



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Bundesamt für Energie BFE
Office fédéral de l'énergie OFEN
Ufficio federale dell'energia UFE
Swiss Federal Office of Energy SFOE



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Improvement of Electric Motor Systems in Industry IEMSI



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- Introduction
- “Topmotors” programme
- IEMSI programme
- Conclusions



Introduction: New Federal Energy Act

Energy-efficiency targets



Average per capita energy consumption

Reduction versus level in 2000

- 16% in 2020
- 43% in 2035

Average per capita electricity consumption

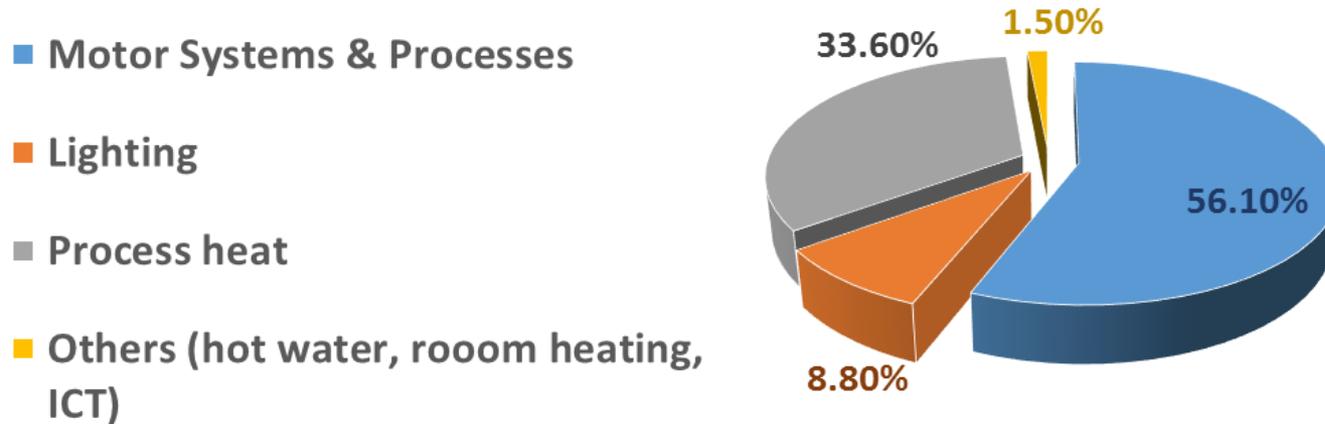
Reduction versus level in 2000

- 3% in 2020
- 13% in 2035



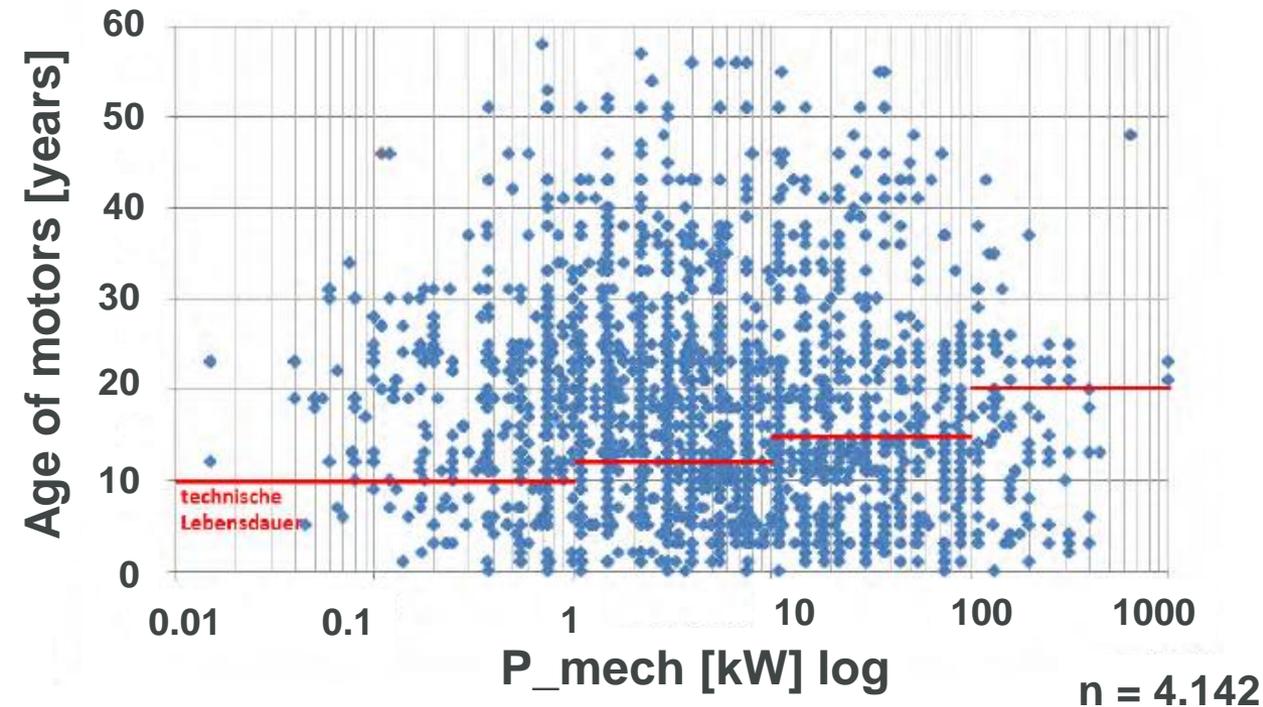
Introduction: Main consumers

Main electricity consumers in the Industry sector





Introduction: Starting point



> 50% have exceeded their technical service life

68% have a load factor lower than 60%

Less than 20% are equipped with a VSD



Topmotors programme: 2007 to 2016



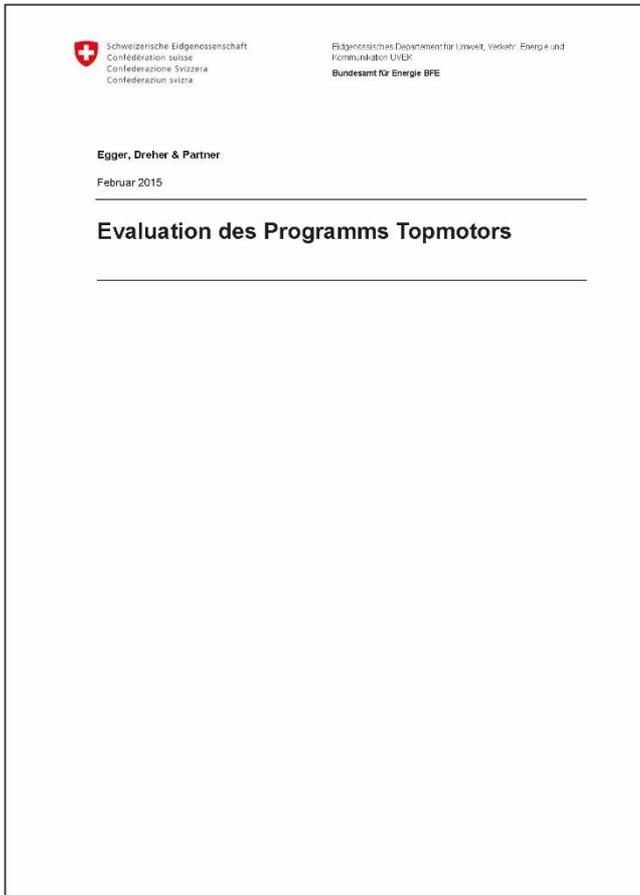
Objective: to generate and disseminate knowledge about efficient motor systems, applications (pumps, fans, compressors, etc.) and their correct use and adaptation to the mechanical needs of a process.

