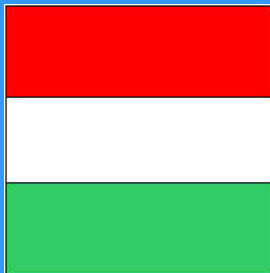


Hungarian Market Investigation Plan



4EM-MCP Meeting

Krakow, Poland

June 26, 2006



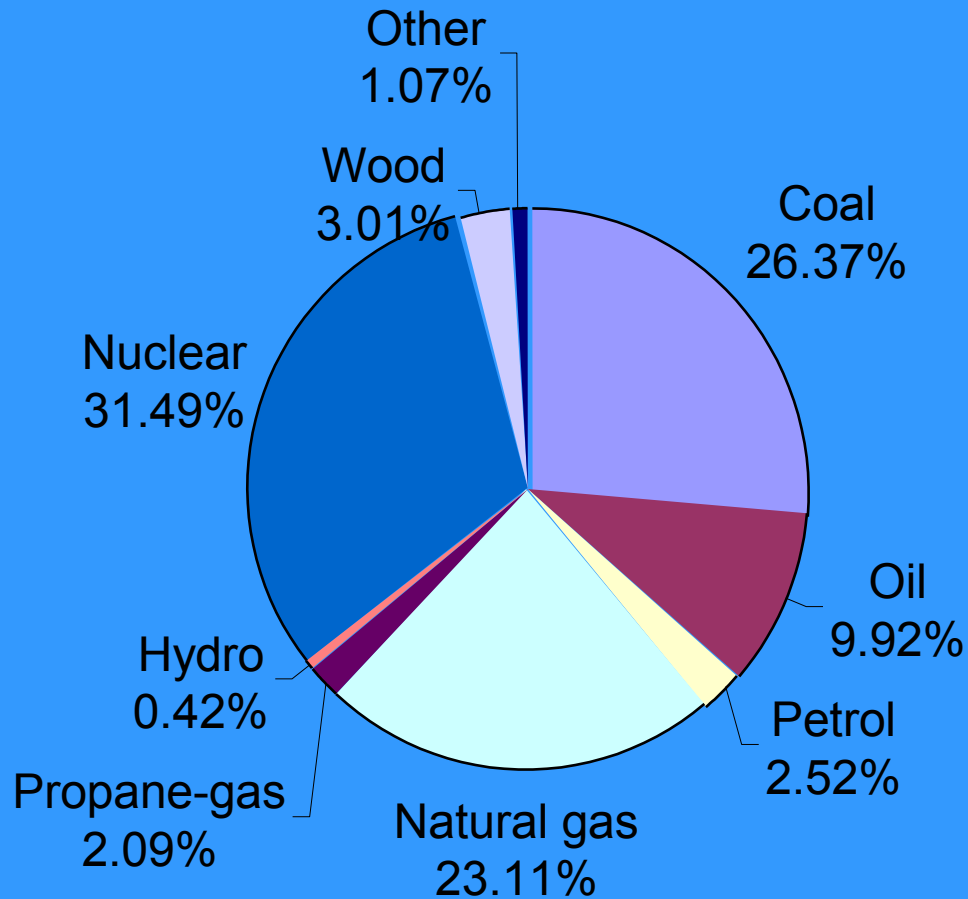
Hungary has now an emerging market economy. After having joined the EU in 2004, the present concern of macroeconomic analysts is the large share of budget deficit which might hinder the introduction of the EU community monetary unit, the euro.

The main economic indicators are shown below

Main economic indicators of Hungary in 1990-2004 (%)

	1990	1993	1995	2000	2001	2004
GDP growth rate	-3.3	-0.8	1.5	5.2	3.8	4.2
Unemployment rate	2.1	12.1	10.4	6.4	5.7	7.2
Inflation rate	28.9	22.5	28.2	9.9	9.3	6.8
Central budget /GDP	0.8	-5.5	-6.0	-2.8	-2.8	-4.2

Power generation in Hungary, 2004



Market situation

- Full Liberalisation of the power market is expected from 2008, partial liberalisation is done by the new Electrical Energy Act, which is still not ready
- Enormous (70%) dependence on primary energy imports, which means almost entire dependence on the Russian relation.
- Almost 100 % penetration of natural gas network
- As transition economy, a deep economic decline and a consequent reduction in energy use and CO2 emissions occurred.
- Despite recent price rises, the cost of energy is still not market-based to all consumer groups.
- Slow progress is due to low funding (the projects have to compete on available funding with energy-efficiency measures and regional development projects) and in consequence very little working-capital invested

