

Core partner:

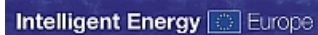


4EM – MCP

Motor Challenge Programme - Energy Efficient Electric Motor Systems in
New Member and Candidate Countries

Market Investigation Plan: Bulgaria

4EM – MCP is supported by:

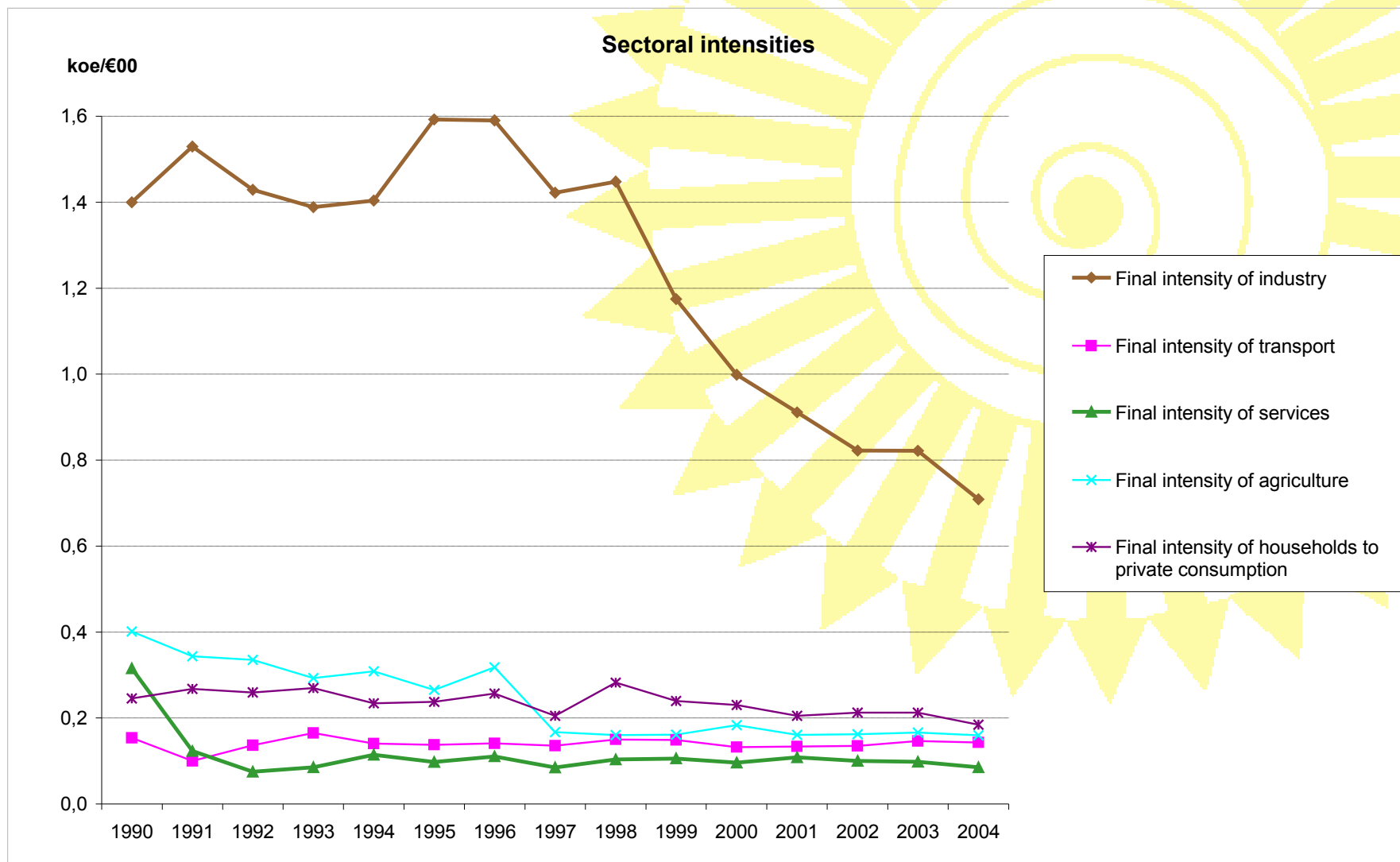


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Introduction

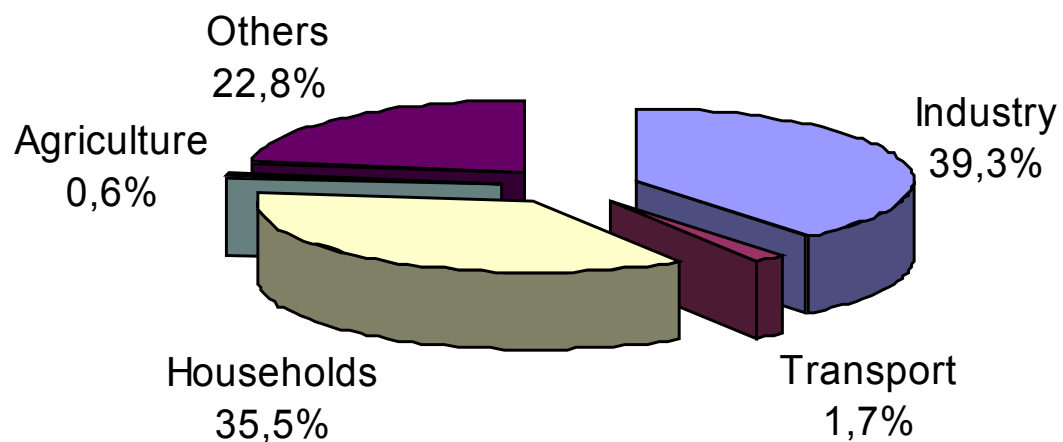


Energy intensity by sectors

Introduction

	GWh	%
Electricity Consumption	24 679	100%
Industry	9 711	39,3%
Transport	419	1,7%
Households	8 769	35,5%
Agriculture	151	0,6%
Others	5 629	22,8%

Final Electricity Consumption by Sectors for year 2004



Final Electricity Consumption by Sectors for year 2004

Legal Instruments and Regulation in the field of EE

The Energy Strategy of the Republic of Bulgaria (2002)

Energy Act (2003)

Energy Efficiency Act (2004)

the relevant secondary legislation, related to the EE Act:

- Ordinance for Energy Performance of Sites (2004);
- Ordinance on Energy Efficiency Audits (2004);
- Ordinance on Certification of Buildings for energy efficiency (2004);
- Ordinance on Terms and Order for Registering Persons, Performing Certification of Buildings and Energy Audits, and for Receiving Information (2004);

The National Long-term EE programme till 2015 (2005)

The National Short-term EE programme 2005-2007

The Environmental Protection Act and Clean Air Act

Electricity tariffs, paid by the Bulgarian industrial companies is
6÷6,7 eurocents/kWh, VAT excl.) - subject to regulation

National motors and motor systems manufacturers

Bulgaria has several electrical motors producers. Most of them are manufacturing three-phase squirrel cage asynchronous motors. There are several producers of VSDs.

The TPSCAMs, made in Bulgaria, correspond to the Bulgarian standards. The motor starting, working and energy performance is equal to the performance of the induction motors (IMs) with the same size, power and rotating frequencies, manufactured in the EU.

