Impact: this expands the market of EE motors and increases the saving achieved. Success factors: includes mixing both technology specifications ensuring efficiency with system optimization</p>	<p>Highly relevant to Egypt to expand the market of saving opportunities outside MEPs scope which only focuses on standalone motors and not those coupled with equipment</p>
Turkey	<p>Policy in addition to MEPs the policy provides loans, leasing and ESCO support to SMEs to switch to more efficient motors (within the TEVMOT program launched in 2017). Impact this incentivizes the shift to EE motors particularly for SMEs to accelerate transition to higher IE motors. Success factors focus on SMEs which typically struggle to access finance, also the inclusion of various finance schemes such as ESCO and leasing which expands the finance market and provides end-users with flexible options.</p>	<p>Along with the relevance of specialized finance scheme for motors and focus on SMEs, the availing of leasing and ESCO schemes are very relevant to Egyptian market. Not all end-users are comfortable to take loans and prefer other finance options. In addition, ESCO and leasing can serve SMEs which are not served by banks and can include vendor finance schemes</p>
UK	<p>Policy emphasizes spreading knowledge and promoting communications in the motor sector related to EE motors in the market which is registered and validated by authority through registration and promotion of such EE motors through a specially designed platform for EE technologies Impact avails a high informative and accessible marketplace to promote EE motors and provide users with information on motors which enables effective decision making by end-users Success factors include designing the platform to allow easy browsing of options while providing information which allows conducting feasibility analysis</p>	<p>This is highly needed as an incentive to suppliers complying with MEPs and providing higher efficiency motors while providing information to end-user who lack access to reliable market information</p>
USA	<p>Policy implements a best Practice Program” which is TA-focused provides deep information on saving opportunities, tools and charts for feasibility analysis calculations with focus on specific technologies including motors. Impact allows end-users to conduct feasibility assessments and take investment decisions in EE motors effectively ensuring savings are achieved and end-users are encouraged to invest. Success factors deep information should be easy to use and allow rapid decision making. It should also be interactive and well promoted to market players</p>	<p>Highly relevant to Egypt since the baseline study indicated that end-users do not have a clear systematic approach to assess investment opportunities in motors due to limited knowledge and access to information</p>

Based on the identified gaps, international experience and national experience, an initial list of seven policy tools and interventions were recommended and presented to the attendees of the 2nd working group (ANNEX VII). These recommended tools are intended to operationalize the Decree #463/2020 and increase penetration of EE EMDS. They are the most relevant to Egyptian context and are tuned to reflect the market gaps and the Egyptian context. Collectively, they are expected to put the high-level policies of supporting EE into action in the motor market. The seven policies listed below include three regulatory policies (regulatory), two of an economic nature (fiscal), and two concerned with communication and knowledge-building (Informative). Each policy is briefly explained, including the challenge it solves and its intended objectives:

1. **Clarification note to elucidate the details and scope of the Decree #463/2020 (regulatory):** this mainly focuses on developing a clear concise note explaining what is in- and out of scope for the rating plate (nameplate) and MEPS articles in the decree, and on promoting this note among market and institutional actors. It is aimed at solving the following **challenge:** as has been observed, none of the interviewed stakeholders, distributors and end-users could identify clearly the scope of the MEPS and of the nameplate articles leading to confusion on what type of motors are relevant to the MEPS versus the nameplate. Usually, interviewees (refer to baseline report) perceived that the scope is wider than intended by the decree. This led to over estimation of the compliance burden by suppliers and local producers and corresponding resistance to meeting its provisions. The clarification note is discussed in more detail later, however, the **Main objective:** is to provide full clarity on the scope of the decree in order to avoid over burdening the market and facilitating compliance. This note is also needed to help the regulatory authorities in the implementation of their duties.
2. **Effective Market Regulation Framework for Decree #463/2020 implementation (regulatory):** this includes defining market regulatory aspects, the role of each public authority and their interactions, as well as conformity conditions. No single entity can achieve this function alone. Motors enter the market in various forms and regulatory aspects require different activities which requires careful cooperation between GOEIC, EOS, ICA, and MoSIT.
 - i. **Challenge:** without clarity on roles and responsibilities, similar decrees in Egypt or laws are sometimes not implemented at all, for instance, most of the EE aspects of the Electricity Law of 2015 (see the Baseline report). In addition, market players might feel over regulated due to overlapping activities. Also, under-regulation might take place due to leaving certain gaps that could allow non-compliant products to enter the market in the event that some entities do not fulfil their role. This challenge is further underscored by the absence of an overarching organization responsible for EE in general in Egypt, however the fact that most organizations needed to regulate the market are within MoTI is an opportunity to overcome this risk.
 - ii. **Main objective:** effective market regulation will lead to increasing confidence among end-users and encourage compliant suppliers and producers to invest more in promoting EE motors. It will also ensure all market channels are treated effectively and decrease

confusion among suppliers and producers with regard to compliance aspects thereby ensuring non-compliant products are minimized. Most notably it will make the economic cost of attempting to supply non-compliant products exceed the potential benefit and thereby greatly lower the probability that market actors will try and ignore or circumvent the decree's provisions

3. **Registration of EE motor models (informative):** creating a platform to register IE3 and higher efficiency motor models will inform end-users and allow them to ensure they procure compliant motors while being able to find reliable information on motor efficiency and savings.
 - i. **Challenge:** with numerous types and models of motor on the market, consumers might find it difficult to compare the motors they are buying and also ensure their compliance. This creates hesitation and slowdown in the uptake of EE motors.
 - ii. **Main objective:** avail information on compliant products and information to compare various motors from an energy efficiency point of view to increase uptake of EE motors in the market as well as supply information to financial institutions.
4. **Preferential procurement of EE motors in public tenders (economic):** restrict public procurement to IE4 and above motors to catalyse demand or put preferential scoring on efficient product (or life cycle cost). This is highly relevant given the large-scale public infrastructure projects and investment particularly in the water sector. This policy, for instance, is mandatory in Korea and started as voluntary in China and then became mandatory. The policy is either focused on certain products or requires certain processes in assessment including life cycle cost assessment.
 - i. **Challenge:** public procurement law usually focuses on lowest cost products and consultants working with the public sector do not usually emphasize higher efficiency motors in their tenders. Outside the scope of the decree, particularly in pumps which government projects procure extensively in waste projects (water sector budget in 2021/2022 was 126 billion EGPs), energy efficiency is not usually emphasized.
 - ii. **Main objective:** increase demand for EE motors through public projects particularly in the water sector.
5. **Expand EE EMDS finance in green finance facilities (economic):** through development of specific EE motors-financial products and mainstreaming of EE motors finance within current green finance products as well as availing data to support financial decision making.
 - i. **Challenge:** EE motors and EE EMDS equipment such as sequencers, intelligent pump systems, etc. require higher upfront investments than lower EE alternatives which can deter industrial end-users from rapidly shifting to efficient options. At the same time there are no specialized financial facilities to promote finance EE motors and EE motors and related equipment are not mainstreamed in green finance facilities.

- ii. **Main objective:** facilitate finance of EE motors and relevant equipment to increase their demand and uptake.

6. **Awareness and communication (informative):** to be conducted on various important aspects including: the scope of the decree, saving opportunities, value proposition for end-users and suppliers, payback and techno-financial details, etc.
 - i. **Challenge:** currently there is a limited visibility and challenge in information exchange in the EE EMDS market. This limits awareness of the decree and hinders compliance, limits capacity of end-users to direct investments into EE motors and implement motor system saving opportunities, as well as makes banks hesitant in financing EE EMDS investments. And thereby limits penetration of EE EMDS solutions in industry.
 - ii. **Main objective:** to increase market visibility and value proposition awareness leading to a healthy and rapidly growing EE EMDS market.

7. **Integration of EE EMDS in educational programs (informative):** to ensure university graduates are knowledgeable in motor system optimization in industrial facilities and in the effective assessment of investments in EE motors and EMDS at large.
 - i. **Challenge:** Educational programs in engineering schools lacks complete coverage of EE motor investments and operations. This eventually leads to engineers in industrial facilities being unaware of motor systems optimization measures and savings opportunities. They also usually lack the capacity to assess savings in EE motor investments. This prevents effective decision making towards investing in EE motors (see baseline report) and limits optimum operation of motor systems in industry.
 - ii. **Main objective:** mainstream knowledge on EE motor investments and system optimization in engineering schools leading to graduates capable of driving EE EMDS further in industrial facilities.

1.3 Short-Listed Policies

The 2nd working group attendees were asked to rank, adapt or re-arrange the policies above. The policies above themselves as mentioned were consolidated the bottom-up and top-down approaches discussed above.

Attendees were asked to rank both the ease of implementation and impact of each policy and also discuss success factors of implementation at large. Attendees were further asked to provide a score from 1 to 3 to rank the ease of implementation, impact and priority of each measure where 1 refers to low and 3 refers to high. The figure below shows that three policies were seen as higher priority reflected by the green large dots (EE EMDS in green finance, effective market regulation, and clarification note). The second tier in terms of priority were awareness and communications, EE EMDS in educational programs and registration of EE motors) and finally the lowest priority was for EE motors in public procurement which was recommended not to be pursued by attendees. Attendees agreed on all the proposed policies, however, suggested not to pursue the public

procurement policy recommendation since it is extremely complex to change the public finance law in Egypt and particularly just to include articles related to motor procurement. To do so would require the involvement of the Ministry of Finance and also require development of legislation which is a lengthy process in Egypt. This policy was seen as the most difficult to implement and is more likely to succeed within a larger drive towards green procurement in public tendering rather than being approached from a pure EE motors perspective. This could perhaps be part of a wider initiative linked to COP27 as part of other recommendations.

In terms of priority the recommended policies can be arranged into descending priority of implementation based on the figure above

- EE EMDS in green finance
- Clarification note
- Effective market regulation
- Registration of EE motors
- EE EMDS in educational programs
- Awareness and communications

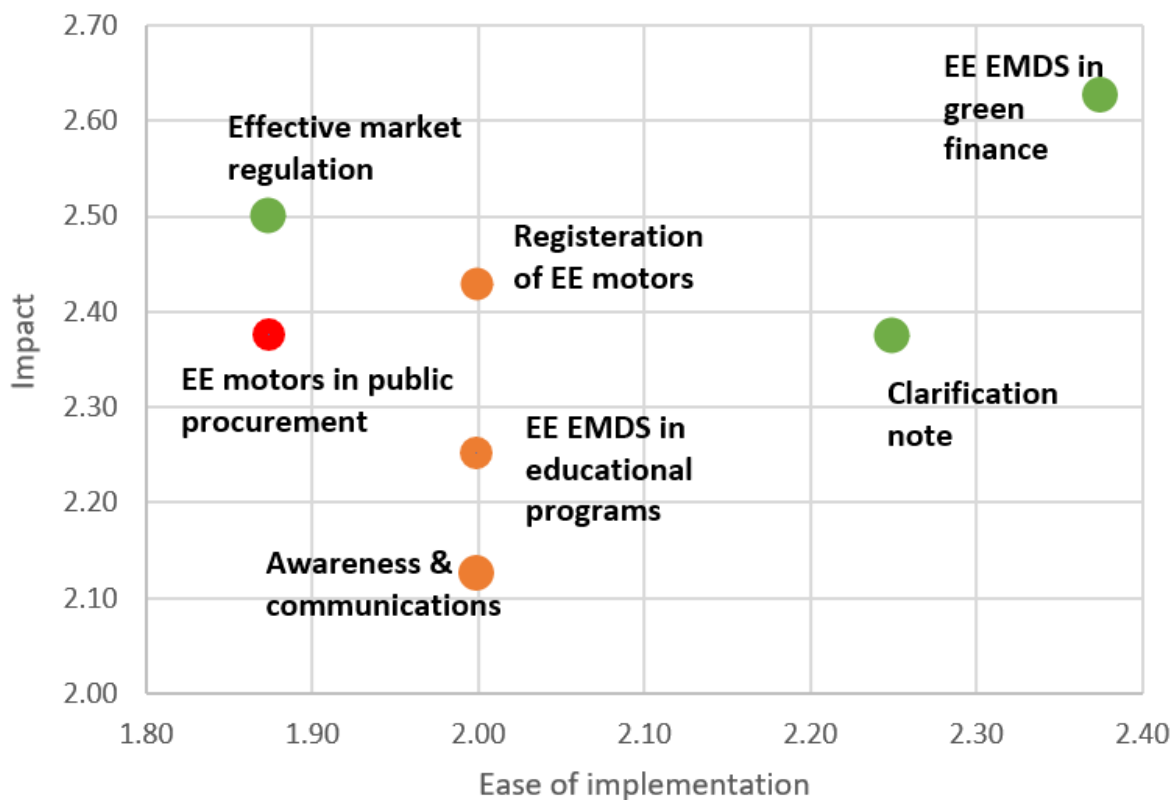


Figure 14 Assessment of policies by attendees of 2nd working group (1=low – 3=high)