- The privatisation of the electricity industry: the generation monopoly of the power utility MVM (Hungarian Power Companies) was ended in 1994.(due to the sharp decline in demand since 1989 and prices do not yet fully reflect market values).
- TPED: 61% rise between 1971 and 1987, fell by 20% over the following decade.
- Biggest decline in coal supply (- 41% - representing 21% of TPES), followed by oil (- 22% - representing 30% of the TPES) and natural gas (down 10% - representing 34% of the TPES).
- Nuclear power production, which began in 1983, accounted for 15% of TPES in 1995.
- Energy self-sufficiency was 55% in 2005: Hungary imported 78% of its oil supply, 57% of its natural gas supply and 19% of its coal supply.

Supporting measures and mechanisms in Hungary

Energy Saving and Energy Efficiency Action Programme

Based on the principles of Business Model of the Energy Sector and related policy decisions, the government adopted the new Energy Saving and Energy Efficiency Action Programme (ESEEAP) (Resolution of the Government 1107/1999.(X.8.) Korm.) that began in 2000 and is to run until 2010. The overall goals of the Action Programme are: 3,5% /year reduction of energy intensity; the saving of 75 PJ/year of primary energy use; reduction of 50 kt/year of SO₂ and 5 Mt/year of CO₂ emissions, increase of renewable energy production. The Action Programme lists 15 specific policy measures, the most relevant of which are described below.

Improving energy awareness

The purpose of this measure is to assist reaching the overall objectives of the ESEEAP by providing state-of-the-art information and training via the educational system and the organisation and operation of advisory networks and consumer offices, as well as via advertisements, the media etc. Another specific point of action is the promotion of energy efficiency labels. The resolution set an overall 10 PJ energy saving until 2010 via energy awareness raising tools.

R&D for energy efficiency and renewables

This action of the ESEEAP aims at encouraging the participation of Hungarian experts in foreign research, as well as the incorporation of energy saving and environmentally friendly technologies in the Hungarian R & D, including demonstration projects. According to the ESEEAP, the priority of energy efficiency within R& D has to be ensured with legal instruments and with preferential credits.

Operative programmes

Energy audits in industry

It is widely recognised that demand side energy efficiency actions can only be effective if they are preceded by energy audits that can identify the most efficient course of action. Therefore energy audits have been supported through various tools, one of them being that energy audits in industry were one important item of the Energy Saving and Energy Efficiency Action Programme (ESEEAP).

Reduction of industrial energy use

The objectives of the action were - modernisation of energy processes of industrial production, - improving thermal insulation, - improving the efficiency of energy consuming equipment and - improving the efficiency of energy generating equipment. The objectives were to be achieved through providing preferential loans, but no concrete amount was allocated. The expected target reduction of industrial energy use is 8.5 PJ until 2010.