The three strategic goals:

- **Information and education**
- **Networking**
- **Promotion of premium motors**



Topmotors programme: Achievements to date



- Development of two numeric tools (SOTEA and ILI+) and standard protocols for measurements (STR)
- Publication of 18 technical fact sheets
- Publication of 29 technical papers
- Mailing of newsletters (up to 3 per year)
- Organisation of 9 workshops and 7 motor summits





Topmotors programme: Impacts



Results based on 244 participants in the evaluation:

- (+) Success in reaching several different target groups
- (-) *Around half the energy-intensive companies not aware of TM.ch (same applies to OEM companies)*
- (+) Opportunities for participants and market players to meet, exchange ideas and network at workshops and summits
- (-) *No direct impact on the strategy of motor manufacturers and OEM suppliers*
- (+) Making users aware of the benefits of purchasing premium motors and thus exerting pressure on the manufacturers and suppliers
- (-) *Although TM.ch has had a certain impact, its reach was not extensive*



IEMSI programme: Introduction

The evaluation report strongly **recommends the continuation of the programme**, but also cites some weaknesses that need to be addressed (see previous slide)

Need to define a **strategy for broader implementation:**

- Communication
- Tools
- Events
- Market



IEMSI programme: Objectives for next five years

- 15% of companies to be made aware of the IEMSI programme via the Internet, technical papers or special events
- Downloading of at least one document by 10% of the companies
- Analysis carried out by 5% of the companies
- Implementation of efficiency measures by 2% of the companies
- Cost efficiency ratio of the programme to be lower than 5 cents per kWh (accumulated electricity savings over the duration of the measures)



IEMSI programme: Communication

Website in at least three languages: German, French and English

www.topmotors.ch

- Newsletters (4 per year)
- Fact sheets (at least 1 per year)
- Best Practices (at least 2 per year)
- Technical papers (at least 2 per year)