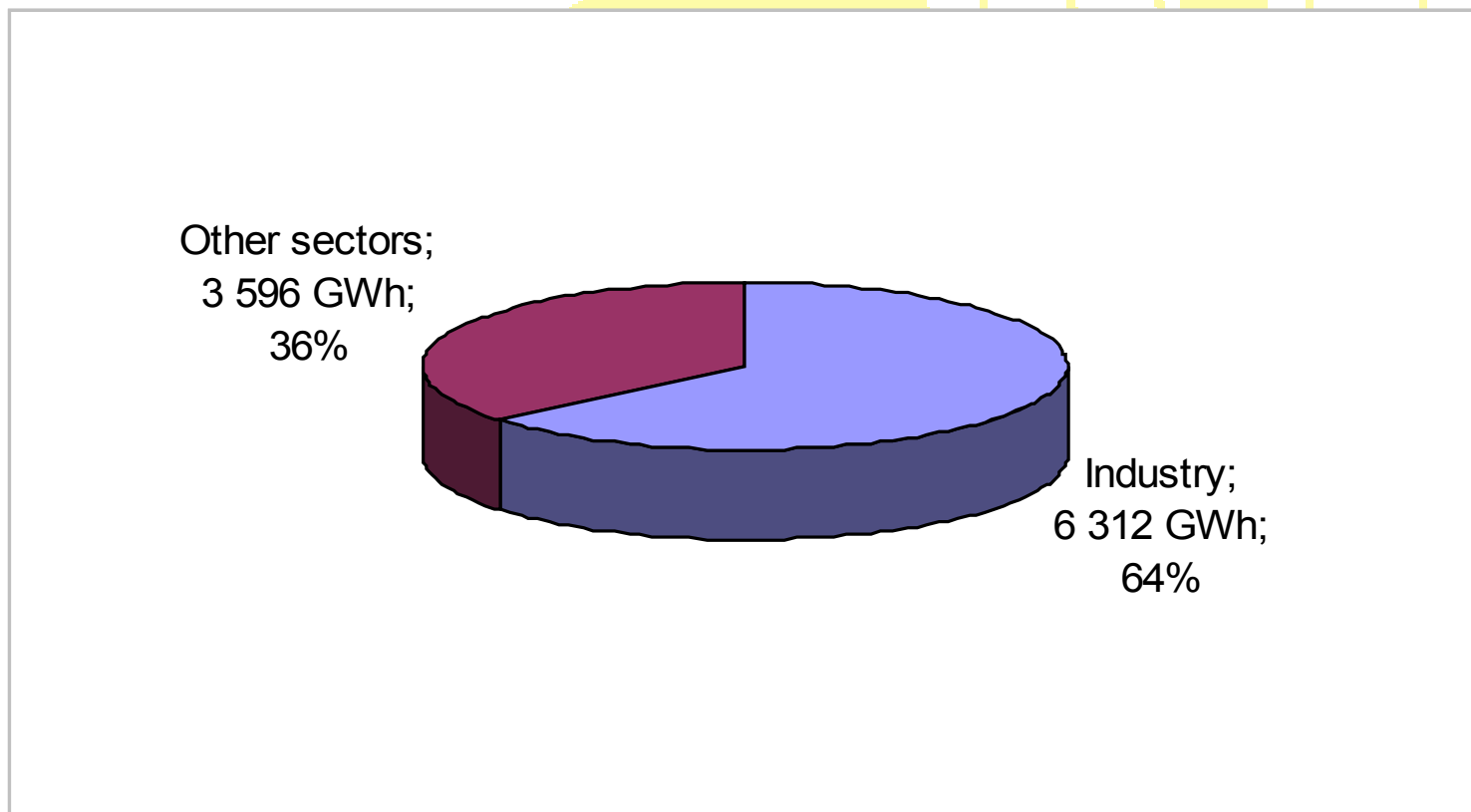
The majority of the Bulgarian made motors correspond to efficiency class eff3, and some of them belongs to eff2 (as per the classification of CEMEP for the new EEMs).

The price level of the Bulgarian made IM is slightly lower than this one of EU made IM.