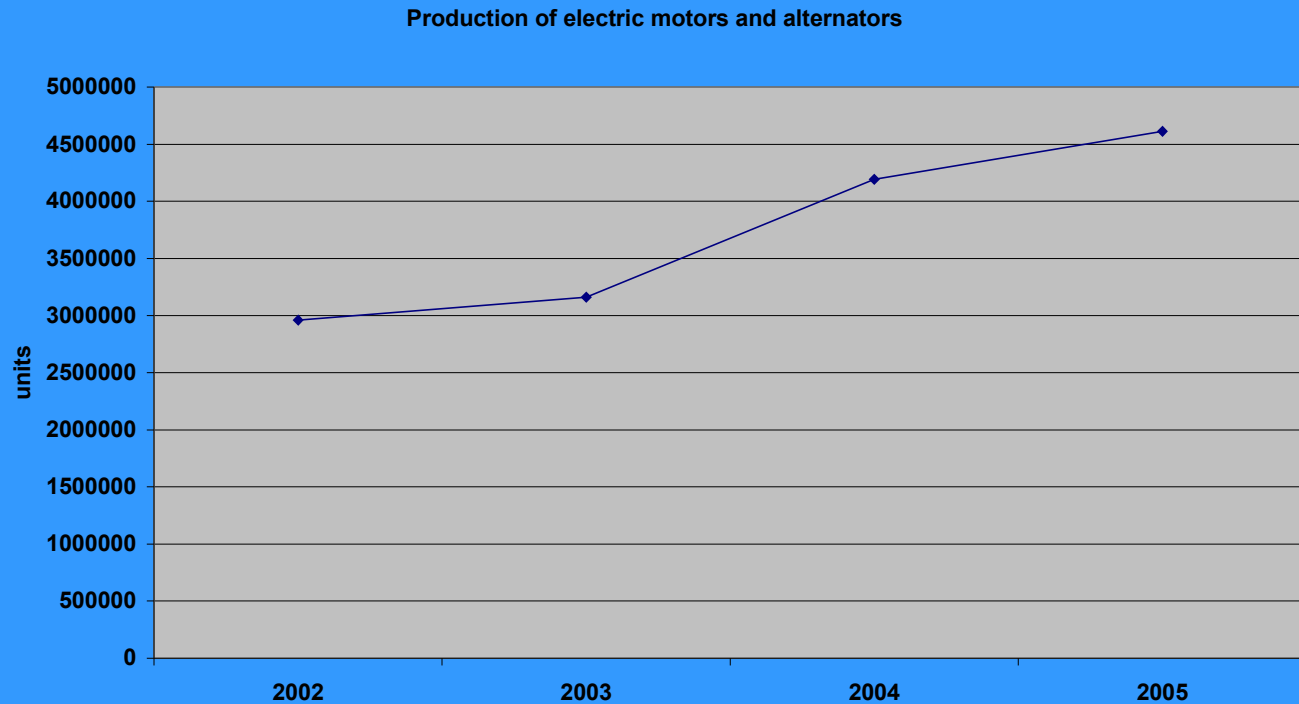
Least-cost planning, demand side management programmes

The aim of this action was to make the operators of large energy supply systems interested in reducing energy demands by recognised the related costs as justified costs and reflect them in the energy prices. The quantitative target was around 5 PJ saving of primary energy by 2010.

- Energy intensity per capita shows that the Hungarian energy consumption is cca. 30% higher than in the average European OECD country. This probably indicates that the industrial sector is running at low capacity utilisation.
- In the residential sector the energy consumption per family is rather low due to lack of energy intensive household appliances.
- Consumption per heated volume is 20-30% higher than the typical value for similar countries in the EU.

Current situation of electric motor production

The below chart outlines the current production of electric motors and alternators in Hungary based on the data provided by the National Statistical Office.



