

STEP Success Story: Creating a Market for Energy Efficient Motors in Egypt

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Key Milestones

- On September 23, 2020, the Egyptian Ministry of Trade and Industry (MoTI) issued Ministerial Decree 463/2020 to enforce the labelling of motors, mandating higher energy efficiency standards for select electric motors.
- The decree is the outcome of the Smart Technology and Energy Efficient Production Program (STEP), an engagement with MoTI aimed at reducing industrial energy consumption by encouraging the adoption of energy efficient motors and promoting the growth of local energy efficient manufacturing in Egypt.

Key Impacts Achieved:

\$150M+

created in private
sector savings

1.1M+ metric tonnes

saved in greenhouse
gas emissions

2100+ GWh

of energy savings
generated

\$70M+

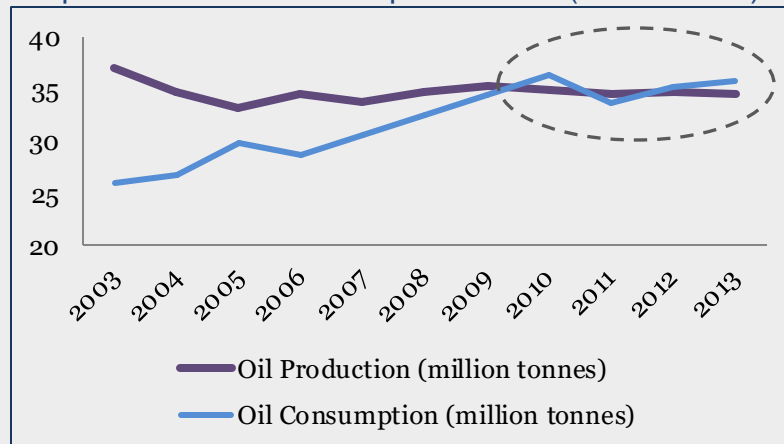
resulted private-sector led
investments and mobilization of
cross-border capital to create energy
efficient technology manufacturing



Unpacking the Problems that Sparked the Creation of STEP?

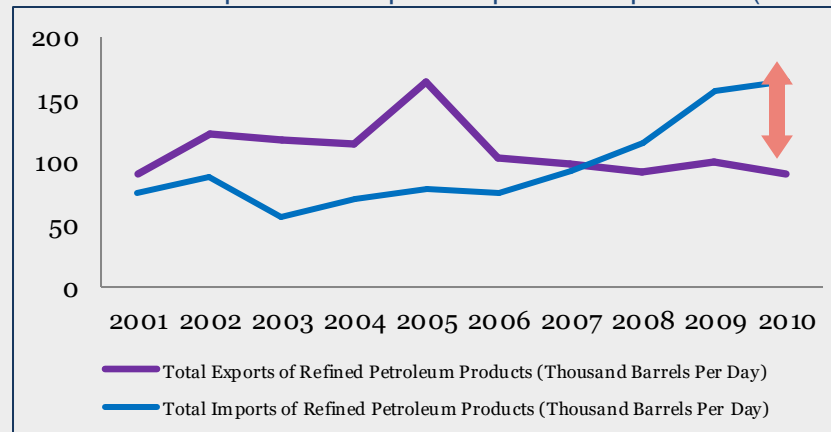
- **Energy crisis**, including rapid fuel demand combined with falling production levels.
- **Pressure to maintain electricity production** to keep up with consumption.
- **Subsidized energy leading to distortions** in markets and private sector activity.
- **Removal of subsidies and rising energy prices** impacting the private sector's competitiveness, given that industry's cost structures and production systems were built based on access to subsidized energy.