Despite market regulation having the highest priority and highest impact in the view of attendees, it was cautioned as difficult to implement due to the absence of a successful track record in enforcing similar regulations (baseline report, Electricity Law). This indicates how diligent the implementation plan should be for this policy. With regard to the registration of motors, a QR code policy of tagging each motor entering the market was discussed as a future addition to the market. The QR code

policy is very complex to put in place and there was full agreement among the attendees and in particular GOEIC and the private sector that is not recommended to follow at the moment. This was further validated in one-on-one meetings with GOEIC, ICA and EOS as well as the Ministry of Trade and Industry as well as IMC. As a start, the policy is considered to be complex to implement in terms of the required platform and the digital system as well as the cloud system to execute the framework. The process of printing and placing the QR code on the motors entering the market is cumbersome. Furthermore, based on GOEIC's experience counter fitting is quite easy and the codes can be replicated or forged, leading to low levels of trust in the whole system. The QR code implemented in most economies such as the EU only focuses on providing information on the model rather than being a unique identifier of the piece of equipment. Hence, starting with registering motor models following international best practices as in UK, New-Zealand, and Australia was agreed upon. The policies can be arranged under the following three categories

✓ Access to finance and investment data to catalyse demand

Mainstreaming of motor finance within existing green facilities

Development of EE Motors Specialized Financial Products

✓ Knowledge and awareness raising

Awareness and communication

Integration of EE EMDS in educational programs

Registration of EE motor models

✓ Developing effective market regulation

Clarification note to elucidate details and scope of the Decree #463/2020

Effective Market Regulation Framework

Reflecting on the three pillars above, the operational policy tools are hinged on a mix of first, knowledge and awareness raising (typically referred to as communication policies) to increasing demand and improve decision making and streamlining response to market regulation. Second, set of tools is those focusing on access to finance and investment data (typical set of economic tools) to accelerate demand and increase uptake. Finally, a collection of regulatory tools to ensure market quality and confidence of end-users and banks. This mix of tools is expected to develop the market system of EE motor driven systems collectively. Each policy is discussed in detail in the next sections while the figure below demonstrates and overview of how the operational policy tools are supposed to work.

The discussion in the 2nd working group (ANNEX VII) identified that the following success factors should be pursued in the short-listed policies.

- Developing integrated policy package addressing various gaps in the market simultaneously
- Starting with focused scope and gradually expand it



- Avoiding complex, cross-ministry policies particularly at the start
- Integrating an effective outreach and promotion process of all policy aspects
- Disseminating information and knowledge
- Balancing between positive incentives and negative aspects
- Linking funding mechanisms to the implementation of the compulsory actions
- Integrating and speaking the language of all stakeholders and market players (end-users, banks, suppliers, traders, manufacturers, etc.)

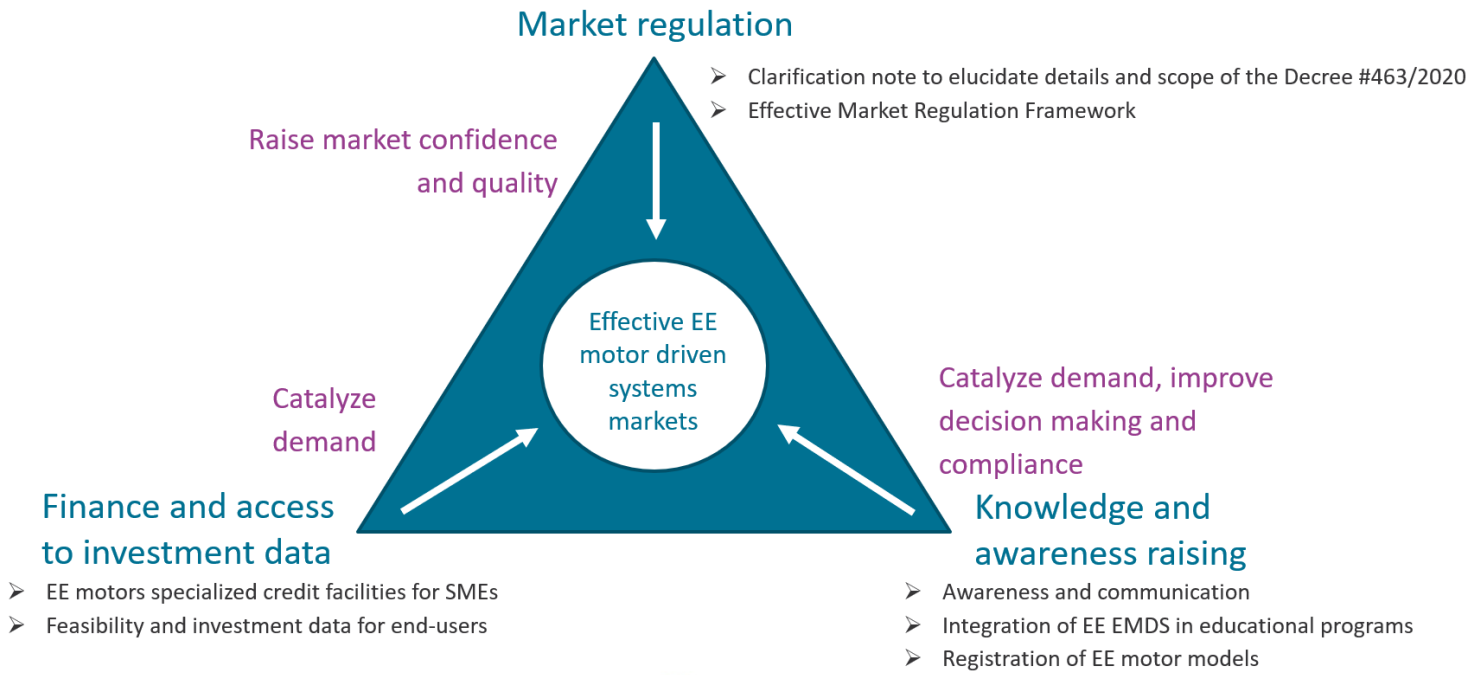


Figure 15 Overview of proposed policy tolls and their impact on the market

Section 2. Operational policy tools and guidelines for the deployment of EE motors

2.1 Access to Finance Catalyze Demand (Economic)

Compliance with the decree will be much easier to achieve if those who procure motors are not looking for the cheapest motors but understand that they should be seeking the motors that are most cost effective over the working life of the motor. If motor procurers can be educated to understand that higher efficiency motors may be more expensive but are always less costly over their lifetime, then they will take efforts to ensure they are procuring motors with a demonstrably high energy efficiency. This demand will help create a self-regulating market that will not only reduce demand for imported low efficiency standalone motors but will reduce demand for inefficient second-hand refurbished motors, such as those in scrap metal imports, assembly line imports and from the domestic repair and refurbishment market (which in turn will create demand for higher quality, higher value refurbishments). EE motors and EE EMDS solutions such as sequencers, intelligent pump systems, compressed air storage, variable speed drives have higher upfront cost despite long term savings. Having access to finance, particularly green finance facilities which have competitive lending rates or incentives can accelerate the improvement of energy efficiency in EMDS in Egyptian industry. The following two policies described below are recommended.

2.1.1 Mainstreaming of motor finance within existing green finance facilities

Green finance facilities do not have a particular focus on EE motors and EMDS equipment as discussed above. In the baseline report, green finance facilities in Egypt were mapped (ANNEX IV). Saving investments in motors such as shifting to higher IE classes, investing in sequencers, intelligent pump systems, and variable speed drives is not widespread. To mainstream such investments, the following activities are recommended:

- Raise awareness of suppliers about the existing green financing facilities and how to support end-users in accessing such facilities. Suppliers should be aware of such facilities, the banks offering them, general lending terms, etc. They should also promote these to their clients and help clients in applying for such facilities. This can take place through training webinars as well as brochures and posts.
- Connect suppliers and green finance facility managers to include as many as possible high IE class motor models as possible among pre-approved technologies (fast track). Most of the green finance facilities have fast track products which are less scrutinized in loan applications. For instance, this includes EBRD's Green Technology Selector. Key motor and EE EMDS equipment suppliers should be connected with finance facility managers to register as many of their products as are eligible within the short-listed set of technologies.
- Provide green finance facility staff with training on saving investments in EE motors and EMDS and relevant technologies. This includes the capacity to assess saving opportunities in shifting to higher IE class motors but also to understand the savings opportunities in sequencers, intelligent pump systems and variable speed drives.

2.1.2 Development of EE Motors Specialized Financial Products

The development of tailor-made financial products is an important policy to ensure access to finance for standard EE EMDS equipment such as motors, pumps, and compressors is provided effectively. The specialized product is aimed to be an on-shelf one which is rapidly and effectively deployed rather than being part of a generic financial credit line. The product would target the industrial sector with about 60,000 possible clients and 1,200,000 motors to replace. Investments are likely to have the following features:

- Typical payback period for the client varies between 1 and 5 years
- Typical loan amount is expected to vary between 100,000 and 1,500,000 EGP
- Most loans are likely to be between 200,000 and 400,000 EGP.

The market size and segmentation has already been developed and will provide banks with insights into how to market the product. Financial tools will be developed to help the bank assess investment feasibility in an effective manner. Application processes will be detailed to include technical aspects of motors. A short list of trusted suppliers would be included and a fast-track application for registered motors (in the platform mentioned above as discussed further later). Training will be provided to bank officers to understand the technology and its details. The policy would support both the purchase of standalone IE3 and IE4 class motors as well as high efficiency pumps and compressors, despite these not being part of the decree. This expands the opportunities and market reach of the credit line which helps to build necessary scale. This type of policy is already implemented in China to accompany MEPS as well as in Germany, with both focusing on industrial SMEs.

2.1.3 Fact sheets and Action Plan

Table 3: Mainstreaming of motors finance within existing green finance facilities Policy Fact Sheet

Policy Fact Sheet	
Policy	Mainstreaming of motors finance within existing green finance facilities: Through technical assistance and capacity building to bank officers. It also includes promoting the existing facilities to end-users and suppliers and linking suppliers with green finance facilities. Training to bank officers should include various EE EMDS technologies and how to assess their feasibility
Objective	Increasing finance of EE EMDS by existing green finance facility
Impact	Increase demand and uptake of EE EMDS technologies through availing finance
Owner	Banks with existing green finance facilities particularly financed by EBRD (Technical assistance through UNIDO to support banks)
Key stakeholders	Suppliers, IMC, and consultant to promote green finance facilities. Suppliers can register with green finance facility as short-listed technology providers
Beneficiary	Suppliers and End-users where suppliers can expand their market and sales and end-users avoid difficulty with availing upfront costs
KPI	Amount of finance in EE EMDS technologies provided by green finance facilities Number of entities receiving finance for EE EMDS technologies from green finance facilities
Success factors	Effective market regulations and clear decree which ensures banks trust in market is high Presence of information on investments in EE EMDS in a manner accessible to bank officers High level of awareness at end-users and suppliers with the green finance facilities
Risk and Mitigates	Risk Strong competition of with other technologies in green finance facilities can make officers reluctant to focus on EE EMDS Mitigate stakeholders linking end-users with facilities can create pipeline of demand on EE EMDS on facilities Risk Limited access of banks to trustworthy suppliers can decreases chances of lending Mitigate link suppliers with green finance facilities

Table 4: Development of EE Motors Specialized Financial Products Policy Fact Sheet

Policy Fact Sheet	
Policy	Development of EE Motors Specialized Financial Products: This takes place through technical assistance to banks with focus on serving SMEs. Mix of trainings and development of financial tools should take place to assist banks in developing the products
Objective	Increasing finance of EE EMDS in existing green finance facility
Impact	Increase demand and uptake of EE EMDS technologies
Owner	Banks with existing green finance facilities particularly financed by EBRD (Technical assistance through UNIDO to support banks)
Key stakeholders	Suppliers, IMC, and consultant to promote facility. Suppliers can register with green finance facility as short-listed technology providers
Beneficiary	Suppliers and End-users where suppliers can expand their market and sales and end-users avoid difficulty with availing upfront costs
KPI	Number of specialized financial products developed Amount of finance in EE EMDS technologies provided by green finance facilities Number of entities receiving finance for EE EMDS technologies from green finance facilities
Success factors	Effective market regulations and clear decree which ensures banks trust in market is high Presence of information on investments in EE EMDS in a manner accessible to bank officers High level of awareness at end-users and suppliers with the green finance facilities Financial tools tailored for bank needs Design of credit facility in a manner that fits SMEs needs
Risk and Mitigates	Risk Limited awareness of the green finance facilities decreases demand on it Mitigate promote facility along with awareness raising and also engage suppliers in promoting the facility Risk Limited awareness of the facility decreases demand on it Mitigate promote facility along with awareness raising and also engage suppliers in promoting the facility

Table 5: Policy implementation activities and timeline for access to finance

	Q4 – 2021	Q1 – 2022	Q2 - 2022	Q3 - 2022	Q4 - 2022
Access to Finance Catalyze Demand (Economic)	<ul style="list-style-type: none"> -Prepare market sizing, segmentation, number and size of expected loans (done) -Meet banks and get their agreement to develop credit lines focused on EE motors replacement – done (MSMEDA, NBE) -Register high number of EE motor types in Green Finance Facilities pre-approved technologies (GEFFII and VCFF) - done 	<ul style="list-style-type: none"> -Connect green finance facilities with end-users and suppliers through events -Conduct awareness raising webinars to suppliers including information on green finance facilities -Raise awareness of banks with green finance facilities on saving opportunities in EE motors and EDMS (IE motors, sequencers, intelligent pump systems, Variable Speed Drives) 	<ul style="list-style-type: none"> -Design EE motor credit line and develop tools to be used by the banks -Train credit officers on higher IE class motors feasibility assessment 	<ul style="list-style-type: none"> -Launch credit line and link credit line with registration platform -Promote newly launched credit lines to end-users and suppliers 	<ul style="list-style-type: none"> -Promote newly launched credit line -Short list suppliers

2.2 Knowledge and Awareness Raising (Informative)

As has been indicated in the baseline study, there is limited awareness on saving opportunities from EE EMDS and limited awareness on how to assess saving opportunities as well as the details of the decree. Knowledge and awareness raising are also a critical part of the success of most motor policies worldwide, as previously discussed. Knowledge and awareness raising needs to be specific to each recipient and to provide the right type of information as detailed below.