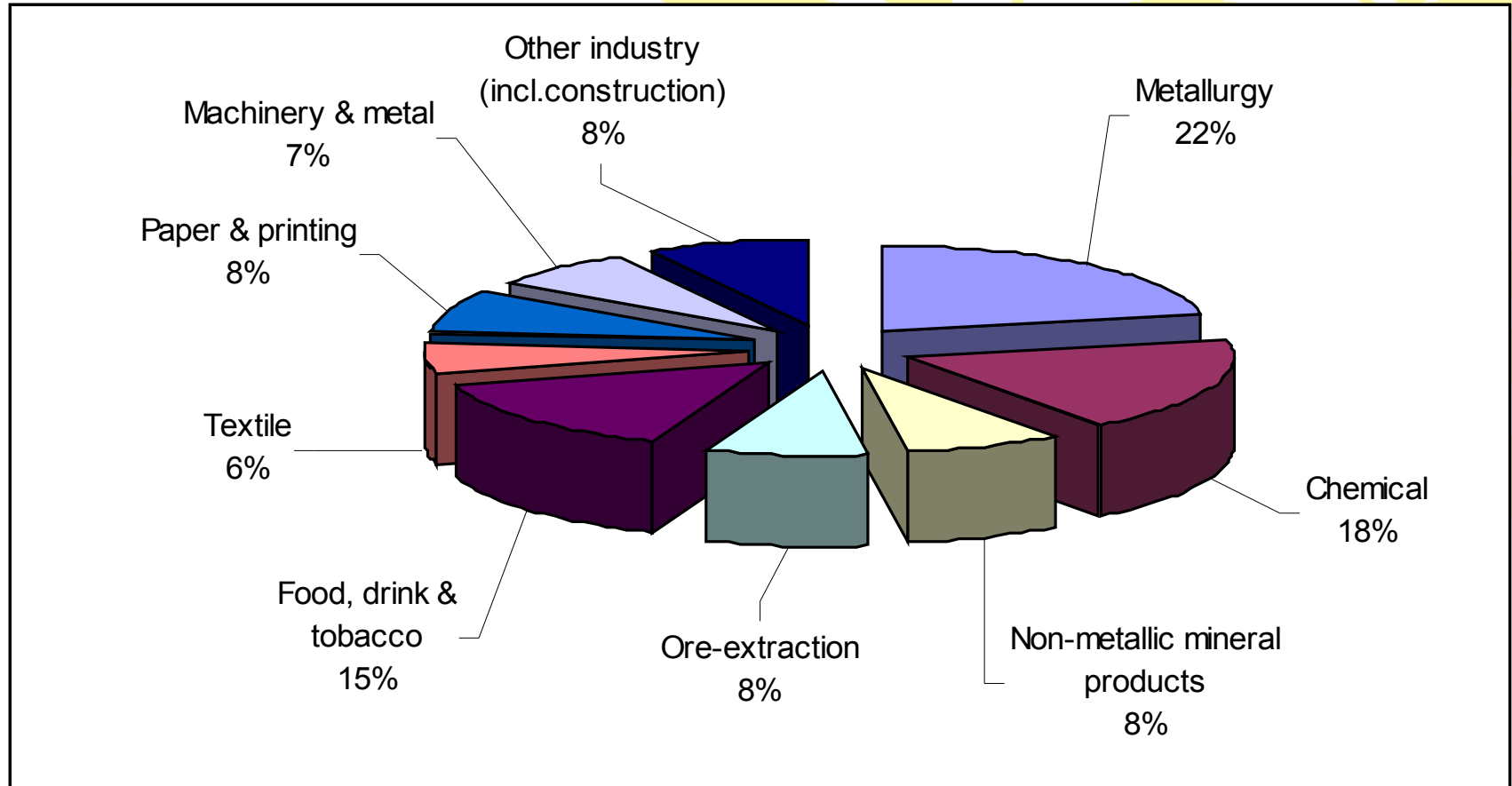
On the market there are several electrical motors dealers, representing European companies, offering TPSCAM, as well as high efficient motors and systems.

Evaluation of motor systems penetration to end users

Share of electricity consumption of the motor driven systems by sectors, Bulgaria, 2004, GWh