IEMSI programme: Communication

HOME

ABOUT US

KNOWLEDGE

PRACTICE

NEWS & EVENTS

CONTACT

TOPMOTORS

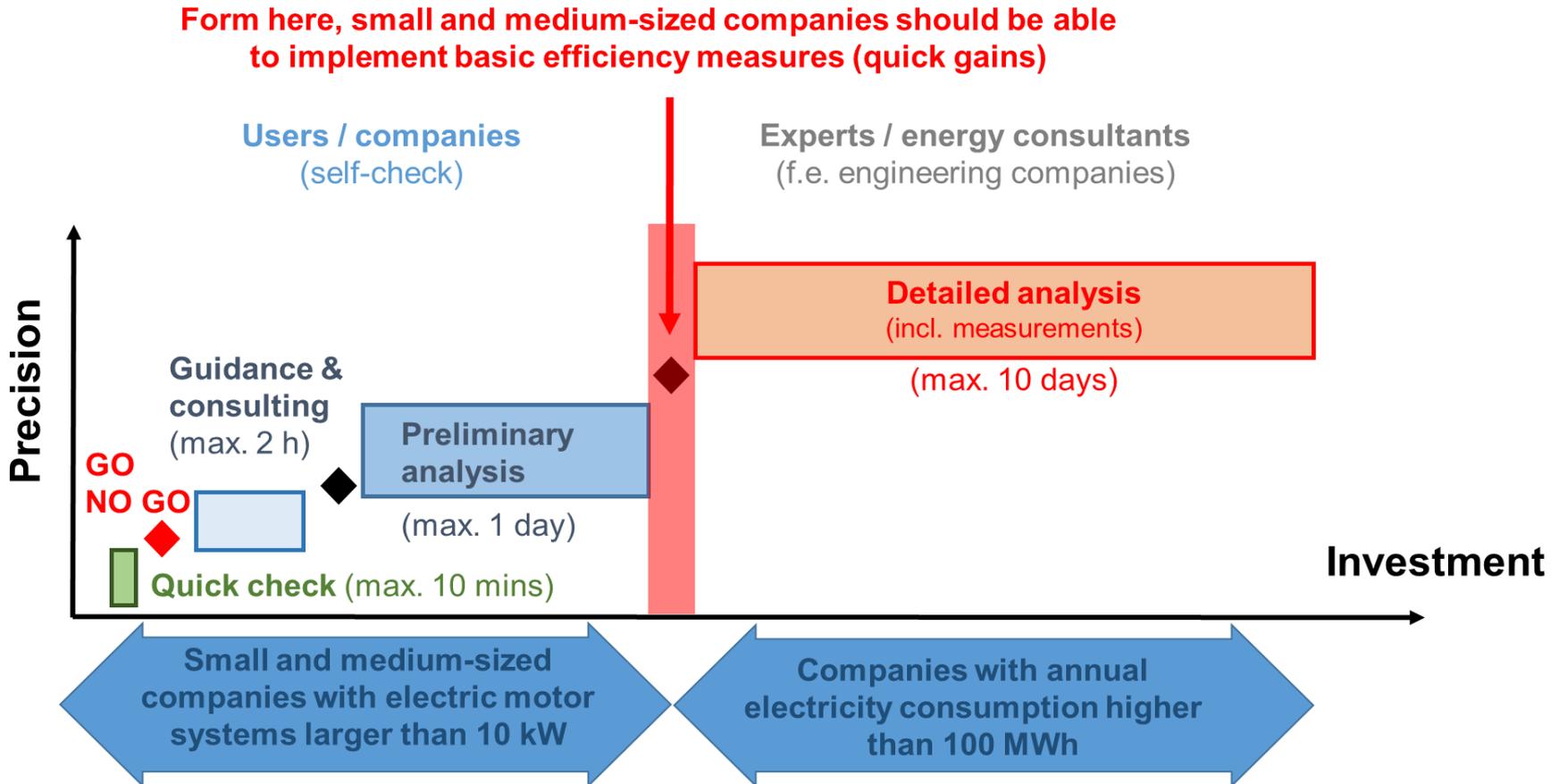
D F E



TOPMOTORS IS AN IMPLEMENTATION PROGRAM SUPPORTED
BY SWISSENERGY FOR EFFICIENT MOTOR DRIVEN SYSTEMS IN
SWITZERLAND



IEMSI programme: Tools





IEMSI programme: Tools



Step 1

How old is your pump?

< 5 years

5 - 15 years

> 15 years

Preliminary analysis tool for efficient pump systems

Detailed results

Electricity price:

16 cents per kWh

No.	Identification	Other identification	Location	P	t	Year	Savings potential		Recommendations
							Total		Detailed analysis
				[kW]	[h/a]	Construction year	[kWh/a]	[EUR/a]	
2	Pump mixer Nr. 3	A2		10'000	3'000	1900	5'825'023	932'004	Detailed analysis highly recommended
5	Pump cooling section B	B2	Workshop	100	2'000	1990	49'225	7'876	Detailed analysis highly recommended
7	Circulation pump Nr. 1	C21		10	8'000	2010	12'339	1'974	Detailed analysis recommended
3	Circulation pump offices north and west	A3		250	100	1980	10'724	1'716	Detailed analysis recommended
8	Vacuum pump workshop	C22		9	8'000	2010	2'160	346	no action needed
1	Pump mixer Nr. 2	A1		10	2'000	2010	1'839	294	no action needed
9	Pump cooling section A	C23		10	2'000	2010	1'839	294	no action needed
4	Circulation pump office south	B1		3	5'000	2014	1'228	196	no action needed



IEMSI programme: Special events



WORKSHOPS

TOPMOTORS

WEBINARS

(1st edition, 21 Sept. 2017)