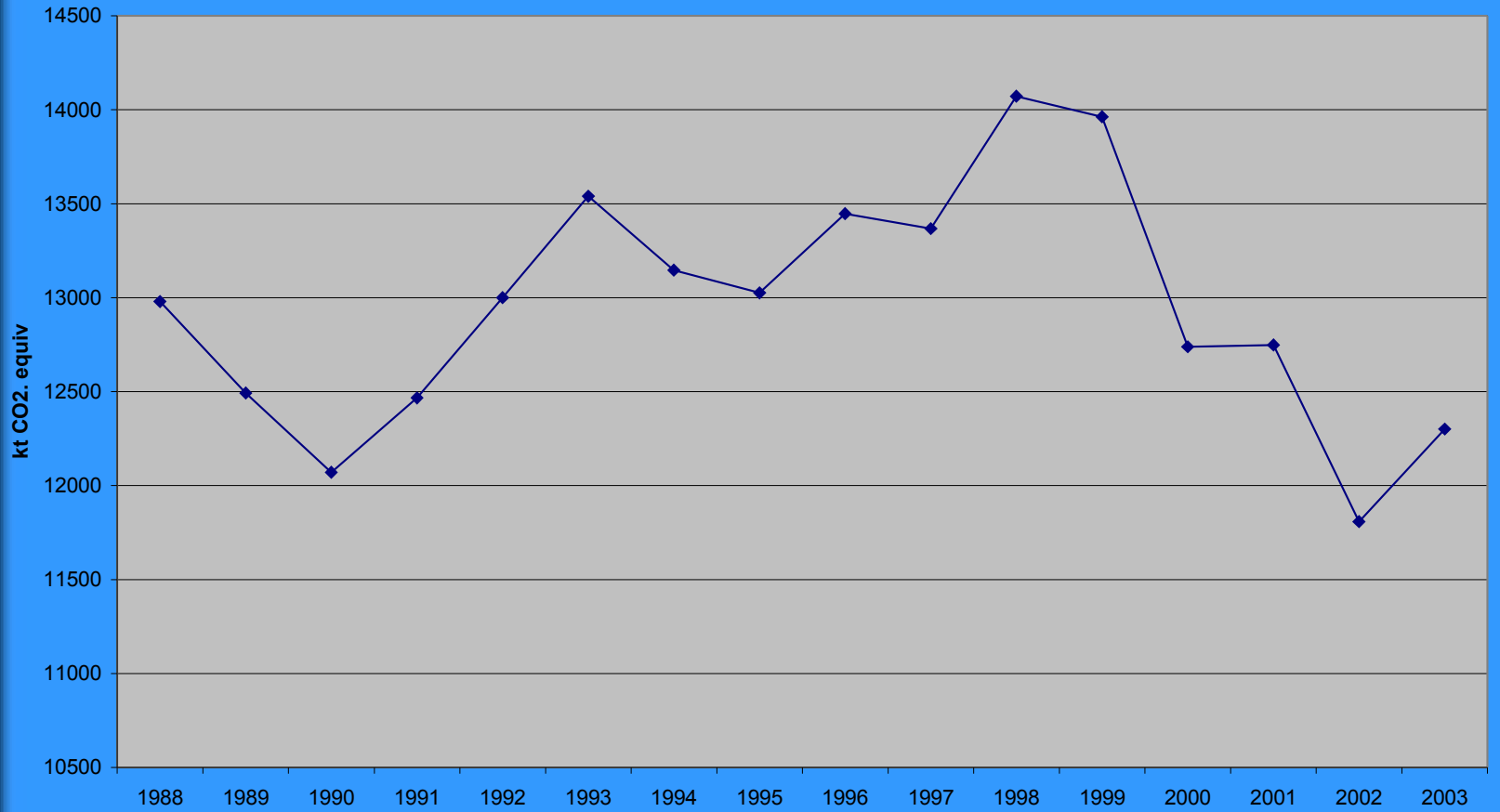
	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>
Total units produced	2,959,995	3,159,482	4,193,253	4,613,296

Emissions from electric motors operation

Having no precise data we can use the estimate that electric motor systems which include motors, drives, pumps, fans, and control equipment, use about 60% of all electricity generated in power plants. This means that the emissions generated by the motor usage can be estimated using a top-down methodology. The national greenhouse gas inventory provides precised and revised results in the field, based on this we can estimate emissions from the electric motors in Hungary as follows (data available only until 1988-2003). (total Kyoto commitment ~105,000 kt CO2 equiv)

	...	1999	2000	2001	2002	2003
Est. emissions from electric motors (kt. CO2 equiv)	...	13,962	12,739	12,748	11,808	12,301