2.2.1 Awareness and Communication

2.2.1.1 Awareness of market regulation

Awareness regarding the market regulations is critical to ensure compliance and also ensure misinformation is minimized. Awareness needs to be raised regarding:

- ✓ The scope of the decree for both the MEPS and nameplate (as explained later-ANNEX II)
- ✓ Who is Who with regard to the implementation of the decree #463/2020 (ANNEX I)
- ✓ Relevant standards and their role in the decree
- ✓ Documentation required for compliance (details discussed later).

The above should be promoted in webinars to suppliers and end-users as well as documented in brochures and info graphics to be promoted online and in print. The documentation required for compliance (discussed later) should mainly be determined by GOEIC and promoted to suppliers.

2.2.1.2 Awareness of saving opportunities and value proposition

Savings opportunities in EE motors and EMDS need to be promoted to both end-users and suppliers. These should include the savings in shifting to higher IE class motors but also in MSO - particularly in pumps, compressors, fans, and chillers. This should take place through training exercises, webinars, and brochures. It also should include an outline on how to conduct feasibility studies and calculate payback periods as well as typical savings. The awareness should include knowledge of finance facilities in the market which are relevant to the finance of EE. The awareness should be directed to both end-users and suppliers.

The value proposition to end-user needs to be clarified and promoted to factories by focusing on life cycle savings, payback and reduced stoppage time and interruptions. For technology providers, the value proposition is offering their clients an improved service but also expanding their market to include VSDs, sequencers and other equipment to improve EE in EMDS. Finally, technology providers can generate more revenue by selling higher IE class motors. The value proposition for finance institutions is expanding to a market of 1.2 million motors and 60,000 clients with an asset that is easy to assess and has a high salvage value.

2.2.1.3 Availing data for financial decision making and promotion of existing facilities

In addition to the above, financial data on investment in EE motors should be made wide-spread in the market in a clear manner. As elaborated upon later, this requires the provision of information on payback periods, typical costs of various IE classes of motors and lifecycle costs. This information needs to be availed to suppliers and manufacturers so they can promote their products accordingly. It needs to be availed to end-users so they can take informed decisions on the best investment choices possible in EE motors and EMDS. Information also needs to be availed to banks which can thereby finance clients with more ease and less perceived risk. Suppliers needs to receive training of green finance facilities in the market, understand their scope, conditions, and the banks which are



providing them. They need to be able to promote such facilities to their clients and assist them in applying for finance from such facilities. They should also register their products within such facilities. Webinars can provide such information to suppliers in addition to brochures and info-graphs. Linkages between banks and suppliers and end-users should be created through B2B events.

2.2.2 Integration of EE EMDS in educational programs

The other essential aspect to raise demand is to promote the benefits of high efficiency motors to the procurers of such motors as well as saving opportunities in EMDS. Essentially this requires awareness raising actions so procurers appreciate that cheap inefficient motors are much more costly over the service life than more expensive efficient motors and hence are a false economy. It likely also needs work to ensure that companies and organizations are structured to reward procurement based on best value over the service period and not simply procurement at the cheapest price. Understanding saving opportunities particularly in motor system optimization is critical. To achieve this such knowledge needs to be embedded in educational programs. Mainly such knowledge needs to be integrated within 3rd and 4th year educational courses in Mechanical and Electrical Departments. Courses could be based on UNIDO MSO Courses.

Over the short term, until educational programs are integrated, UNIDO will continue its user and expert Motor Optimization courses to build the knowledge in the market at among consultants and end-users. The courses within universities can be based on both user and expert motor system optimization content with emphasize on problem-solving, exercises and student projects. Such educational content was developed by IEE and piloted in Cairo university and can be expanded into other Universities.

2.2.3 Registration of EE Motors

Ensuring that motor energy performance is visible to market actors and is understood by them is an essential component of the policy's success. This requires not only that the rating plate, in accordance with the Egyptian standard, be affixed to all motors within its scope (per the provisions of the decree #463/2020) but also that the market actors are aware that it should be there and understand what the information presented on the rating plate means. In addition, the same information should be present in product brochures and online promotional material. It is important that procurers of motors should be aware that this information should always be available and demand to see it for any motor they are considering procuring. As part of the process of creating visibility for high efficiency motors it is proposed to create an online platform exhibiting motors with high energy performance that are 3rd party certified; mainly through EOS. This will provide visibility for reliably high-efficiency products and provide a hub where procurers can search for such motors that meet their needs with a high degree of confidence in the claimed performance. EOS is well placed to host such a hub and also to provide certification services to support it. Examples of how such hubs are administered elsewhere, such as the UK's scheme, have been shared with EOS by the project team. If supported by additional support measures, per those proposed in the sub-sections below, this will help create demand for such motors and induce suppliers to voluntarily seek to have their products certified and listed on the platform. Suppliers will also seek to promote the virtues of such certification to their client base which in turn will help raise awareness among motor procurers.

The platform would allow information to be obtained on energy savings in various models and to compare various models in terms of energy performance. Third party validated information on expected savings for each model is typically quite informative to users. The platform can allow users to browse various motor models and checking their ratings, specifications, energy efficiency, energy consumption as well as other technical data. End-users will also have access to trusted information that can provide them with ensured savings estimates. The platform should allow end-users to compare different models to be able to take effective investment decisions. There are numerous examples of best practices and success cases for such platforms in the UK, New Zealand, Australia. A sample from the UK platform is shown below.

Line operated motors

The screenshot shows a web interface for searching products. At the top, there is a search bar with the text "Search for products in this technology" and a magnifying glass icon. Below the search bar, there are "Filters" and "Clear filters" options, with "121 products" listed. To the right, there is a "Sort by" dropdown menu set to "Date added to ETL (newest)".

The main content area displays a list of products. The first product is "WEG W22 22KW 6 Poles Super Premium Efficiency IE4 Induction Motors" by WEG Electric Motors (UK) Ltd. It includes the model number "W22 22 kW 6 Poles 200L Standard Frame" and the date "Date added to ETL: 1 August 2016". There is a "Compare" checkbox next to it.

Below the product list, there is a blue banner for "2 products shortlisted". It contains two product cards:

- WEG W22 22KW 6 Poles Super Premium Efficiency IE4 Induction Motors. Model: W22 22 kW 6 Poles 200L Standard Frame. A "Remove from shortlist" link is at the bottom.
- WEG W22 30KW 2 Poles Super Premium Efficiency IE4 Induction Motors. Model: W22 30 kW 2 Poles 200L Standard Frame. A "Remove from shortlist" link is at the bottom.

At the bottom right of the shortlist banner, there are links for "Download spreadsheet" and a "Compare" button.

Figure 16 Sample of UK platform for registered EE motors

These platforms can also assist banks in financing such models in an easier manner. Banks can have a more effective and faster process in assessing registered models. Banks could also restrict finance to registered models hence providing a stronger incentive for suppliers to register on the platform. It also provides a reward for compliant suppliers and a market edge to them over those who are reluctant to register or provide their clients with high efficiency motors. In return, when banks have an assurance of financing a high-quality trusted product. The platform can also allow banks to assess possible energy savings by comparing higher IE motors to low IE motors which are being replaced by the client. EOS will create a fully online application process to suppliers (against fees) to apply to register certain models. Such models need to be already accredited. EOS will review documentations and decide on registration status accordingly. EOS will maintain and operate the platform and promote it to banks, end-users and suppliers.

2.2.4 Fact sheets and Action Plan

Table 6: Awareness and Communications policy fact sheet

Policy Fact Sheet	
Policy	Awareness and Communications: through a comprehensive awareness raising and knowledge sharing. This should include various channels such as online infographics, printouts and brochures, webinars and workshops each targeting a certain
Objective	Facilitate understanding and compliance with decree Assist public authorities in playing their role effectively Improve decision making for investments in EE EMDS technologies
Impact	Increase compliance and uptake of high IE motors
Owner	IMC promote EE EMDS to end-users ICA promote EE EMDS to end-users IDA promote EE EMDS to end-users (Through assistance of UNIDO)
Stakeholders	Consultants who can promote EE EMDS Suppliers (which can use developed awareness material to promote EE EMDS)
Beneficiary	All market elements
KPI	Number of stakeholders' awareness raised Number of stakeholders participating in awareness raising Number of knowledge products developed
Success factors	Using multiple channels Content simple and tuned to each stakeholder group
Risk and Mitigates	Risk Limited reach of knowledge and awareness activities due to different types of targeted beneficiaries Mitigate use a mix of tools and channels such as online material, print-outs, online awareness sessions, on ground workshops Risk Awareness raising activities stop after UNIDO technical assistance is concluded



Mitigate Training various stakeholders to continue raising awareness of the market including suppliers, consultants, ICA, EOS, IMC

Table 7: Integration of EE EMDS in educational programs Policy fact sheet

Policy Fact Sheet	
Policy	Integration of EE EMDS in educational programs: through reaching out to universities and university professors and assisting them in developing and integrating curricula within exiting mechanical and electrical engineering program
Objective	Long-term streamlining of knowledge on EE EMDS in the market through trained graduates leading to improved decision making and capturing of saving opportunities
Impact	Increasing knowledge on EE EMDS savings at suppliers, end-users and consultants through graduates
Owner	Universities (Technical assistance by UNIDO)
Stakeholders	End-users and consultants who can support professors through case studies and site visits
Beneficiary	Suppliers, end-users, consultants who will work with qualified graduates
KPI	Number of trained students Number of students using knowledge on MSO to serve the market
Success factors	Building upon UNIDO MSO tool kit Allow content to be flexible enough to fit various courses Work with motivated and committed professors
Risk and Mitigates	Risk Content not suitable for university standards Mitigate support content with exercises and projects Risk Long time needed to approve new courses in universities can delay results and impact Mitigate Integrate content with most relevant existing courses

Table 8: Motor registration platform Policy fact sheet

Policy Fact Sheet	
Policy	Motor registration platform: to register high IE motors and provide users with complete information on technical specification and energy utilization. This platform promotes high IE motors and provide banks and end-users with reliable information on high IE motors while promoting them
Objective	Provide information on high IE motor models and promote compliant suppliers and traders
Impact	Increase demand on compliant high IE motors
Owner	EOS
Stakeholder	GOEIC which can coordinate with EOS on imports on registered models
Beneficiary	Suppliers who can promote their products on the platform End-users who can have information to assist investment decision and options to select trustworthy projects Banks to use registered motors as shortlisted models for finance
KPI	Number of registered motors Visitors to platform
Success factors	Flexible design of the platform by building on international best practices Promoting platform to suppliers, banks and end-users
Risk and Mitigates	Risk Platform developed but not effective Mitigate cooperating with suppliers to promote platform to clients and market the platform to end-user Risk EOS cannot maintain platform due to hosting fees Mitigate registration can be again fees to provide sustainability

The action plan of the EOS for Development of the Registration platform (ANNEX VI)



Table 9: Policy implementation activities and timeline for knowledge and awareness raising

	Q4 – 2021	Q1 – 2022	Q2 - 2022	Q3 - 2022	Q4 - 2022
Knowledge and Awareness Raising	<ul style="list-style-type: none"> -Prepare webinar content for suppliers, consultants, and end-user to raise awareness on decree, saving opportunities, feasibility analysis and end-user finance -prepare info graphs (on topics above) -prepare brochures (on topics above) -prepare videos (on topics above) -conduct webinars with suppliers, end-users, consultants 	<ul style="list-style-type: none"> -Conduct linkages events between suppliers, end-users, banks, regulatory agencies -Promote info graphs and videos online -Provide suppliers, regulatory agencies, banks with brochures for distribution -Conduct end-users awareness events on the ground 	<ul style="list-style-type: none"> -promote information online -promote information door to door in factories -arrange with universities to include content in courses 	<ul style="list-style-type: none"> -share content to be included with interested professors 	



Egypt National
Cleaner Production Center
مركز لتكنولوجيا الإنتاج النظيفة



مركز تحديث الصناعة
INDUSTRIAL MODERNISATION CENTRE



The action plan of the EOS for Development o
ion platform (ANNEX VI)



2.3 Developing Effective Market Regulation and Decree #463/2020 Clarification Note (regulatory)

2.3.1 Effective Market Regulation

Ensuring compliance with requirements entails a mixture of actions to ascertain that market actors know what the requirements are for compliance and how they should comply. Full clarity is needed and details of compliance process needs to be precisely specified. The market regulation should ensure that the reward-to-risk ratio of compliance is better than for non-compliance. This means that the market regulation should make the reward for compliance high and the disincentive for non-compliance strong. While compliance steps are straightforward to write down, they require coordinated and sustained activities to address each of them if compliance is to be achieved.