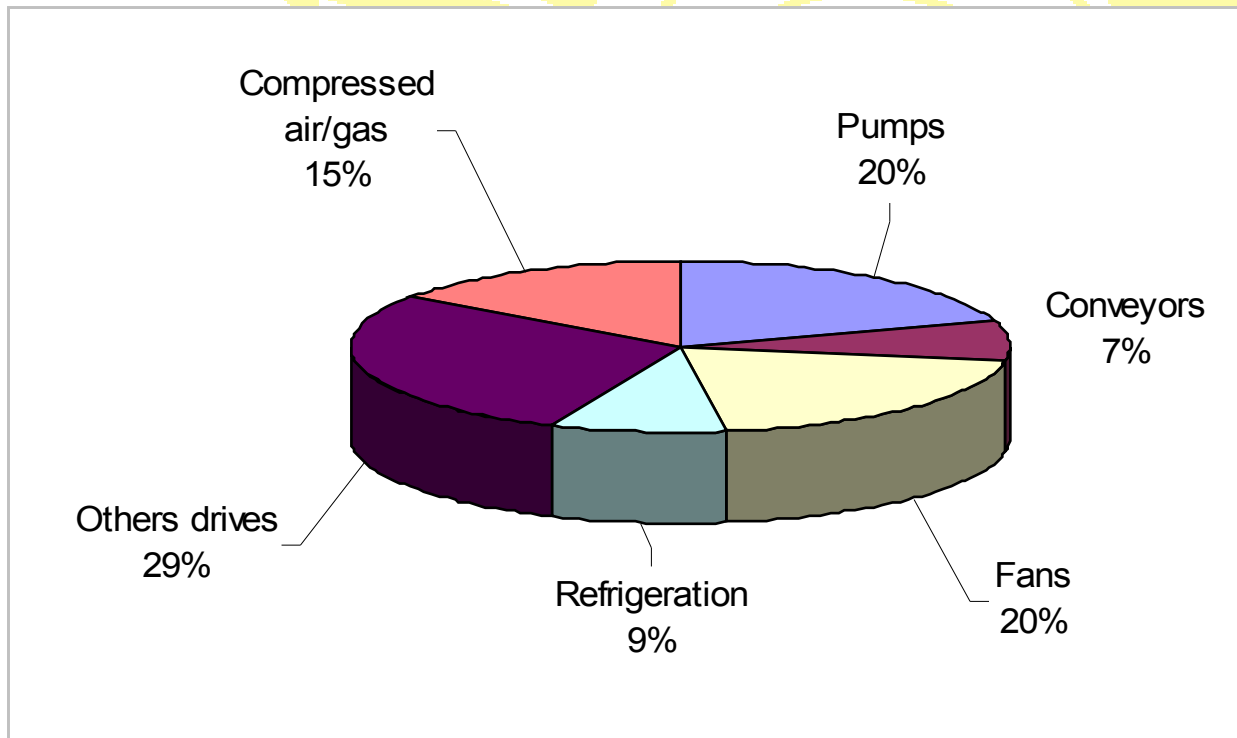
Evaluation of motor systems penetration to end users



Motor driven systems electricity consumption by industry, 2004.
Total = 6312 GWh

Evaluation of motor systems penetration to end users

Equipment	Industry
Pumps	1 287
Conveyors	457
Fans	1 270
Refrigeration	542
Others drives	1 795
Compressed air/gas	961
TOTAL	6 312



Estimated electricity consumption by application part of the motor system, Bulgaria, 2004. Total = 6 312 GWh

Comments on EE motors penetration to end users

The constraints for the wider use of EE motor driven systems in Bulgaria may be summarized in the following order:

- ✓ ignorance of the mechanical load performance;
- ✓ pre-gauging of power;
- ✓ work at loading different from the nominal one;
- ✓ low mechanical efficiency of the technological equipment;
- ✓ insufficient use of regulated EEM;
- ✓ lack of methodologies, algorithms and models;
- ✓ lack of information from producers;
- ✓ issues, related with operation and repair work;

Research and studies on energy efficient motors and motor systems

The research and studies on EEMs and motor driven systems date from the late ninetys.

The leading institution in this area is the Technical University of Gabrovo. Two projects were implemented within the framework of the EC INCO-COPERNICUS Program, which are dealing with the efficiency use of water pumping systems.

In the framework of University Programme “Scientific Studies” of the Technical University – Gabrovo were implemented 4 contracts - focused on the systems which have a large technical and economic potential for improvement of the EE by the use of the VSDs, EEM and electronic controllers.

It is difficult to notice an apparent connection between the results of the research and studies and their implementation in practice.

Bulgarian standards and regulations on motors and EE motors and motor systems

At the present 89% of Bulgarian standards for electrical machines are harmonized with the European ones, and the rest are in process of harmonization.

Major Bulgarian stakeholders related to motors and EE motors topic

Ministry of Economy and Energy (MEE)

Energy Efficiency Agency (EEA)

Energy Efficiency Center in Industry (EECI) to the MEE

State Energy and Water Regulatory Commission (SEWRC)

Ministry of Environment and Water (MoEW)

Bulgarian Industrial Association (BIA)

Bulgarian National Chamber of Electrical Engineering (BNCEE)

Bulgarian Chamber of Commerce and Industry (BCCI)

Energy Analyses Association

Technical universities in Sofia, Varna, Gabrovo and Rousse

Energy for Sustainable Development - Bulgaria Ltd. (ESD Bulgaria Ltd.)

Black Sea Regional Energy Centre (BSREC)

Bulgarian Energy Efficiency Fund (BEEF),



Thank you for your attention !

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