







Quezada, Joest, August 1st, 2018, Mexico City

EMS-IMPLEMENTATION IN GERMANY

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-  **The German Energy Agency (dena) – Short Introduction**
-  **Political Context around EMS in Germany**
-  **Current Implementation State of EMS**
-  **Outlook**



The German Energy Agency (dena) – Short Introduction

MANAGEMENT & SHAREHOLDERS



MANAGEMENT

- Andreas Kuhlmann (Chief Executive)
- Kristina Haverkamp



SHAREHOLDERS: FEDERAL REPUBLIC OF GERMANY


- Represented by the Federal Ministry of Economic Affairs and Energy
- in consultation with:
 - Federal Ministry of Food and Agriculture
 - Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
 - Federal Ministry of Transport and Digital Infrastructure




FINANCIAL SERVICE PROVIDERS:

- KfW Group

WE'RE MAKING THE ENERGY TRANSITION HAPPEN

 **Centre of Expertise**
for energy efficiency, renewable energy sources and intelligent energy systems

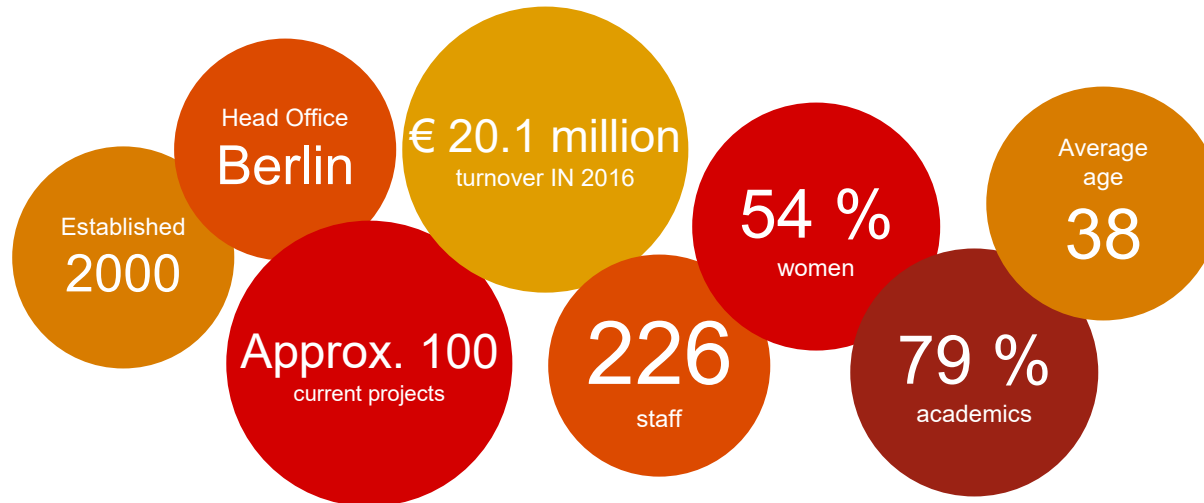
 **Intermediary**
between politics, industry and science

 **Serves multiple ministries**
and is in constant dialogue with market stakeholders

 **With clear objectives:**

- Support for the Federal Government in its energy policy strategy
- Communication focusing on issues concerning end users and suppliers
- Realisation of energy efficiency and renewable energy potential, including system integration

FACTS, FIGURES AND DATES



Main Divisions:

- Energy-Efficient Buildings
- Energy Systems and Energy Services
- Renewable Energies and Mobility