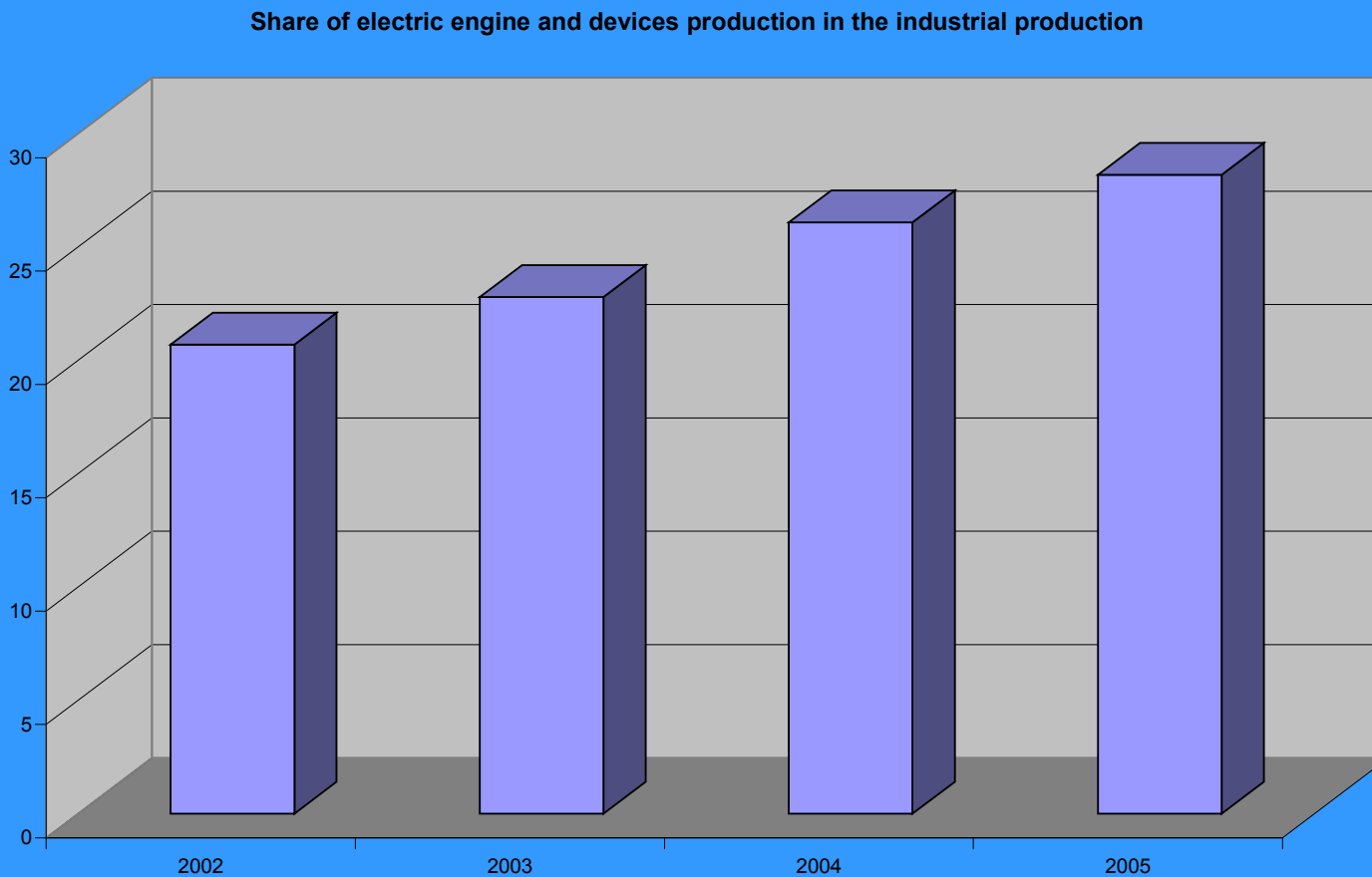
Est. emissions from electric motors



Size of the market

In 2005, according to the national statistics, among the machine industries, the biggest growth of 16% was measured in the sector of production of electric engines and devices, nevertheless the dynamics of growth was 7.2 points % less than in the previous year. The sector with its over-average growth and nearly one-third weight plays a decisive role in the processing industry. The performance of the subsector is defined by some large multinational companies, which also contribute significantly to the export. Significant component of the sub-industry is the telecommunication (43%). The other very dynamically growing subsector is the “other electric products, non-specified motor and equipment”, whose performance raised with more than 25% in the last year. This beneficial figure is due to new investments in new production capacities.

Figure 4.1. Share of production of electric engines and equipment in the domestic industrial production (% of total)



Forecast Of Energy Efficient Motors Penetration Potential In Hungary

Based on previous expert estimations and the forecast of the Ministry of Economic Affairs, the following potential was estimated from the increased energy efficiency resulting from usage of more efficient motors. Primarily the following figures are gained from the program of “Support for the improvement of industrial energy efficiency” of the ESEEAP (Energy Saving and Energy Efficiency Action Programme).

Based on the findings and on the forecasts of market development and price escalation the following potentials can be concluded in percent of total market share for energy efficient motors until 2012, and their energy savings.

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There are two main scenarios, one which assumes the present low level of support and subsidy, and an „optimal case scenario” which assumes a higher level of governmental support as outlined in some strategical plans.