In the case of the decrees no 463 the requirements are two-fold:

- a) Provision of a rating plate with the required information (including indicating various technical characteristic and performance aspects, among which is the IE energy efficiency class for motor products that are in scope) – applicable from March 2021
- b) For 3-phase AC induction motors to attain a minimum IE3 class providing they are in scope (i.e.: are fixed-speed direct-on-line type, have a rated capacity of from 0.75 to 375 kW, have 2-8 poles, have a rated voltage of $50 < <= 1000$, have an S1 duty cycle and are not certain types of specialist motor within this broad category) – applicable from March 2022

While it would be easy and tempting to focus actions on only one or some of the activities that can create compliance in the market; generally, they all need active attention and targeted measures if compliance is to be achieved.

The remainder of this text sets out the actions which are needed and proposes a tentative roadmap to achieve them. The steps needed to put in place an effective market regulation frame is elaborated upon in subsequent sections.

2.3.1.1 Understanding the Regulated Product and Market Channels

It is important to be clear about both the nature of the regulated product and the channels used to place the product on the market. Understanding the channels is necessary so that relevant market actors can be properly informed about the requirements and also to ensure that compliance verification processes are established that address each channel. This is necessary to avoid any loopholes that could otherwise be exploited.

The decree imposes minimum energy performance standards (MEPS) at the IE3 level for 3-phase AC induction motors that have certain technical characteristics. It also requires rating plates to be affixed to motors placed on the market that indicate the motor energy performance and other technical characteristics in accordance with Egyptian Standard 2628-1/2019. Rating plate requirements apply to a broader set of motor types than the MEPS requirements but for both the MEPS and rating plate cases there are motors that fall outside the scope of the requirements. Thus, it is essential market actors and regulatory authorities responsible for enforcing the regulations have clarity about the motor types that are in scope of each requirement and those which are not. It is also important that the regulatory authorities responsible for enforcement know how to tell if a motor falls within the



scope of decree or not. ANNEX II sets out exactly which type of motors are subject to MEPS and/or to the rating plate requirements.

Electric motors can be placed on the Egyptian market via the following channels:

- 1) Imports of standalone finished motors
- 2) Motors imported as scrap metal and refurbished and sold domestically
- 3) Motors imported within second-hand assembly lines
- 4) Domestically manufactured motors
- 5) Motors imported as a component within OEM equipment.

Once a motor has originally been placed on the Egyptian market the following channels become relevant:

- New finished motors sold within the internal market via commercial distributors
- Old motors that are repaired and refurbished and sold within the internal market.

The decree concerns motors that are placed on the market as new standalone types so directly applies to channels 1) and 4). It also applies to channels 3) and 5) provided that the motor is not completely integrated in equipment⁹. In the case of channel 2) *Motors imported as scrap metal and refurbished and sold domestically* the status of application is less clear but this is understood to be a significant source of motors placed on the Egyptian market and one that appears to be both a legal grey area and a potential loophole in the regulations that could be exploited by those seeking to bypass the regulations. Thus, having a strategy to address this route to market will be important to the policy's success.

When considering the relative importance of the various channels about 95% of standalone motors that are subject to the MEPS requirements are imported while only ~5% are locally manufactured. There is much less reliable data on the importance of:

- Motors imported as a component within OEM equipment
- Motors imported within second-hand assembly lines
- Motors imported as scrap metal and refurbished and sold domestically.

But the IFC STEP project estimated that motors imported as scrap and then refurbished and sold “as new” could account for a large proportion of the total domestic consumption of motors. The other two sources are almost certainly less significant, but still could be important. In the case of motors imported within OEM equipment they are also much more difficult to address from a market surveillance perspective, but they are also not a concern from a loophole perspective as no one would be tempted to import motors this way as a means of bypassing the regulatory requirements.

⁹ The IEC standards 60034-30 indicates that the following is not the scope of IE standards “Motors completely integrated into a machine (for example pump, fan and compressor) that cannot be practically tested separately from the machine even with provision of a temporary end-shield and drive-end bearing. This means the motor shall: a) share common components (apart from connectors such as bolts) with the driven unit (for example, a shaft or housing) and; b) not be designed in such a way as to enable the motor to be separated from the driven unit as an entire motor that can operate independently of the driven unit. That is, for a motor to be excluded from this standard, the process of separation shall render the motor inoperative”

2.3.1.2 Clarify Roles and Responsibilities and Coordinate Market Surveillance Activities

To avoid compliance loopholes, it is important that no matter which channel is used to place a product on the market that market surveillance will take place which is sufficient to determine and prevent non-compliance. In practice, different state agencies have different roles and responsibilities with regard to ensuring compliance of products placed on the market via each market channel. For effective compliance to be delivered it is important that there is a common understanding of these roles & responsibilities and that an adequate degree of coordination is established and maintained between the various line agencies.

Throughout the course of the project consultations have occurred and dialogues maintained which have established the following mapping between the channels to market and agency responsibilities with regard to market surveillance:

Channel to market	Market Surveillance Agency
Imported standalone motors	GOEIC
Imported “scrap metal” motors	GOEIC
Motors imported within OEM equipment	GOEIC
Motors imported within second-hand assembly lines	GOEIC
Domestically manufactured motors	ICA
Motors circulated within the economy	MoSIT with potential support from CPA
Repaired/Refurbished motors	MoSIT with potential support from CPA

GOEIC has responsibility for market surveillance for all imported motors, regardless of the specific importation channel or motor type. ICA has responsibility to ensure the compliance of domestically manufactured motors with the provisions of the decree, while the Ministry of Supply, Industry and Trade has responsibility for market surveillance of motors that are sold internally within the Egyptian national market including those motors which are repaired and/or refurbished prior to resale.

MoSIT has the responsibility of following up on traded motors on the market by traders and suppliers. Once the motor enters the market, MoSIT becomes responsible for it. MoSIT can check trader’s shops and ensure proper documentation ensuring motors are IE3 or above exists. MoSIT has the mandate to check warehouses and shops without prior notice and is authorized to confiscate any non-compliant product. MoSIT needs to also receive training on how to do spot check and visual inspection and understand how to read documentation and testing report indicating efficiency of motors.

2.3.1.3 Implementing Market Surveillance

Effective market surveillance and enforcement is essential for the provisions of the decree to be

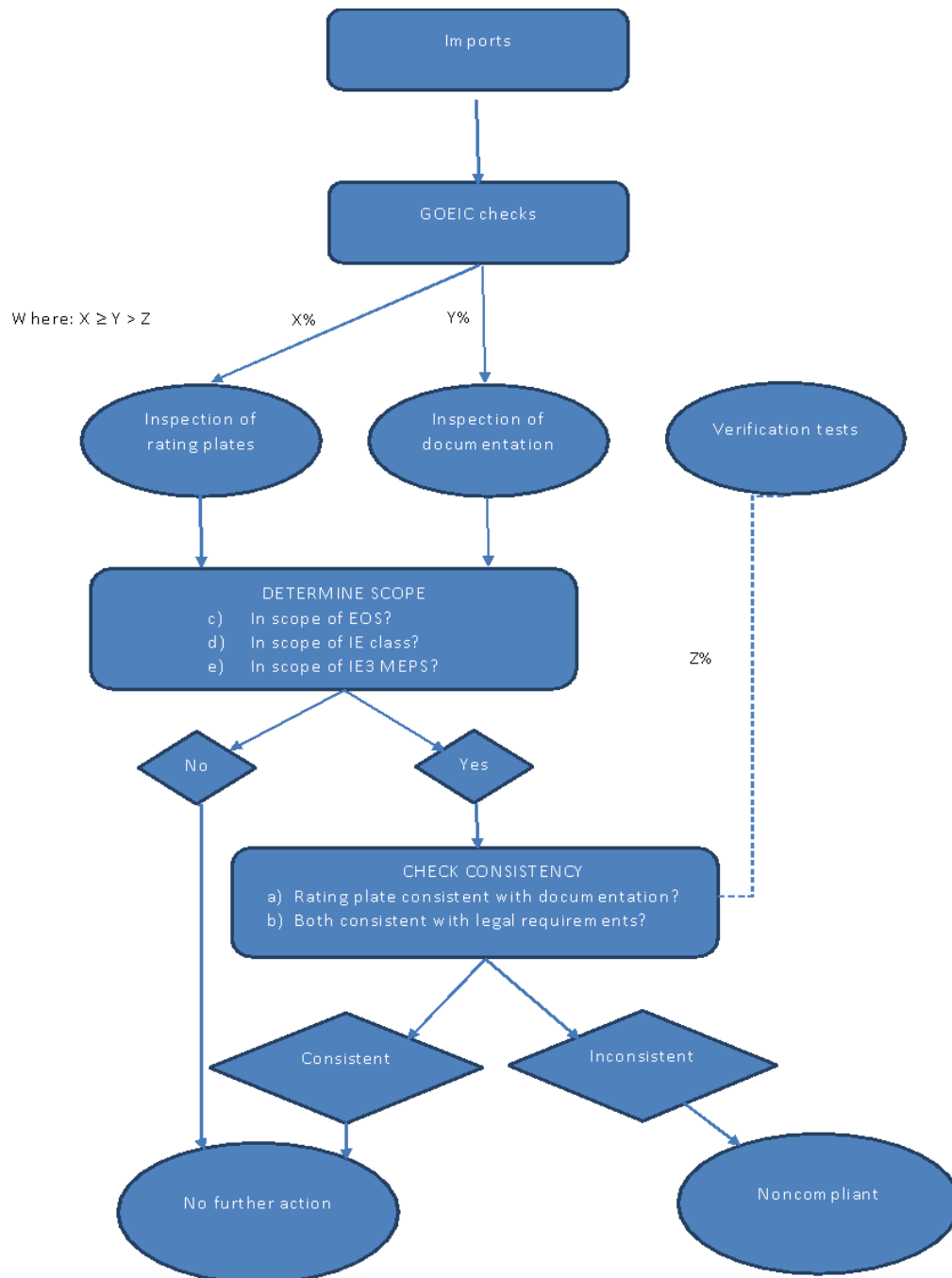


Figure Flow chart of product check at port of entry

respected as well as to increase market confidence in the integrity of the declared performance and thereby boost demand for energy efficient motors. The market surveillance needs to be structured to effectively address all the channels to market and to ensure that market actors appreciate that it is



more economically beneficial to be compliant than non-compliant with the requirements of the decree. This section sets out the actions that will need to be implemented.

2.3.1.3.1 Market surveillance at the borders

Border control is managed by GOEIC and gives them powers to check conformity of imports with regard to the regulations. The cases that can be confronted at the border are:

- Imports of standalone finished motors
- Motors imported as scrap metal and refurbished and sold domestically
- Imports of motors which are integrated into finished products
- Motors imported within second-hand assembly lines.

In the case of **motors imported as “scrap metal”** that could then be supplied to the refurbishment market. If a scrap motor is sold as a new one, it is already illegal as it constitutes a deliberate misrepresentation as per Egyptian Consumer Protection Agency. It is important for GOEIC to ensure that imports of scrap metals do not include motors. That in itself is a fraud case and misrepresentation of import items.