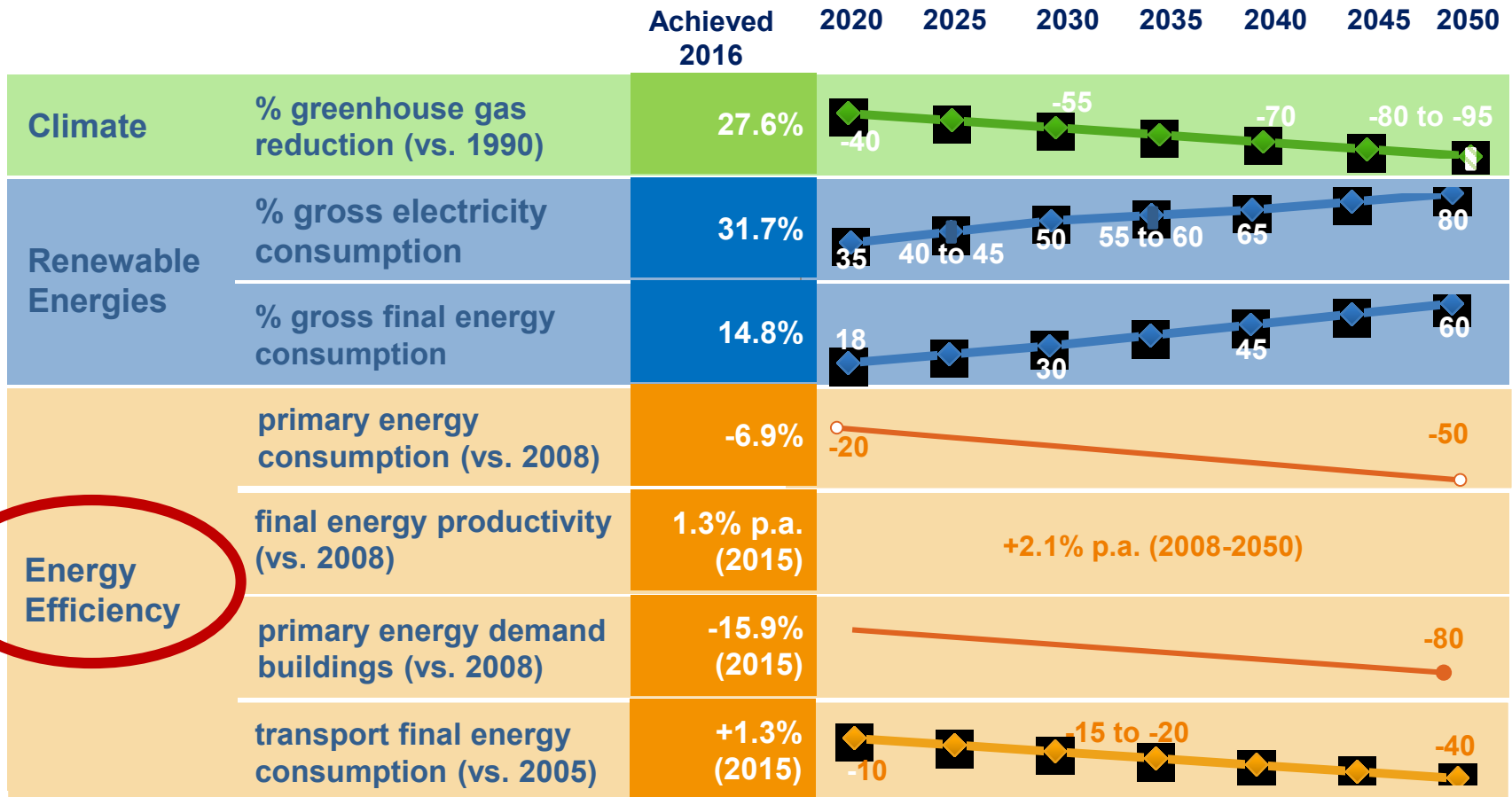
dena in dialogue in 2017:

- 4.5 million page visits on dena websites
- Distribution of 170,000 publications
- Over 2,700 printed articles and around 830 articles in online media
- Around 5,600 visitors to dena events



POLITICAL CONTEXT AROUND EMS IN GERMANY

THE *ENERGIEWENDE*: LONG-TERM ENERGY AND CLIMATE STRATEGY OF GERMANY



& Following Fukushima 2011: Nuclear power phase out by 2022!

A SOUND MIX OF ENERGY EFFICIENCY INSTRUMENTS FOR INDUSTRY...

... is essential to achieve Germany's emissions reduction targets and some instruments are related to EMS

Tax exemptions and reductions

National founding program for EMS (until 2017)

Grants for energy efficient technologies and processes

Competitive invitations to tender for power efficiency (STEP up!)

EU emission trading
Voluntary agreements
IPPC

EDL-G: Energy audit obligation for non SME

SpaEfV: peak balancing directive

EEG 2016/17: Renewable Energy Sources ActEU

...