MOTOR SUMMIT 2018

International

14-15. November 2018

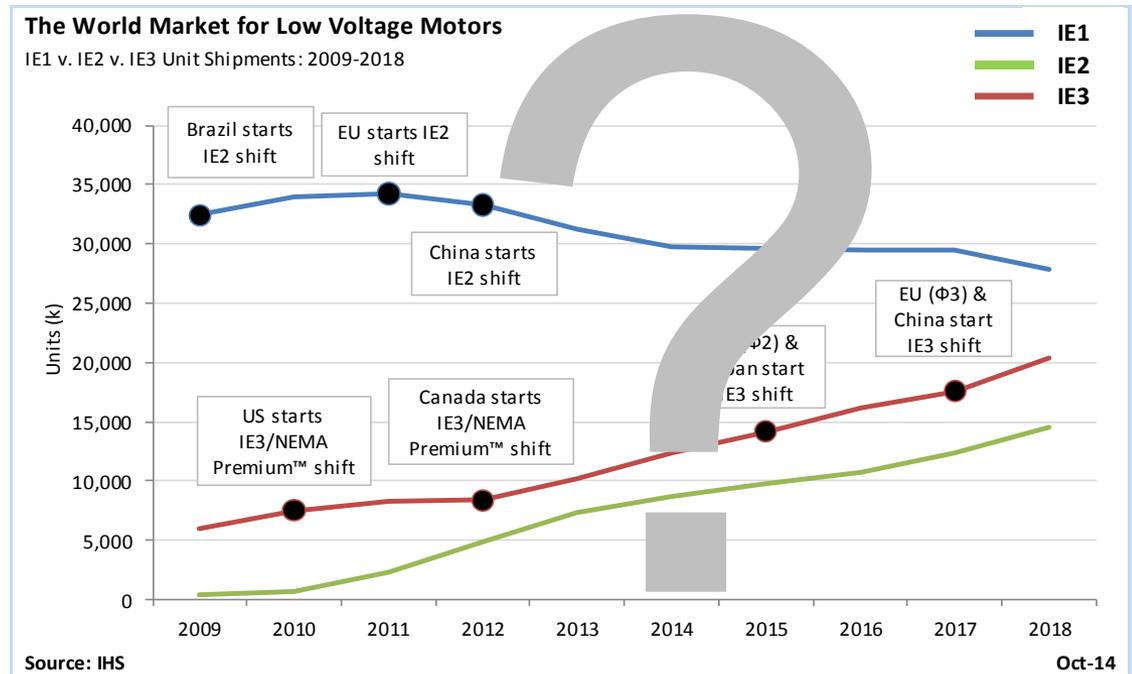


IEMSI programme: Market

Electric motor systems

Switzerland

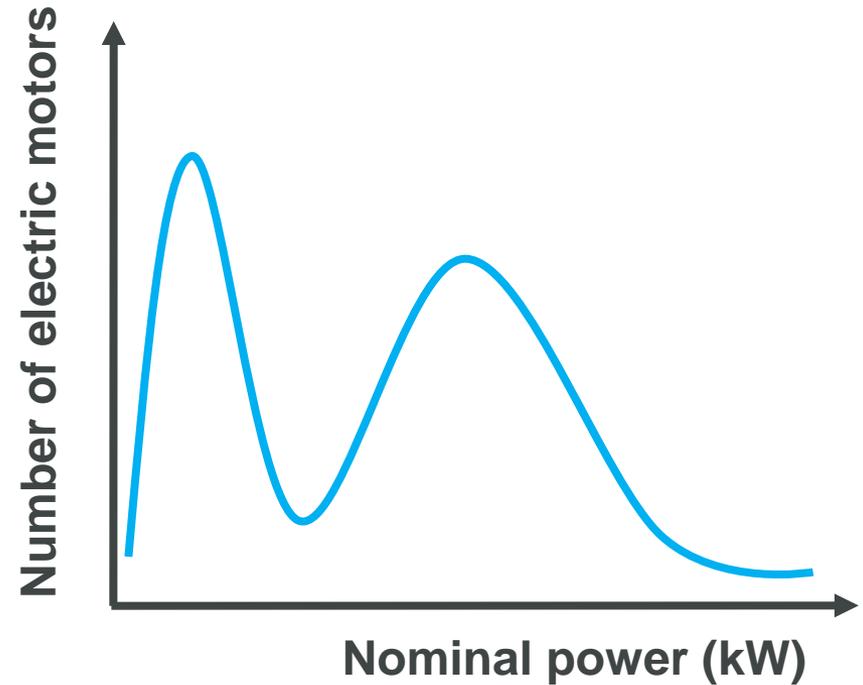
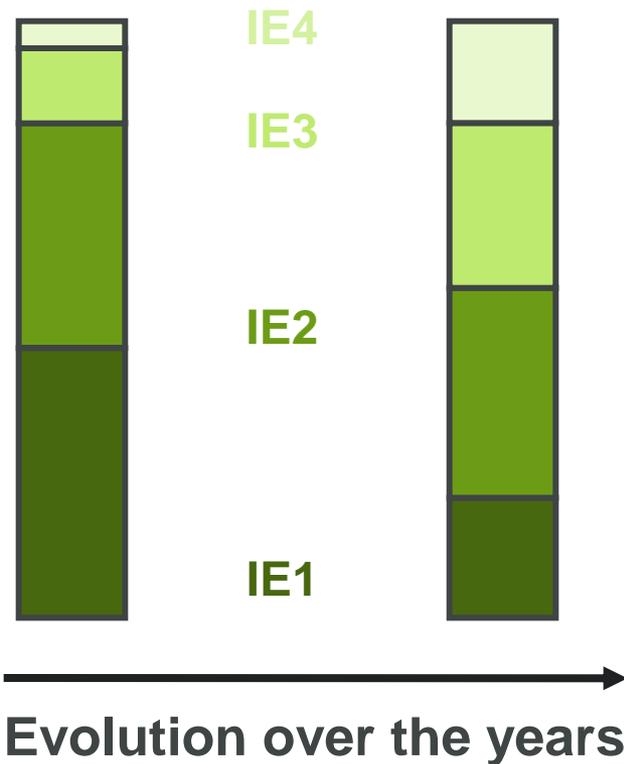
- **Mandatory measures**
MEPS
(based on EU Eco-design directives)
- **Voluntary measures**
SwissEnergy (TM.ch)
Competitive tenders



Source: «Motor Market Update», A. Chausovsky, IHS, Motor Summit'14, Zürich, Switzerland.
Link: http://www.motorsummit.ch/sites/default/files/2017-06/530_ms14_chausovsky_0.pdf