Oil production and consumption trends (2003 - 2013)



Source: Data extracted from BP Statistical Review of World Energy, June 2014

Trend in total exports and imports of petroleum products (2001-2010)



Source: Data extracted from BP Statistical Review of World Energy, June 2014

While these data capture pre-2014 consumption and production trends, the challenge continues today

UNECO YC SINGLE PHASE ELECTRIC MOTOR

TYPE: YC100L-2

220	V	50	Hz	16.5A
2200	W	3.0	HP	2900 r/min
INS.CL	B	IP44	NO.	

MADE IN CHINA

KSB Aktiengesellschaft CE

NOTES ~ 4185 30F V15 N° A5017684

P 55 / EC34-5 Hz 50 I.C.I. F/B S1

ID.NR. - 01078461

S - N6

KW	Δ V Δ	Δ A Δ	cos φ	RPM
18.5	400	35	0.85	2920

PEM-EI Amir SINGLE PHASE ELECTRIC MOTOR

TYPE YC100L-4

2HP	1.5KW	9.7	A
220	V	1420	r/min
50	Hz	INS.CL	B
IP 44		DATE	2011
NO.			KG

MADE IN CHINA



Winding

Electric Motor

TYPE 100L1 - 4

3	HP	2.2	kW	S1
8.7/5	A	1430	RPM	

STANDARD JB/T10391-2002 NO. 1401 023

MADE IN CHINA



SHAKTI

EFF 2

TYPE	SMO 132	SR NO.	2050454702
23-100	KW/HP	30A) MAX.AMB 40°C	INS. F CONN. Y
Hz	50	ENCL	IP55 EFF(F.L.) (90.9 %)
VOLT	230/415	Hz	60 DUTY S1
AMP	15.2	VOLT	
RPM	1430	AMP	
COSφ	0.85	RPM	
BRO D E	730622	COSφ	0.85 0.85 0.85 0.85
YEAR	2014	BRO N D E	620622 90 10 10 90 10 10
MADE IN INDIA		Mfg by	Shakti Pumps (I) Ltd.

UNECO YC SINGLE PHASE ELECTRIC MOTOR

TYPE: YC90L-4

220	V	50	Hz	10.4A
1100	W	1.5	HP	1420 r/min
INS.CL	B	IP44	NO.	

MADE IN CHINA

Mohamed AHMED DAOUD Co.



MADICO

TYPE	ADM400L3-4	NO.	12528 10/09
HP	855	Δ/Y V	380/660
R.P.	M1490	AMP.	1120/647
INS	CLS.F	IP 55	HZ 50

MADE IN A.R.E

FIRST DC MOTORS

TYPE		DC-200L2-2					
50	HP	37	kW	180	V	67	A
50Hz	INS.CL.	F	CONN.	Δ/Y	IP55		
	Date	09/2014	No.				



SINGLE PHASE MOTOR ONE SPEED

TYPE YC100L-2					
3	HP	2.2	kW	220	V
IP 44		S1		2900	r/min
INS.CL B		16.5	A	50	Hz
kg		DATE 2013.1		NO. 130275	