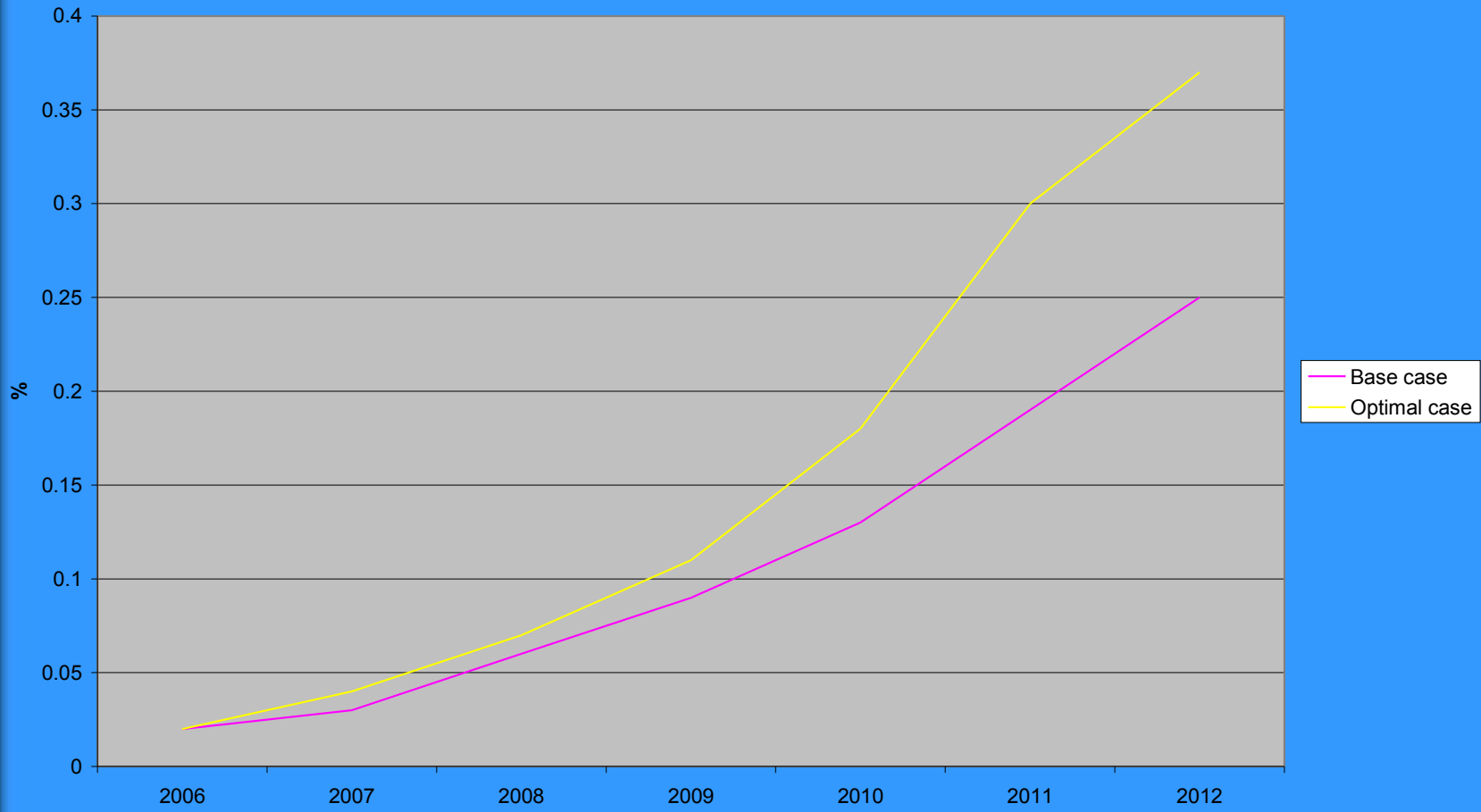
Estimated share of energy efficient motors - base case

	2006	2007	2008	2009	2010	2011	2012
Share	0.02	0.03	0.06	0.09	0.13	0.19	0.25
Annual energy saved (TJ)37	63	116	170	239	356	461	
Aggregate energy saved (TJ)37	100	216	386	625	981	1442	

Estimated share of energy efficient motors - optimal case

	2006	2007	2008	2009	2010	2011	2012
Share	0.02	0.04	0.07	0.11	0.18	0.3	0.37
Annual energy saved (TJ)37	80	150	238	394	664	820	
Aggregate energy saved (TJ)37	117	267	505	899	1563	2383	

Market penetration of EE motors under different subsidy schemes



Conclusions

- Uncertainty of estimations exists, however can be considered non-biasing
- Significant development in market penetration can be achieved with supporting measures (awareness, govt. Subsidies)
- Energy price in itself is a good market force for more efficient solution
- Additional support is yet needed for better penetration in the form of tax-benefits