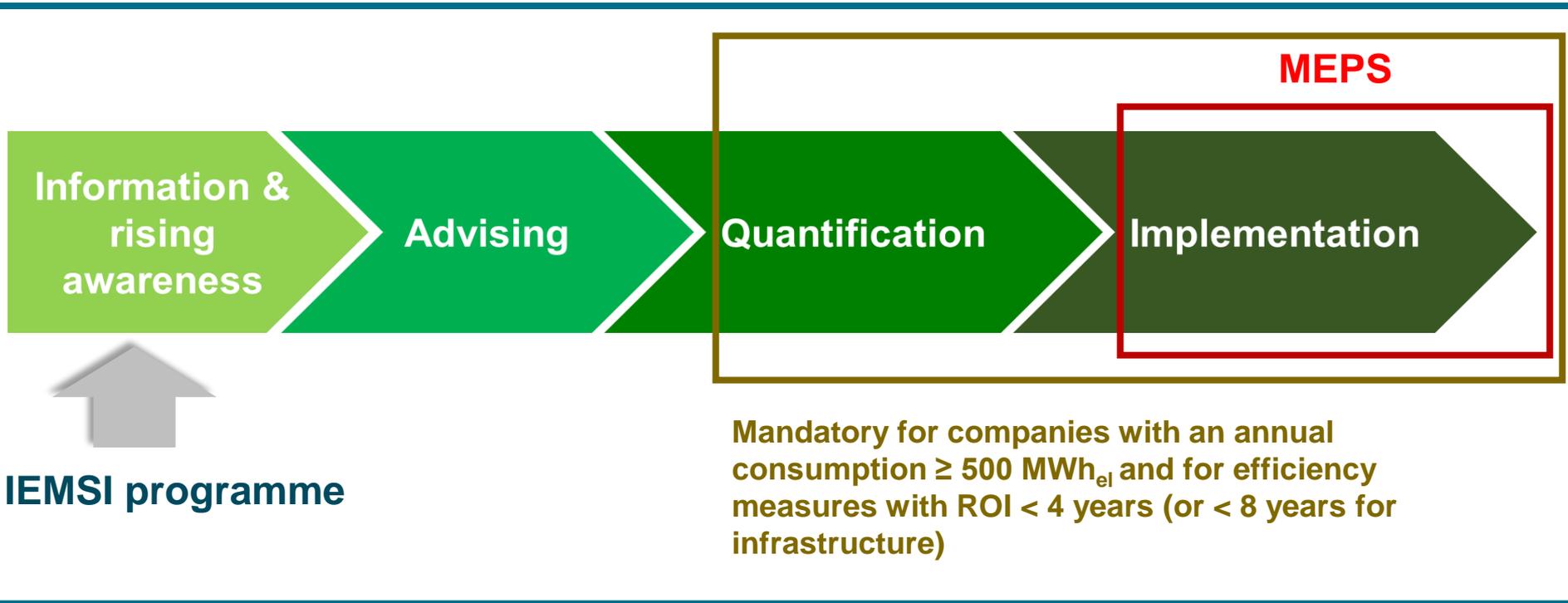


IEMSI programme: Market





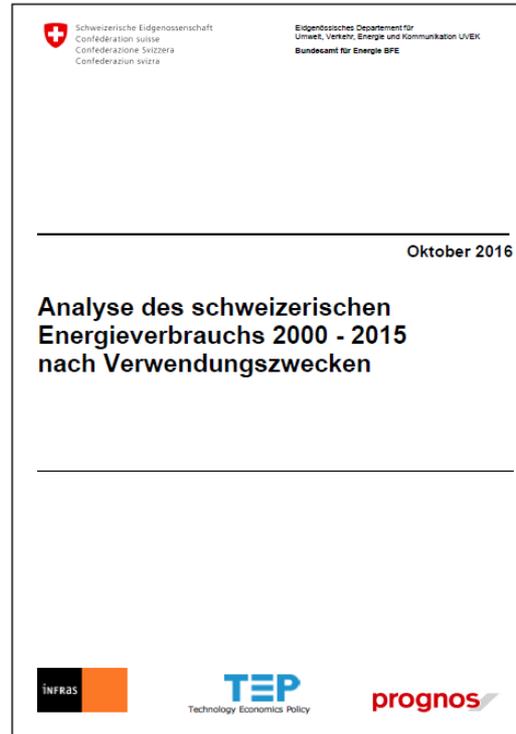
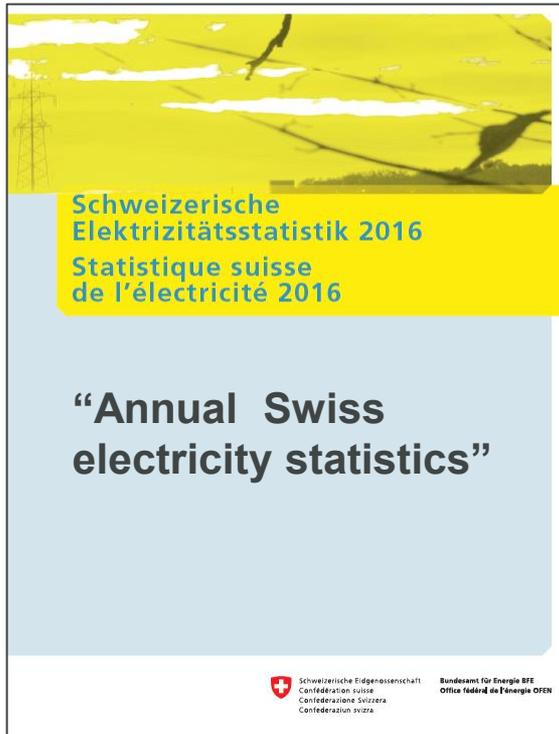
IEMSI programme: First step towards implementation