Imports of motors that are integrated into finished products are out of scope of the regulation if they cannot be extracted and tested as standalone units without damaging the product¹⁰.

Motors imported in second-hand assembly lines are likely to be a modest part of the total motor market and hence probably are not a significant issue. The companies bringing such assembly lines into the country are understood to be known to GOEIC. Note, as the motors in such assembly lines are: a) second-hand and b) may be integrated into other equipment, they should not be subject to the provisions of the decrees. Nonetheless, it would be important to monitor the scale of these imports to ensure this is not developing into a loophole.

Verification of imported **standalone motors** with the requirements of the decrees will be GOEIC's main responsibility. The following verification checks should be done:

- visual inspection to
 - check the presence of rating plates and IE class or % efficiency)
 - (From April 2022) check that IE3 is declared for motors in scope of MEPS
- checking of suppliers' conformity assessment documentation
- testing motors to verify their claimed performance.

The conduct of checks of the consistency of information presented on the rating plates and within the conformity assessment documentation are also recommended i.e. checking to ensure that both sets of information are consistent with each other for each specific product.

¹⁰ IEC 60034-30 indicates that the following is out of scope of IE standards “Motors completely integrated into a machine (for example pump, fan and compressor) that cannot be practically tested separately from the machine even with provision of a temporary end-shield and drive-end bearing. This means the motor shall: a) share common components (apart from connectors such as bolts) with the driven unit (for example, a shaft or housing) and; b) not be designed in such a way as to enable the motor to be separated from the driven unit as an entire motor that can operate independently of the driven unit. That is, for a motor to be excluded from this standard, the process of separation shall render the motor inoperative”



Scope checks

For both rating plate and conformity assessment documentation checks the first issue is to identify which, if any, of the provisions in the decrees that the motors are subject to. The next policy recommendation is dedicated to clarifying the Decree through a clarification note (ANNEX II).

Conformity declaration documentation

The same scope checks can be conducted for the evidence presented in the conformity assessment documentation.

It is important to check that this documentation includes all the aspects it is required to and that the information it conveys is:

- consistent with the information presented on the rating plates
- supports the claimed IE class.

An important aspect that may need further clarification is whether the conformity assessment (and in particular the performance tests) were done by an approved laboratory and/or CAB (conformity assessment body according to the IEC 60034-2-1:2014 Rotating electrical machines - Part 2-1: Standard methods for determining losses and efficiency from tests (as per the decree #463/2020).

Verification testing

GOEIC has established its major test lab (capable of testing motors with a capacity of up to 75kW) in Alexandria, a lab at Cairo airport (capable of testing motors with a capacity of up to 7.5kW) and testing facilities at Port Said (capable of testing motors with a capacity of up to 30kW). By law GOEIC are required to do verification testing of at least 1 motor from each shipment entering the country. In practice shipments may comprise multiple containers which means larger shipments will have a smaller proportion of the total stock subject to verification testing.

It is essential that the test labs used for verification testing are properly accredited. Ideally, this would not just be via the national accreditation agency, but would also entail witness and cross-testing with a recognized 3rd party international lab to ensure the tests are being done correctly.

Sampling and risk screening

GOEIC applies pre-set variable sampling plans for each container to avoid placement of compliant samples in easy reach while non-compliant ones are hidden. However, it is neither viable nor cost-effective (from an improved compliance perspective) to do all types of verification checks for every sample selected thus a risk screening plan and plan for sampling for each kind of verification check needs to be formulated. Checks could include spot checks (visual inspection), documents check, or testing checks. Such a plan can be structured hierarchically such that the frequency of verification checks is highest for visual inspection of the rating plate, potentially less frequent for



conformity documentation checks and least frequent for verification testing. Because this type of hierarchical system of verification checks correlates the frequency of checks with the ease and cheapness of checks, yet ensures that there is always some part of the market that is subject to more thorough verification checks it maximizes the proportion and quality of checks that are delivered within the available resources while ensuring there are no loopholes.

In the application of this hierarchy of checking it is good practice for market surveillance authorities to establish non-compliance risk factors for market actors that are adjusted over time to reflect actual experience. In this system suppliers that do not comply should receive high risk score and be further scrutinized while those that are compliant should receive less risk score and be less. E.g. if motors placed on the market by a particular supplier are always found to be compliant then their non-compliance risk can be lowered and less frequent checks done on their products, whereas if those of another supplier are frequently found to be non-compliant then their non-compliance risk profile can be increased and the verification checking increased accordingly (until they begin to comply routinely). In principle, the same can be done based on country of origin, e.g. countries where non-compliant products are spotted at port of entry more frequently, should receive more scrutiny. Such risk weightings can also be adjusted by type of non-compliance (e.g. not having a rating plate, not having proper conformity assessment documentation or having motors whose declared performance is worse than verified through testing) and used to influence the frequency of checks to be done accordingly. Such risk profiling takes time to establish and requires tracking of verification check outcomes against supplier, country of origin and type of non-compliance in a dedicated compliance tracking database. This risk scoring and adjusting of scrutiny level ensure cost effective market regulation. The relationship between these actions is indicated in the compliance-check flow chart shown figure 18 on the subsequent page:

What actions should be taken when non-conformity is identified?

There are many ways that products could be found to be non-compliant with the requirements stipulated in the decree. Accordingly, each type of potential non-compliance needs to be described and an agreed set of enforcement responses established for whenever such non-conformity is identified. An example of the types of non-compliance that could be identified is shown below.

Where	Potential cases of non-compliance
At point of import / placing on the market	<ul style="list-style-type: none"> • Contravention of product registration procedures • Failure to provide Conformity Assessment Report • Failure to provide requisite technical documentation • Failure to provide proof of testing • Failure to submit product for testing • Failure to cooperate with authorities • Falsified test reports • Product does not conform with MEPS requirements • Missing energy label or energy performance rating information • Inaccurate energy performance information or energy label • Smuggling products with intent to contravene regulations
At point of testing	<ul style="list-style-type: none"> • Failure to provide proof of testing • Failure to submit product for testing • Failure to meet performance claims or comply with MEPS • Falsified test reports
At point of sale	<ul style="list-style-type: none"> • Missing energy label or energy performance rating information • Misuse of a voluntary or mandatory energy label • Inaccurate energy performance information or energy label • Failure to provide required energy performance or labelling class in product catalogues, websites or other promotional media • Failure to meet performance claims or comply with MEPS
Following initial enforcement action	<ul style="list-style-type: none"> • Failure to take corrective action following initial identification of non-conformity • Failure to follow a requisite procedure • Failure to pay testing fees • Failure to pay fines • Any or all of the above as a repeat offence after ample notice of the infraction

Figure 18 Examples of types of non-compliance

GOEIC will need to clearly establish the enforcement procedures to be followed in each case that are proportionate, adequate to discourage non-compliance and feasible to implement.

2.3.1.3.2 Market surveillance for domestically manufactured motors

Market surveillance for products that are manufactured within Egypt is the responsibility of ICA. ICA has existing powers to inspect factory premises to ensure that their practices accord with Egyptian law. Currently there are only a small number of domestic producers manufacturing motors that are subject to the provisions of the decrees so it will suffice to inspect the practices of these producers to ensure their products are compliant. Ordinarily, factory inspection checks can verify that a producer has procured or developed product designs that respect the regulatory requirements, that their method of testing and certifying their products performance is robust and credible, that the required information is being displayed on rating plates being affixed to their products, and that motors within scope of the decree are respecting the minimum IE3 energy performance requirement.

As part of this process ICA could:

- Check product design files
- Check product certification processes and documentation
- Select product samples at random and send them to GOEIC for verification testing

A complicating factor is to verify that the products are destined for sale within Egypt, and hence are subject to the provisions of the decree. As with other agencies ICA staff will need to receive appropriate levels of training to understand the scope of the decree and the means of verifying compliance with this for when they conduct factory inspection visits.

2.3.1.3.3 Market surveillance of motors sold within the internal market

Market surveillance for products that are sold within Egypt's borders is the responsibility of MoSIT.

The key aspects that will need to be checked are that:

- motors within scope of the decree are being sold with a rating plate affixed displaying the required information
- the rating plate has not been tampered with and that the information is genuinely determined for the motor it is affixed to
- the declared performance is consistent with the regulatory requirements, i.e. attains IE3 from March 2022 if within scope of the MEPS provisions
- the product type and performance claims are supported by accompanying technical documentation for which the conformity assessment has been conducted in line with the regulatory requirements.

The above aspects can be checked through the implementation of occasional visits to motor retailer/distributors shops and warehouses. The checks done during these visits will need to entail a blend of visual inspection e.g. of the rating plate presence and information, documentation inspection (i.e. of the supporting conformity assessment documentation) and through occasional verification tests which can be potentially conducted at GOEIC's labs when the capacity of the motor is $\leq 75\text{kW}$.

Again, there will be a need to establish a market surveillance team, to train them and resource them to conduct their surveys. As with the checks on imported motors it makes sense to conduct a mix of



completely random market checks combined with more prevalent checks targeted at market actors who are considered to be at greater risk of non-compliance. The development and application of non-compliance risk weighting would need to be supported by the establishment of a longitudinal compliance database wherein the compliance records of each market actor is maintained and used to determine dynamic non-compliance risk probabilities.

As with the other market surveillance pathways discussed in this report it will be important for MoSIT to establish a set of procedures to be followed in the event of each potential kind of non-compliance being determined.

Lastly, it is noted that as ICA has the authority to address consumer complaints, they also need to develop capacity to respond to such complaints should procurers of motors inform them that they believe a product they have been sold does not meet the requirements. As energy management methods become more widespread in Egyptian industry it could be expected that motor procurers are likely to become more aware of the decree and of the risk of being sold non-compliant products. Again, ICA could develop its capacity and procedures to be able to address such complaints in a similar manner to MoSIT.

In the next page is a summary of market regulation frame.

Table 10: Market Channels and Possibilities of Fraud

Channels	Possible fraud	Responsible entity	Actions
Imports of motors	Imports of standalone motors could be below IE3 or missing name plate of could have counter fitted name plate	GOEIC	Visual inspection of motors, document validation and sample testing
Imports of motors within OEM	Motors could be not connected to mechanical element and will be sold separately	GOEIC	Ensure imported OEM includes a fully integrated motor through visual inspection
Domestically manufactured motors	Motors produced by local producers could not match MEPs or name plate requirements	ICA	Ensure name plate is established and possible test or witness test through random visits
Motors imported within production lines	Motors could be not fully integrated in equipment and is imported by a trader	GOEIC	Ensure production lines are imported by manufacturers and motors are integrated within equipment
Scrap	Importers who import scrap metal could have motors within such shipment as scrap which can be refurbished and sold	GOEIC	Checking if shipments of scrap metal include motors and prevent it from entering the market
2 nd hand local motor trading	In case a second hand motor is sold in the market or a motor that is refurbished it could be of lower efficiency than IE3	MoSIT	Check traders' shops and warehouses frequently and ensure each motor has the relevant documentation and name plate

2.3.2 Clarification note to elucidate the details and scope of the Decree #463/2020

As mentioned previously the provisions of the motors decree only apply to some, not all, motor types, but the distinctions of what is in scope and what is not is quite technical. It is essential for the integrity of the policy that authorities with responsibility to enforce the regulations and market players understand which motor types are within scope and which are not so this knowledge can be applied consistently across their enforcement implementation activities. For this reason, the following activities are essential:

- Developing and circulation of a memo explaining exactly what type of motors are in scope of each of the requirements (rating plate and MEPS). This has already been developed and included in ANNEX II.
- Organising of training for market surveillance authority staff (MoSIT, GOEIC, ICA and MoIST) on how to tell whether motors are in scope or not.
- Promote clarification note to end-users and suppliers

The decree specifies that rating plates displaying the IE class must already be affixed to motors within the scope of the EOS standard. This includes:

- 3-phase AC asynchronous motors (DC motors and synchronous AC motors are not in scope; nor are rotor-wound 3 phase motors)
- Motors with a rated capacity of 0.12kW to 1000 kW (smaller or larger motors are not in scope)
- Motors with 2, 4, 6, 8 poles
- Motors rated to operate under the S1 duty cycle
- Direct on-line types
- Rated Voltage of between 0.12 kW and 1000 kW and rated frequency of 50Hz (or 50/60 Hz).