MADE IN CHINA



3 - PHASE INDUCTION MOTOR

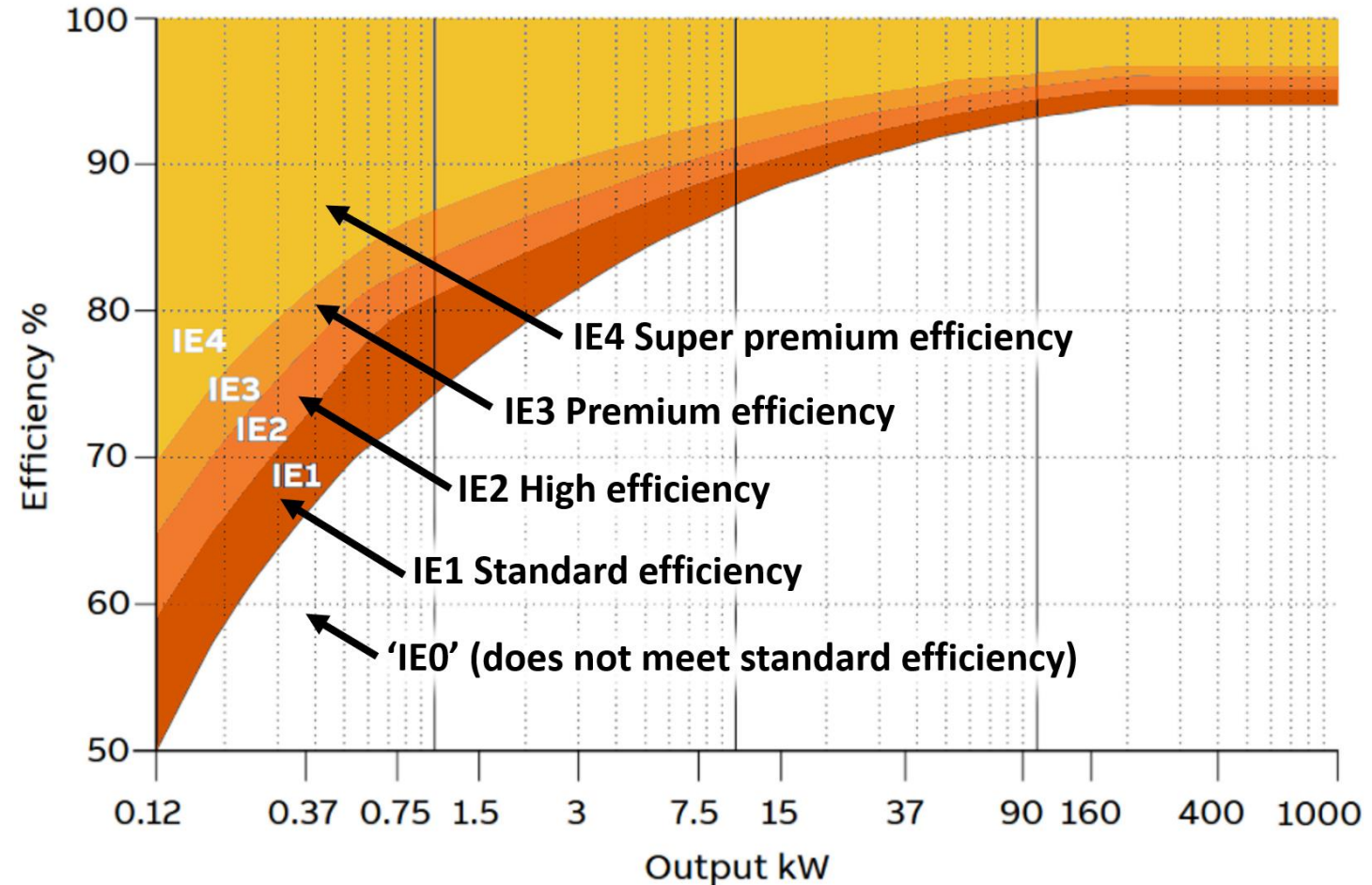
YONGHENG		TYPE Y200L - 4		56.8/32.8	A
30	kW	40	HP	380 / 660	V
50	Hz	1470	r/min		
CONN. Δ / Y		INS.CL B		IP 44	
STANDARD JB/T10391-2008		NO.			

THREE PHASE INDUCTION MOTOR

kW/HP	: 7.5/10.0	S.F	: 1.10	TYPE	: 3ND132M4P 10
VOLTS	: 415	~ 50 Hz	PHASE	: 3	RPM : 1430
AMP.	: 15.4	I _{max}	: 17	INSUL. CLASS	: F
EFF.	: 87%	P.F.		AMB. TEMP.	: 40 °C
CONNECTION	: Δ			CONNECTION	: Δ

The Egyptian Motor Supply Market

- The majority of motors had no efficiency marking and/or were rewound and of significantly lower efficiency than class IE1.
- At least half of the motors were over 10 years old or far over the lifetime of the motor according to its size. Almost all of these motors (96 percent) were rewound – (rewinding further reduces efficiency).
- 70 percent of the motors surveyed were small (less than 10 HP (7.5 kW));
- 95 percent of motors were imported.