Voluntary measures



IEMSI programme: Impacts



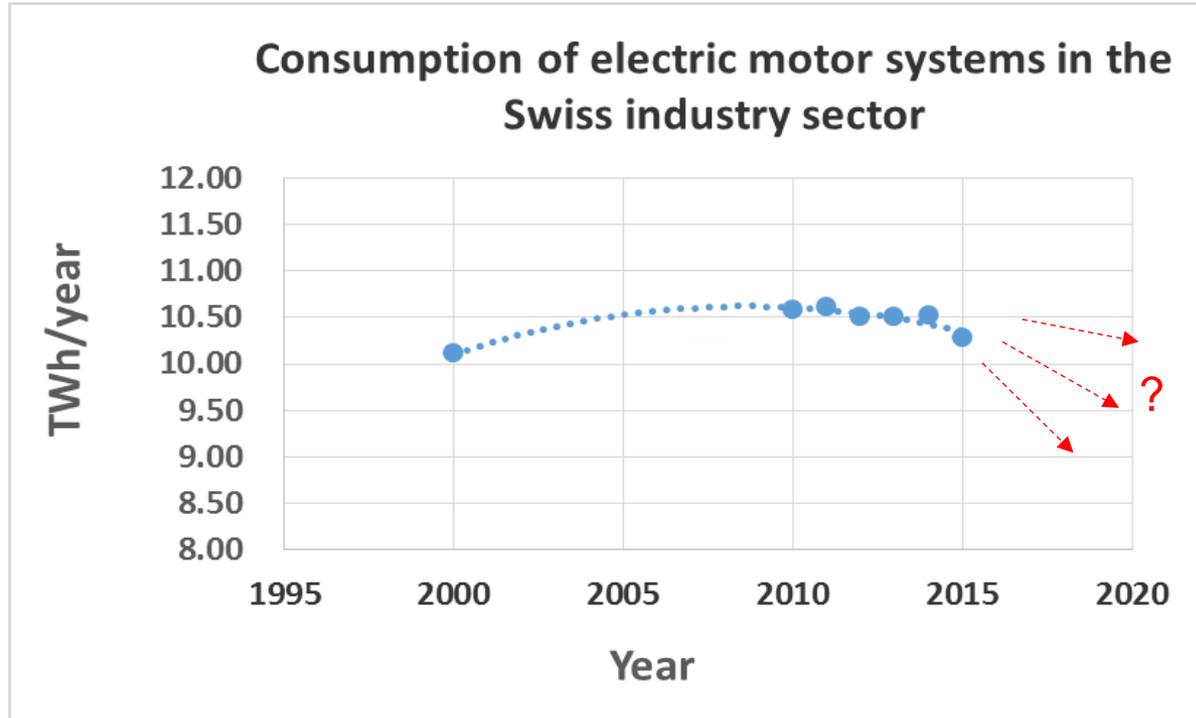
Each IEMSI module will be monitored:

- **TM.ch platform** (web statistics)
- **TOOL** (# of downloads)
- **EVENTS** (# of participants)
- **Market** (# IE3 and IE4 motors per year)

“Annual analysis of
Swiss energy
consumption according
to type of use”



IEMSI programme: Impacts



IEMSI is a five year programme: where we will be in 2021?



Conclusions

- More than 50% of running motors in the Swiss industry have exceeded their technical service life
- TM.ch programme was launched in 2007 to generate and disseminate knowledge about efficient motor systems
- The evaluation of TM.ch in 2014 strongly recommended its continuation, but also recommended some strategic adjustments
- As a result, the IEMSI programme was launched in December 2016 with the objective of achieving broader implementation
- The IEMSI programme encompasses four modules: communication, tools, events and market (some of the modules will continue to run under the TM.ch brand)
- The IEMSI programme is planned for a five-year period (2016 to 2021) with a budget of 3.0 million euros (TM.ch had a budget of 2.0 million euros for the period from 2007 to 2014)



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Thank you



Dr. Richard Phillips

+41 31 323 22 77

Richard.Phillips@bfe.admin.ch