The EOS standard is aligned with IEC/EN 60034-30-1: 2014 for which all technical constructions of electric motors are covered as long as they are rated for direct on-line operation and are:



- Single speed electric motors (single and three phase), 50 and 60 Hz
- No of Poles 2, 4, 6 or 8 poles
- Rated output P_N from 0.12 kW to 1000 kW
- Rated voltage U_N above 50 V up to 1 kV
- Motors, capable of continuous operation at their rated power with a temperature rise within the specified insulation temperature class
- Motors, marked with any ambient temperature within the range of -20 °C to +60 °C
- Motors, marked with an altitude up to 4000 m above sea level.

The following motors are excluded from IEC/EN 60034-30-1

- Single-speed motors with 10 or more poles or multi-speed motors
- Motors completely integrated into a machine (for example, pump, fan or compressor) that cannot be tested separately from the machine
- Brake motors, when the brake cannot be dismantled or separately fed.

Note, explosion motors are included, however, in practice it is difficult for such motors to attain the IE3 class as stated in the IEC standards.

If the motors are within scope of the above then they must already indicate their IE class on the rating plate. It is not enough for market surveillance authorities to understand what products are subject to the requirements and which are not. It is equally important to ensure that obligated market actors know what the requirements are and what their responsibilities are under the law. To support those the following actions are strongly recommended:

- Publish and circulate an official annex (ANNEX II) to the decree that shows what types of motors are in and out of scope with the rating plate and MEPS provisions respectively. This is the clarification note which is developed as a policy recommendation and discussed in the coming section.
- Ensure trade/industry associations are communicating the scope of the decree to:
 - motor suppliers
 - motor procurers/consultants
- Ensure that public sector authorities and bodies are communicating the scope of the decree to public sector entities that are likely to procure motors
- Ensure that market actors/public authorities know how to tell whether a product is in scope or not and understand the information that should be on the rating plate and what it signifies
- Informally signal to market actors that from a certain date on which various aspects of the decree will be actively enforced (or much more pro-actively enforced).

In addition, it is very important that the market actors who are placing motors on the Egyptian market are fully aware of the conformity assessment process that must be undertaken for their products and of the documentary evidence that is needed to demonstrate that the required conformity assessment process has been undertaken for their products.

Even if a motor is not obliged to indicate its IE class it may still be required to indicate its energy efficiency at full load according to the electricity law of 2015.

From March 2022 motors are not only obliged to indicate their IE class but eligible motors with a rated capacity of from 0.75 to 375kW will also have to attain at least the IE3 class i.e. IE3 or higher.

Note, one obvious consistency check is to confirm that the declared IE class is consistent with the declared efficiency (at 100% load) for the rated capacity of the motor. A simple spreadsheet tool could be developed to apply this and other consistency checks.

2.3.3 Fact sheets and Action Plan

Table 11: Effective market regulation policy fact sheet

Policy Fact Sheet	
Policy	<p>Effective market regulation frame through</p> <ul style="list-style-type: none"> Defining roles and responsibilities of each player Coordinating market actors' roles Define compliance and conformity procedures Effective control of market channels Proper communication with suppliers
Objective	Ensure compliance takes place in a streamlined and effective manner with minimal confusion
Impact	Build market trust in regulations and ensure efficient transition to higher EE motors takes place
Owner	MoTI which provides platform for its affiliates to coordinate market regulatory frame
Stakeholders	GOEIC, EOS, ICA, MoITS
Beneficiary	All market players
KPI	<ul style="list-style-type: none"> Percentage of motors investigated Percentage of complaint products
Success factors	<ul style="list-style-type: none"> Hierarchy of checks to save financial resources Effective communication of frame to end-users and suppliers
Risk and Mitigates	<p>Risk Cost of implementation escalates limiting sustainability</p> <p>Mitigate Mix punitive actions with awareness to end-users and positive incentives to compliant suppliers such as finance of their product or its promotion through the registration platform</p>

Table 12: Development of clarification note policy fact sheet

Policy Fact Sheet

Policy	Development of clarification note to explain the scope of decree #463/2020 by detailing which type of matters are addressed by MEPS and which are addressed by Nameplate articles
Objective	Ensure decree is well understood b
Impact	Facilitate compliance Allow suppliers to plan their business effectively Decrease negative reaction from the market due to misinformation
Owner	MoTI
Stakeholders	GOEIC, EOS, ICA
Beneficiary	All market players
KPI	Number of end-users understanding the decree
Success factors	Simple clarification note Add what is in scope and what is not in scope decree #463/2020
Risk and Mitigates	Risk Market not aware of clarification note Mitigate Promote the note to all market players

Action plan for market frame for GOEIC, EOS, and ICA (ANNEX VI)



Section 3. Summary and Implementation Roadmap

In this section, a reflection on the recommended policies collectively is presented. This demonstrates that the tools are collectively aiming to catalyze the market in a comprehensive manner.

- ✓ A roadmap of operational policy tools is presented.
- ✓ Interconnection between policies and interventions is summarized.
- ✓ Intended impact on the market elements is summarized

The implementation roadmap for all policies is shown in the table below for the coming year, with key interventions. The timeline is indicated for Q4 2021 and most of its relevant activities have already been concluded. Then activities of Q1/Q2 2022 and Q3/Q4 2022 are presented. Most activities are completed by Q3/Q4 2022. Numerous activities have been implemented during the development of the policy recommendations and interventions.

Table 13: Roadmap of key activities for each policy and intervention

	Q4 2021	Q1-Q2 – 2022	Q3-Q4 - 2022
Clarification note for decree 463/2020	-Consultations to develop the note	-Promote the content of the note to end-users, suppliers, manufacturers (In progress)	-Update note if needed to reflect any changes in the decree



	-Endorsement by stakeholders	-Stakeholders promote the note internally and to their beneficiaries	
Effective market regulation framework	<ul style="list-style-type: none"> -Define roles and responsibilities of key market regulatory agencies -GOEIC starts enforcing nameplate articles 	<ul style="list-style-type: none"> -Determine conformity requirements -GOEIC operates laboratories -ICA regulates market of locally manufactured products -MEPS enforcement through documentation validation and testing 	<ul style="list-style-type: none"> -Expand operations of laboratories -MoITS conduct random checks on traders shops for nameplate and document verification for MEPS
Motor registration platform	<ul style="list-style-type: none"> -Preliminary design of platform -contract entity to develop platform (in progress) 	<ul style="list-style-type: none"> -Pilot operation of the platform -Link platform with banking sector -Promote platform 	<ul style="list-style-type: none"> -Expand platform operation -Add new functions to platform -Increase number of motors registered
Mainstreaming motor finance in green finance facilities	-Raise awareness of suppliers and end-users on existing green finance facilities	<ul style="list-style-type: none"> -Connect green finance facilities with end-users and suppliers -Raise awareness of banks with green finance facilities on saving opportunities in EE motors and EMDS 	



	-Register high number of EE motor types in Green Finance Facilities pre-approved technologies		
Development of tailor-made EE motor financial product	-Get endorsement of banks to develop a financial product	-Develop financial product and train bank staff -Connect suppliers with specialized product	-Launch and promote financial product -Expand specialized credit line -Expand training for bank staff and credit officers
Educational and Knowledge Embeddedness		- Develop course content suitable for university programs based on UNIDO MSO toolkit with focus on developing problems with solution manuals and student projects - Create a call for application for interested universities - Select interested universities to receive support to implement courses in electrical and mechanical programs	- Provide training to selected universities (professors) on content
Knowledge and awareness raising	- prepare awareness raising material - Develop knowledge products	- Share awareness raising material and knowledge products with stakeholders - Expand capacity building and awareness raising workshops	- Stakeholders continue to share knowledge and awareness raising



	<p>- Conduct awareness raising and capacity building workshops</p>	<p>- Raise capacity of stakeholders to continue knowledge sharing and awareness raising</p>	
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The table below shows the interconnection between various recommendations and how they complement one another. Knowledge and awareness raising is the most relevant to all other policies as they support all of them. Finance policies are the ones which are supported the most by other policy tools. This high level of interconnection is a product of attempting to develop the market system as a whole

Table 14: Interconnection of operational policy tools

Cells have the impact of policy in first column on each policy in subsequent columns →	Clarification note for decree 463/2020	Effective market regulation framework	Motor registration platform	Mainstreaming motor finance in green finance facilities	Development of tailor-made EE motor financial product	Educational and Knowledge Embeddedness	Knowledge and awareness raising
Clarification note for decree 463/2020		Facilitates effective implementation of the regulatory frame		Encourages banks to deploy finance	Encourages banks to deploy finance		
Effective market regulation framework				Encourages banks to deploy finance	Encourages banks to deploy finance		
Motor registration platform				Provides banks with information to facilitate finance decisions	Provides banks with information to facilitate finance decisions		
Mainstreaming motor finance in green finance facilities							Becomes part of awareness raising
Development of tailor-made EE motor financial product							Becomes part of awareness raising




Educational and Knowledge Embeddedness				Encourage end-users to seek finance through knowledgeable graduates	Encourage end-users to seek finance through knowledgeable graduates		Enriches awareness and knowledge material
Knowledge and awareness raising	Promotes the decree	Facilitates compliance	Promotes platform	Encourage end-users to seek finance and assess feasibility Assist banks in decision making	Encourage end-users to seek finance and assess feasibility Assist banks in decision making	Enriches curricula	

Finally, the table below demonstrates the impact of the operational policy tools on the key market elements and their benefit to various stakeholders



Table 15: Operational policy tools impact on market players

Impact on each market stakeholder 	Suppliers, traders, and manufacturers	Consultants	End-users	Banking sector	GOEIC, EOS, ICA
Clarification note for decree 463/2020	Facilitates compliance and business planning	Facilitates advisory to end-user and specifying motors in tenders	Facilitates compliance and business planning	Increase confidence in providing finance to EE EMDS technology	Facilitates market regulation efforts
Effective market regulation framework	Facilitates compliance and business planning and ensure fair competition increasing investments in higher IE motors		Ensure fair competition and access to compliant products	Increase confidence in providing finance to EE EMDS technology	Facilitates market regulation efforts
Motor registration platform	Promote products of compliant firms	Facilitate choice of motor models	Ease investment decisions	Facilitates provisions of finance	
Mainstreaming motor finance in green finance facilities	Expand market size and encourages provision of EE EMDS		Encourage investments in EE EMDS	Opens up new finance markets	Facilitate market regulation by increasing demand on higher IE motors
Development of tailor-made EE motor financial product	Expand market size and encourages provision of EE EMDS		Encourage investments in EE EMDS	Opens up new finance markets	Facilitate market regulation by increasing demand on higher IE motors



Educational and Knowledge Embeddedness	Provide access to graduates who can promote higher value EE products	Provide access to graduates who can advise clients on EE investments	Provide access to graduates who can improve EE by guiding investments in EE EMDS		
Knowledge and awareness raising	Allow improved promotion of EE EMDS and hence expand revenues	Improve capacity to advise clients on EE improvement through EE EMDS	Ensure saving opportunities are captured and benefits from green finance increase	Facilitate financing EE EMDS	Assist in effective implementation of regulatory roles

Five key functions: control imports, control locally produced products, market surveillance, product certification and registration, managing complaints, awareness raising