STEP Program Design: Objective and Components

Objective:

To support access to energy efficient motors through policies that encourage their use and enabling investment and manufacturing of relevant technologies.

I. Standards & Labelling (S&L) Program for Industrial Motors

To develop the regulatory framework and tools needed to strengthen and accelerate programs supporting energy efficiency and to improve the overall feasibility and attractiveness of industry specific energy efficiency solutions.

II. Clean Technology Manufacturing

To support the development of a local energy efficient motor market that can serve the developing demand of energy efficient motors as a result of adopting motor standards and labelling.

The program was implemented in partnership with the Egyptian Ministry of Trade and Industry and its affiliates, including the Egyptian National Cleaner Production Center (ENCPC), the General Organization for Export and Import Control (GOEIC), the Egyptian Organization for Standardization and Quality (EOS), and the Industrial Control Authority (ICA).

Ingredients for STEP's Successful Roll-Out

Solid analytical underpinnings to support program design and implementation

- 14 analytical and technical reports were developed to build the case for the potential for energy savings, increased industry competitiveness, and greater resilience.

Dialogue: stakeholder ownership and consensus-building

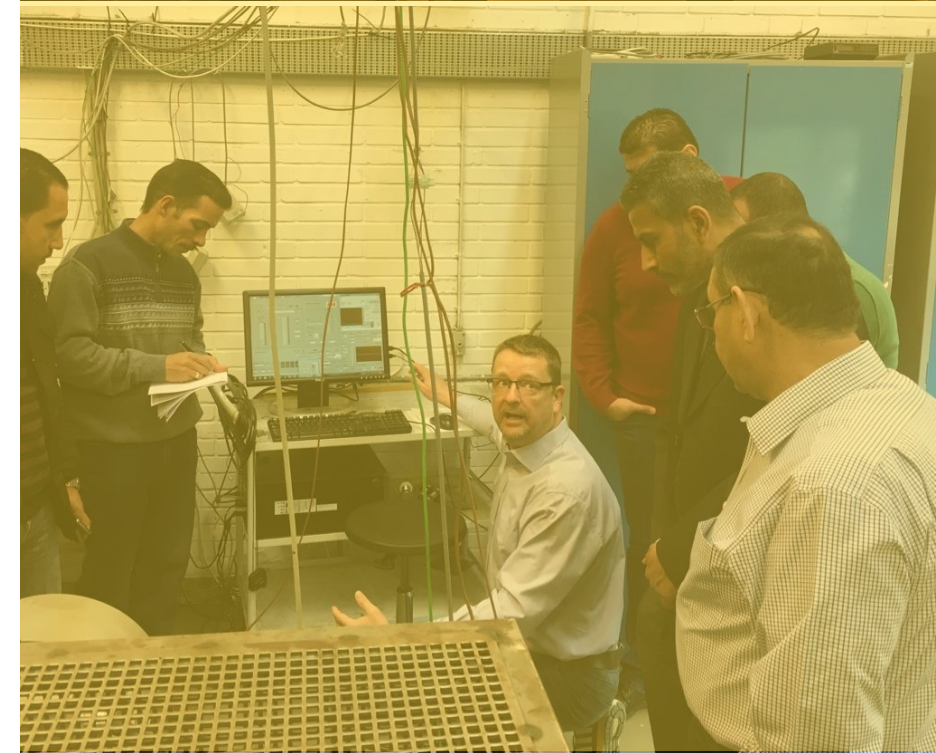
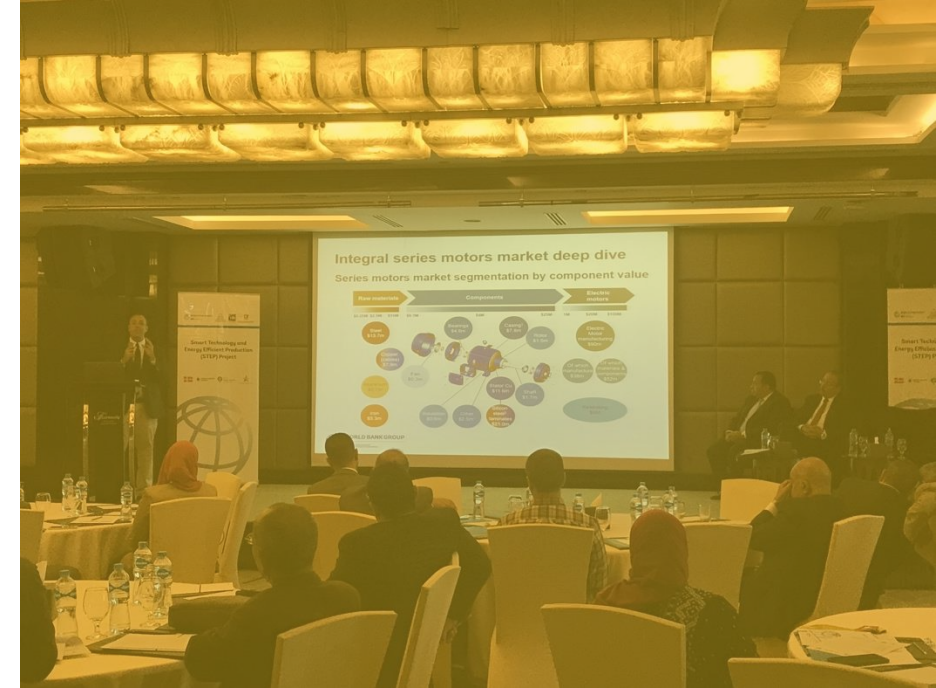
- More than 40 stakeholder consultations and workshops with more than 950 industry stakeholders from the public and private sectors were held.