Involved organizations: GOEIC, MoSIT, ICA, EOS, IMC

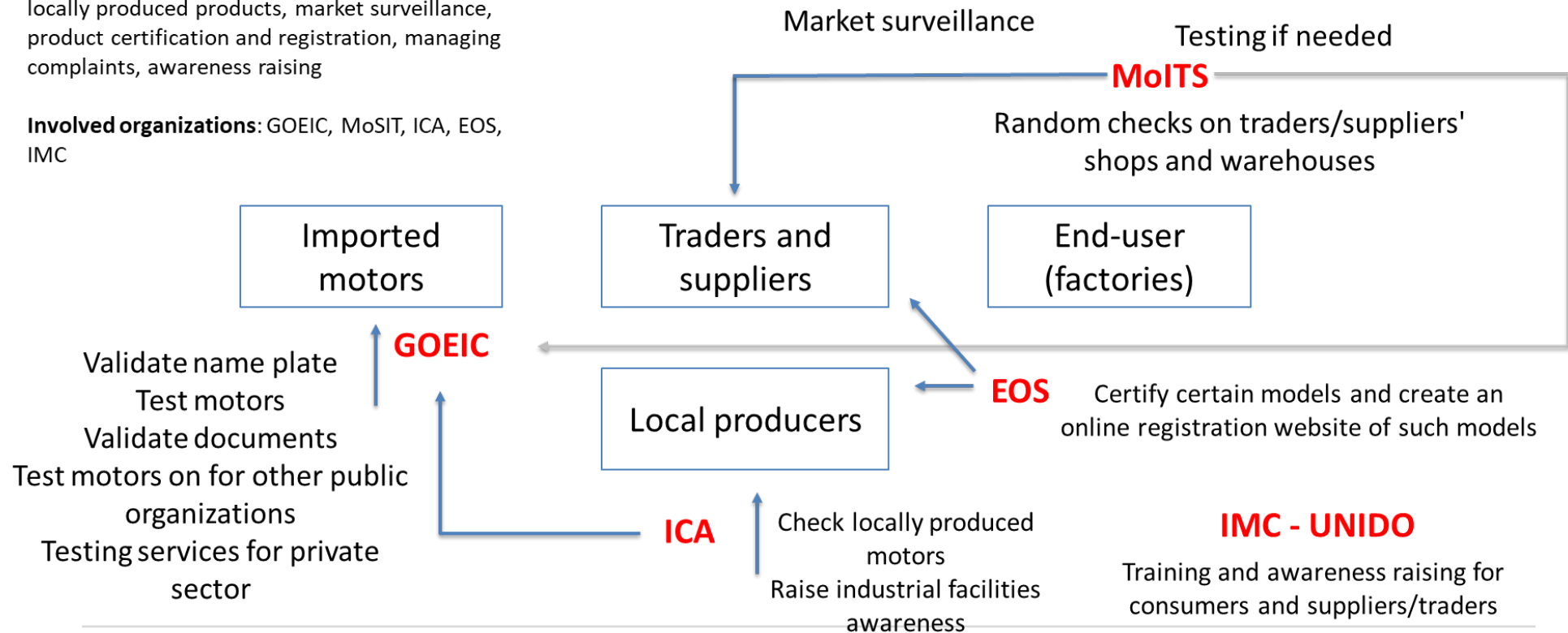




Figure Market regulation frame

Functions	Entity	Objectives
Control imports	GOEIC	Ensure products entering market are compliant
Control locally produced motors	ICA	Ensure locally produced motors and compliant
Market Surveillance	MoSIT	Conduct random checks on traders and suppliers to send signal to market and catch any motors passing through ports
Certifying products/models	EOS	Certify motor models traded in the market (both international and local)
Awareness raising	IMC	Raise awareness of end-user and suppliers on decree and EE motors in general – EOS on certified products



Table 17: Summary of roles and responsibilities of key entities in policy

Entity	Roles and Responsibility
MoTI	– Review of decree and issuance of any necessary clarifications or updates
GOEIC	– Ensure imported products are compliant (name plate and MEPs) – Avail their laboratories to serve public sector – Provide service to private sector for all purposes
ICA	– Ensure locally produced motors are compliant – Raise awareness on decree and motor efficiency for industrial facilities
EOS	– Certify Local products – Create a register of certified products – Avail and update standards
IMC	– Communicate to the market details of decree and relevant regulations – Awareness regarding saving – Avail handheld measurement devices
MoSIT	– Ensure products traded within the country are compliant (name plate and MEPs)
UNIDO For IMEP lifetime	– Support communication and awareness raising – Facilitate coordination among various players – Technical assistance to various players



ANNEX I: Decree #463/2020

(Attached the Decree #463/2020as Supplementary document_1)

ANNEX II: Clarification note

Clarification note to explain the scope of the decree #463 of year 2020 to producers, importers and end-users

According to the standards indicated in the decree #463 for the year 2020 which are

- Egyptian standards 8268-2019/1 which is equivalent to IEC 60034-1:2017 which explain nameplate structure
- Egyptian standards 2623-2017/3 which is equivalent to the IEC 60034-30:2014 which explain the IE standards

:The scope of the nameplate and MEPS is as follows

	MEPS	Nameplate
Motor type	Squirrel cage induction motor	AC motors
Phases	3-Phase	Single and 3 phase
Capacity	0.75 kW – 375 kW	0.12 kW – 1000 kW
Voltage	50 V – 1000 V	50 V – 1000 V
Frequency	50/60 Hz	50/60 Hz
Speed	Single speed	Single speed
Pole number	2 – 4 – 6 – 8	2 – 4 – 6 – 8
Duty cycle	S1	S1
Start	Direct online start	Direct online start
Motor coupling	Standalone	Standalone

Out of Scope

	MEPS	Nameplate
Motor type	Any other motors than AC	
Phases	Multiple or variable speed	
Poles	More than 8	
Duty cycle	S2, S3, S4	
Start	Other than direct online start	
Motor coupling	Motors completely integrated in equipment such as pumps, compressors, production machinery	
Temperature	Outside the range of -20 C to 60 C	
Elevation	Above 4000 m	
Others	Submersible motors, brake motors, smoke motors at above 400 C, motors connected with variable speed drive	



ANNEX III: List of Engaged Entities and Interviews Questions

List of Engaged Entities

Name of Organization	Type of engagement	Attendee (position)
End-users (industrial facilities)		
Oriental weavers	Surveys	Rabab Manaa (Group energy and sustainability manager)
Anuqir fertilizers	Surveys	Ashraf Sabry
MAC Carpet	Surveys	Mohamed NOUH (Lead Chemist)
Chipsy	Surveys	Ramy Elmasry (Sustainability manager)
Al-Masria for Paper Industries	Surveys	
Alaraby Group	Surveys	Kareem Hassan (Quality Senior Manager)
Egyptian Plastic & Electrical Industries	Surveys	Ahmed El Bosily
Ghabour Auto	Surveys	Jan Hanna (Maintenance engineer)
Swiss Egyptian company for oral care products (SESIC)	Surveys	Moneim Sultan (EHS)



Fresh	Surveys	Eng. Bahaa Dimitry (VP for Development & Training)
ABCO Group	Surveys	Omar El Sharkawy (Sustainability Manager)
Mars	Surveys	
El-Batal	Surveys	Samy Kamal (Manager)
El-Ahram for Plastic	Surveys	Hany Halim (CEO)
Sara Plast	Surveys	Adel Abd El-Basset
Al Bader Import and Export Supplies	Surveys	Mahmoud Badr (CEO)
Beshay Steel	Surveys	Girgis Emanuel (Electric Engineer)
Elwadi foods	Surveys	Mohamed Lasheen (CEO)
Smart pack	Surveys	Ahmed Fekry (R&D)
Promoteon for Tyres	Surveys	Hassan Elsaied (Technical team manager)
Sakr for food industries	Surveys	Ayman Rizk (Quality Assurance Engineer)
Arab French company for dairy products	Surveys	Eman Ossman



Arozan for import and export of wood	Surveys	Mohamed El Boghdady (Factory Manager)
Arabian Cement	Surveys	Mohamed Medhat (Maintenance Manager)
Abu Qir Fertilizers	Surveys	Mohamed Zoair (Maintenance manager)
Royal Ceramica	Surveys	Samir Abdelsalam (Plant manager)
Ideal standard	Surveys	Mohamed Ehab (Quality/Enegy manager)
Techno Pyramids	Surveys	Ahmed Naguib (Business Development Manager)
EDITA	Surveys	Dina Moheb (Continuous Improvement)
IEC	Surveys	Nour Shobieta (CEO)
Fish Pellets	Surveys	Ahmed Abdesalam (CEO)
Alarabia	Surveys	Ahmed Sultan (Manager)
Tiger	Surveys	Malak Naiem (Manager)
Tadweer	Surveys	Mohamed Yehia



		(CEO)
Bioenergy	Surveys	Mahmoud Galal (CEO)
IRSC	Surveys	Andrew Daniel (CEO)
Toshiba Alaraby	Working groups and surveys	Kareem Hasan (Quality Senior Manager) Abdelrahman Alaraby (Motor Development Manager) Gamil Allam (Quality Sector Director)
Suppliers and traders		
ACG	Working groups and surveys	Sameh Attia
ABB	Working groups and surveys	Yasser Saleh – Channel Manager Amr Abdelkhalik (Head of Motors MENA and North Africa)
Siemens	Surveys	Mohamed Ali – Motor Manager
Nassera	Surveys	Isama Ishak (sales manager)
Al-Marwa	Surveys	Amr Fathi (sales manager)
Techno-Pyramid	Surveys	Ahmed Naguib (Head of Business Development)
Financial institutions		
Cairo Bank	Surveys	Tawfik Elsemary Head of Micro Finance
NBE	Surveys	Hussein Ghanam (Business Development Manager)



Alex Bank	Surveys	Aly Khattab (Product Manager)
QNB	Surveys	Ahmed Wafik (Product manager)
CIB	Surveys	Kamell Sallam (Head of sustainable finance)
EBRD GEF program	Working groups and surveys	Mohamed Abdelhamid (Technical Assistance Engineer) Ashraf Zeiton (Project Manager)
MSMEDA	Working groups and surveys	Amr Elabbasy (Investment Deputy Manager)
Public institutions		
FEI-ECO	Working groups	Wafaa Ismail (Energy Sector Head)
NREA	Working groups	Essam Abel Fattah (Renewable Energy Manager)
Electronic Research Institute	Working groups	Sherif Abdelkader (Chairman)
EGAC	Working groups	Ayman Fathy Farag (Accreditation Manager)
EOS	Working groups and surveys	Monier Lamie (Portsaid Zone Manager)



		Gamal Mourad (Laboratory Analysis)
IDA	Working groups	Mohamed Negm (Chairman Associate) Noha Amin (Project Management Director)
IFC	Working Groups	Dr. Hany Elghazali (Consultant)

In addition to the above, IMC and ENCPC team representative participated in working groups and discussions related to implementation as implementation partners

Interview Questions

Do you consider EE practices in your facility?

Do you consider replacement of old motors by EE ones?

Do you consider MSO and EMDS practices?

Are you aware of the access to finance programs?

If Yes, Do you use them?

If No, What are the barriers of not using them?



Do you apply energy audit and acquire ESCO services? If No, why?

Do your procurement policies consider the lifecycle cost of inefficient motors?

Can you briefly describe the level of decision making and institutional structure?

Are you aware of the decree 463/2020 regarding EE motors?

Are you aware of the benefits to the private sector and the economy?

What are the disadvantages of this decree?

Do you think the 6 months period to add nameplates of motors is applicable?

Do you think the 18 months period to shift to IE3 motors is applicable?

What do you think key success factors to implement this decree?

What do you think key barriers against the implementation of the decree?

What policies could mitigate barriers to EE EMDS and promote the decree?



ANNEX IV: List of Green Finance Facilities

Shown in the table below green finance facilities mapped based on the following items:

- **Program scope:** it indicates the focus of the finance facility (whether it is focused on a certain technology)
- **Targeted sector:** it indicates which sector (of consumers) the program finances
- **Source of finance:** it indicates who is the provider of the credit line
- **Structure of fund:** it describes the type of finance provided (loans, grants, grants + loans, etc.)
- **Incentive:** it indicates if the finance program includes an incentive
- **Participating banks:** it indicates through which banks the finance is channelled
- **Technical assistance:** it indicates the type of technical assistance associated with the program
- **Fund Size:** it indicates the total funds allocated in USD



Table 18: Summary of roles and responsibilities of key entities in policy

Program	Program Scope	Targeted Sector	Source of finance	Structure of fund	Incentives	Participating banks	Technical assistance	Fund Size
EBRD – GEF II	Resource efficiency	Commercial, Industrial, agriculture	EBRD – AFD	A loan component is provided at market rate, in addition to 10% grant paid as a rebate to the client after the system is installed and operates well	10% grant (could be 15% depending on technology)	QNB, Arab African Bank, Alex Bank, National Bank of Kuwait	Assistance to bank	175 million dollars
Eco-FEI – EU	Renewable energy, energy efficiency and environmental compliance, cleaner production	Industrial	EU	Low interest loans are provided for a maximum of 10 Million EGP	Subsidized interest (3.5%)	NBE	Assistance to client	30 million dollars
EBRD – VCFF	Resource efficiency and technology modernization	Industrial and commercial sector (SMEs by EU definition)	EBRD	Loan at market rate with a grant component)	Likely to be a grant of 10%	QNB, others to be included	Assistance to bank	82 million dollar
EBRD – NBE	Renewable energy and energy efficiency	SMEs in general by EU definition	EBRD	Loan at market rate	None	NBE	Assistance to bank	117 Million dollar
EPAP III	Environmental and pollution control	Industrial	KfW	Loan at reduced rate	Lower interest	CIB, NBE, QNB	Assistance to bank	140 Million dollar
MSMEDA	World Bank Renewable and energy efficiency	Industrial, agriculture and commercial	WB	Loan at reduced rate	Lower interest	TBD	None	50 Million Dollars