Ingredients for STEP's successful roll-out

Developing and publishing decree, and preparation for market checks and enforcement:

- STEP played a key role in engaging with relevant private and public stakeholders to build consensus around the decree text, which was drafted in line with best practice.
- IFC facilitated discussions between MoTI and ABB International to procure and set up a testing lab at GOEIC in line with the technical recommendations provided by IFC, and which was inaugurated by H.E. the Minister of Trade and Industry in September 2022.
- Three other labs were procured in 2021 by the GoE and are now operational to check the minimum performance standard of motors as mandated by the decree's second provision.



Ingredients for STEP's successful roll-out

Leveraging global expertise for project design, implementation, and decree formulation

- Egyptian stakeholders traveled to Korea in 2014, 2015, and 2018 and completed a study tour to the Danish Technological Institute in 2017 to learn about policy reforms carried out in Korea and Denmark. The trips distilled lessons that could be applied to Egypt's advantage and built partnerships for future engagements.



Lessons Learned

Providing reliable and actionable information to all program participants is a necessary and critical first step for program success.

Developing trust among key players and incorporating the private sector at an early stage is the foremost condition for lasting success.

Government organizations have unique procedures and need to be brought together to ensure coordination and cooperation.

True success takes time

Acknowledgements

- Egyptian Ministry of Trade and Industry (MoTI) and its affiliates including the Egyptian National Cleaner Production Center (ENCPC), the Egyptian Organization for Standardization and Quality (EOS), the General Organization for Export and Import Control (GOEIC) and the Industrial Control Authority (ICA).
- All government entities, private sector stakeholders, the Federation of Egyptian Industries, as well as users, importers and suppliers of electric motors in Egypt.
- Current and former members of the IFC team and IFC's leadership for their guidance and support.
- Last but not least, the STEP program donors: Governments of Korea, Denmark and Italy as well as the Facility for Investment Climate Advisory (FIAS).

Thank you!

**For more information
about program, please
scan this QR Code to
view the STEP Storymap,
which was developed
with the generous
support of the Korea
Green Growth Trust Fund.**



Scan me!

KGID CAIRO

KOREA GREEN INNOVATION DAYS



**KOREA
GREEN GROWTH
TRUST FUND**



**Ministry of Economy
and Finance**