ANNEX V International policies

#	Policy Name	Description (2 to 3 lines)	Country	Status (active, ended)	Date of Issuance	Date of conclusion	Technology targeted (Motor, Drive, Controls, Coupling, Load as compressor, pump, conveyor)	Sectors (All sectors, industrial sectors)	Value chain (manufacturer, rewinder, distributor/supplier, end-user)
1	MEPS for Electric motor: TCVN 7540:2013 (applied by 24/2018/QD-TTg)	Import, production and business are not permitted for equipment with energy efficiency levels not meeting the minimum energy efficiency levels in national standards (TCVN) For motors from 0.75 kW to 150 kW	Viet Nam	Active	2018		Motor	All	Distributor/Supplier
2	Motor MEPS	The new minimum standard for electric motors is Level IE3.	Brazil	Active	2019		Motor	All	Distributor/Supplier
3	MEPS for Motors (IE3) - Regulated Motors	Covers the following: All single speed, 3-phase 50 Hz or 50/60 Hz induction motors that are rated on the basis of continuous duty operation, and with 1) 2, 4 or 6-poles 2) Rated power between 0.75 kW and 375	Singapore	Active	2018		Motor	All	Distributor/Supplier



		kW; and 3) Rated voltage of up to 1,000V.							
4	Regulated Air-Conditioners	linking cooling capacity of the AC to the required minimum COP	Singapore	Active			Air conditioner	All	end user
5	GB 35971-2018: MEPS for hermetic motor-compress or in room AC	This Standard specifies the minimum allowable values of the energy efficiency, energy efficiency grades, test methods and inspection rules of hermetic motor-compressor in room air conditioners	China	Active	2018		Air conditioner	All	end user
6	Improving Energy Efficiency in Manufacturing Sector	TEVMOT- Promoting Energy-Efficient Motors in SMEs in Turkey by encouraging investments in EE in industry through transformation of electric motors used in small and medium-sized enterprises, by replacing the existing inefficient motors, new electric motors and machineries equipped with these motors into EE ones. It provides loans, leasing, and supports ESCO	Turkey	Active	2017		All	industrial sector	end user



7	Supreme Decree No 009-2017-EM: adoption of technical regulation on labelling of electrical equipment	The technical regulation on the energy efficiency labelling of energy using equipment, covering domestic refrigeration appliances, three-phase induction motors, inductors with squirrel-cage rotors, household washing machines, household tumble driers, air conditioners	Peru	Active	2017		motors, households appliances	All	end user
8	NOM-016-ENE R-2016: Energy efficiency of AC motors, three-phase, induction, squirrel cage type, nominal power of 0.746 kW to 373 kW. Limits, testing method and marking	MEPS of 3-phase AC IM in powers of 0.746 kW up to 373 kW with nominal voltage of up to 600 V, of a single rotation frequency, horizontal or vertical mounting position, air cooled and continuous regime.	Mexico	Active	2017		motors	industrial sector	Distributor/Supplier
9	Energy Efficiency Fund	The fund includes 23 policy measures and provides primarily funding for energy efficiency measures in industry (horizontal technologies, waste heat utilization, efficient production processes, energy management systems for SMEs and 4th generation heat grids) and smaller measures (cross-sectoral).	Germany	Active - Inforce	2011		General	Industrial	Manufacturer, End-user



10	Best Practices Program	The Best Practices Program works with industry to identify plant-wide opportunities for energy savings and process efficiency. Through the implementation of new technologies and systems improvements, companies across the United States are achieving immediate savings results. The programme provides: - Informational resources and tools - Technical assistance - Demonstrated emerging technologies. Coverage includes industrial systems (such as compressed air, motors, process heating, and steam systems) as well as plant-wide assessments where plants are selected through a competitive solicitation process, and these plants agree to a minimum 50% cost-share for implementing the assessment. A Best Practices team conducts an on-site analysis of total energy use.	United states	Active – In-force	1999		such as compressed air, motors, process heating, and steam systems		End-user, Manufacturer
11	Energy Efficient Three Phase squirrel cage Induction Motors		India	Active - In-force	2016		Motor	Market	Distributor/Supplier



12	Law no. 139 on Energy Efficiency	This Law implements Directive 2012/27/EU of the European Parliament and of the Council on energy efficiency and Directive 2009/125/EC of the European Parliament and of the Council establishing a framework for the setting of eco-design requirements for energy-related products. The purpose of this Law shall be to create the legal framework necessary to promote and improve energy efficiency through the implementation of energy efficiency action plans, the development of the energy services market.	Moldova	Active - Inforce	2018		General	Market	ESCOs
13	Mandatory Energy Efficiency Standard for AC Motors (three-phase cage-induction motors) - Top Runner Program	The Top Runner Program is a mandatory standard programme based on the Energy Conservation Act targeting manufacturers and importers of energy-consuming products. Energy efficiency of AC motors was recognized as the important measure to facilitate energy efficiency in industrial sector as these motors are widely used for different purposes including pumps, ventilations and compressors. Under this circumstance, there was an amendment to the Act to newly target AC motors in Oct. 2013.	Japan	Active - Inforce	2015		Motor	Market	Manufacturer, Distributor/Supplier
19	Saudi Arabia Minimum Energy Performance Standards for Electric Motors	Efficiency standards for single-speed, three-phase cage induction motors at the IE3 efficiency level.	Saudi Arabia	Active	2018		motors	industrial sector	distributor/supplier



20	Energy conservation (prescribed regulated goods) order 2017	Specifies the goods that fall under the scope of Part III (Energy conservation measures for domestic and industry sectors).	Singapore	Active	2019		All	industrial sector	distributor/supplier
21	Minimum Energy Performance Standards for Electric Motors	Single-phase induction motors and three-phase induction motors have been incorporated into the list of items for inspection by the Bureau of Standards, Metrology and Inspection (BSMI).	China	Active	2017		motors	industrial sector	end user
22	National Energy Efficiency Action Plan 2016-2025	The National Energy Efficiency Action Plan aims to achieve the following: 1. 52,233 GWh of energy savings (8.0%) 2. 37,702 ktCO2 equivalent reduction	Malaysia	Active	2016		all	all	end user
23	National Programme for Sustainable Energy Use 2014-2018	Sets the strategy and actions for energy efficiency at a national level for all sectors. The first PRONASE covered the period 2009-12 and indicated that the greatest potential energy savings could be found in lighting, appliances and industrial motors.	Mexico	Active	2014		all	all	end user



24	Energy Audit Guide for Motor Driven Systems: Recommended Steps and Tools	Guidelines for auditing motor driven systems	Austria	Active	2018		Load	All	end user
25	The international standard ISO 50001:2011, Energy Management Systems (EnMS)	Specifies requirements for establishing, implementing, maintaining and improving an energy management system, whose purpose is to enable an organization to follow a systematic approach in achieving continual improvement of energy performance, including energy efficiency, energy use and consumption	Cross Country	Active	2011		Load	Industrial	Manufacturer / end user
26	China pilot programme China Motor System Energy Conservation Program	The program demonstrated an effective strategy of technology transfer in which Chinese motor system experts and factory enterprise personnel are trained by international experts and enabled to provide training and assessment services to factory enterprises in China.	China				All	Industrial	Manufacturer / end user
27	IEC 61800-9-1 Losses and efficiency classes of MDU	Adjustable speed electrical power drive systems. Part 9-1: Energy efficiency of power drive systems, motor starters, power electronics and their driven applications – General requirements for setting energy efficiency standards for power driven equipment using the Extended Product Approach (EPA) and semi analytic model (SAM).	Cross Country						



28	IEC 61800-9-2 test methods and efficiency classes for converters and motors with converters	Adjustable speed electrical power drive systems. Part 9-2: Ecodesign for power drive systems, motor starters, power electronics & their driven applications – Energy efficiency indicators for power drive systems and motor starters.	Cross Country						
29	IEC 60034-30-1 Rotating electrical machines - Part 30-1: Efficiency classes of line operated AC motors (IE code)	Specifies efficiency classes for single-speed electric motors that are rated according to IEC 60034-1 or IEC 60079-0, for operation on a sinusoidal voltage supply. This standard establishes a set of limit efficiency values based on frequency, number of poles and motor power	Cross Country		2014				
30	IEC TS 60034-30-2	Efficiency classes for motors driven by converters The classification only covers machines designed for operation with sinusoidal fundamental current that are not designed to be operated direct on-line (grid), for example permanent magnet synchronous machines with and without additional reluctance torque, sinusoidal reluctance synchronous machines and synchronous machines with DC field windings	Cross Country		2016				



31	IEC 60034-31	TS	Rotating electrical machines - Part 31: Selection of energy-efficient motors including variable speed applications - Application guidelines. It provides a guideline of technical and economical aspects for the application of energy-efficient electric AC motors. It applies to motor manufacturers, OEMs (original equipment manufacturers), end users, regulators, legislators and other interested parties	Cross Country		2021				



ANNEX VI: Action plans

A) Egyptian Organization for Standardization and Quality “EOS” Action Plan for development of Motor registration platform

	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
Develop motor certification procedure														
Determine list of documents to be submitted to certify motors	Yellow	Yellow												
Develop application steps		Yellow												
Determine fees for certification		Yellow	Yellow											
Develop list of certified models		Yellow	Yellow											
Develop online platform for motors registration	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange						
Contract web developer	Yellow	Yellow	Yellow											
Approve initial concept of the web platform			Yellow	Yellow										
Approve wireframes for webplatform template				Yellow	Yellow									
Provide feedback on trial version of the platform				Yellow	Yellow									
Provide details for epayment gateway					Yellow	Yellow								
Provide feedback on final version						Yellow	Yellow							
Receive training of platform operations							Yellow	Yellow						
Approve final version of platform							Yellow	Yellow						
Launch platform								Orange	Orange	Orange	Orange	Orange	Orange	Orange
Conduct workshop to launch platform								Yellow	Yellow					
Explain platform to banks								Yellow	Yellow					
Promote platform to suppliers and industry								Yellow	Yellow	Yellow	Yellow	Yellow		
Start registration process of models								Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Update standards if needed (on going)														



B) General Organization for Export & Import Control “GOEIC” Action Plan for Market Regulation according to Decree #463/2020

	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
Prepare staff and details of implementation														
List all potential types of non-compliance and determine enforcement procedures and consequences														
Internally clarify the scope of the decree requirements														
Define documentation to be submitted by suppliers														
Clarify conformity assessment acceptance and laboratory criteria														
Train staff on visual inspection of rating plates														
Train staff on documentation assessment														
Clarify loopholes, sources of fraud and procedure to address them														
Define loopholes and clarify procedures to address potential loopholes														
Laboratory														
Set-up and accredit the testing labs														
Cross check laboratories and with third party whenever possible (internally –with other laboratories – or trusted products) (at launch and occasionally)														
Train staff on testing (as needed)														
Expand labs if necessary (on-going)														
Initiate market control														
Communicate/notify the market on enforcement timeline and all details (workshop + brochures + online)														
Initiate visual inspection														
Initiate document inspection														
Initiate sample testing														
Avail laboratories for others to test														
Support other partners														
Sampling approach for ICA														
How to use laboratories														



C) Industrial Control Authority “ICA” Action Plan for Market Regulation according to Decree #463/2020

	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
Internal team training														
Train internal team of basics of electric motors														
Train internal team on savings in energy efficient motors														
Training internal team on visual inspection of name plate														
Training internal team on sampling of local motors & witness testing														
Awareness raising														
Raise awareness on decree and savings in EE motors in pilot industrial zone														
Expand awareness raising														
Local producers														
Meet local factory to agree on suitable testing approach														
Determine investigation frequency for testing or witness testing														
Check name plate														
Conduct witness test or sampling for testing in GOEIC laboratories														



ANNEX VII: Working group meetings

Working group meeting 2: The meeting was developed in cooperation with “Industrial modernization Center” and the PMU. The attendees are from the key stakeholders of the EE motor sector in Egypt. The Objective of the meeting is to present an introduction to legislative policies framework, Baseline assessment of EE motors market in Egypt and Introduction of the proposed policies and supporting measures. A survey developed during the meeting for the selection for the of the recommended policies. **The conclusion of the meeting** is the Top recommended policies, that have high impact and are highly feasible to implement, and need to be developed as the soonest according to the developed survey in the meeting are “Develop the explanatory memorandum”, “Awareness of the decree as well as of the IEE practices, especially those related to EE motors, “Green financing funds and programs” and “Development of market monitoring and legislative policies framework, as well as clear compliance procedures for manufacturers and suppliers” (Attached the Meeting minutes of the 2nd working group meeting as Supplementary document_2)

Working group meeting 3: The meeting was developed in cooperation with “Industrial modernization Center” and the PMU. The attendees are from the key stakeholders of the EE motor sector in Egypt. The Objective of the meeting is Present “the technical memorandum of the decree 463/2020” “Presentation on Decree implementation action plan and conformity plan” and “Presenting the awareness plan for factories, discussing their coordination and other steps (Policies) to motivate the local market”. **The conclusion of the meeting** is the participants approved the presented tools and guidelines of the policies that were selected in the 2nd working group meeting (Attached the Meeting minutes of the 3rd working group meeting as Supplementary document_3)