Offers of advice
Comprehensive communication measures

Energy efficiency networks

Energy charge
Electricity tax

Broad-based and well networked energy research



Source: BMWi 2017, dena

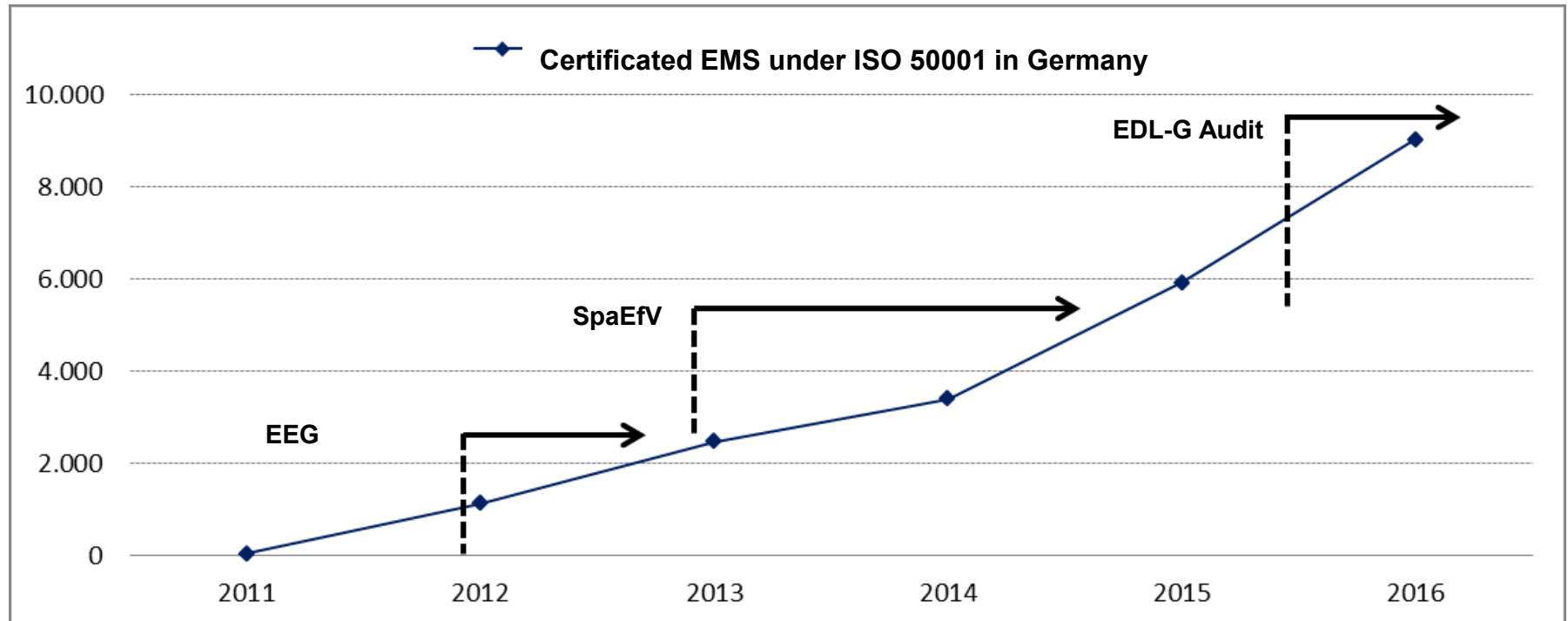
REGULATORY MEASURES RELATED TO EMS

	EEG: Renewable Energy Sources Act EMS necessary for special compensation scheme	SpaEfV: peack balancing directive EMS necessary for tax refund – peak balancing (annual audit in the claim year 31.12.)	EDL-G: German regulation for energy services EMS necessary to avoid energy audit (first-time by 05.12.2015, than at least every 4 th year)
SME Manufacturing	<ul style="list-style-type: none"> • 1 - 5 GWh electricity consumption each delivery point at least SpaEfV-audit or audit under EN 16247-1 • > 5 GWh each delivery point at least ISO 50001/EMAS 	<ul style="list-style-type: none"> • at least SpaEfV-audit or audit under EN 16247-1 • alternative ISO 50001/EMAS 	
Non-SME Manufacturing	<ul style="list-style-type: none"> • 1 - 5 GWh electricity consumption delivery point at least SpaEfV-audit or audit under EN 16247-1 • > 5 GWh each delivery point at least ISO 50001/EMAS 	<ul style="list-style-type: none"> • ISO 50001/EMAS 	<ul style="list-style-type: none"> • Audit under EN 16247-1 • ISO 50001/EMAS
Non-SME Others			<ul style="list-style-type: none"> • Audit under EN 16247-1 • ISO 50001/EMAS



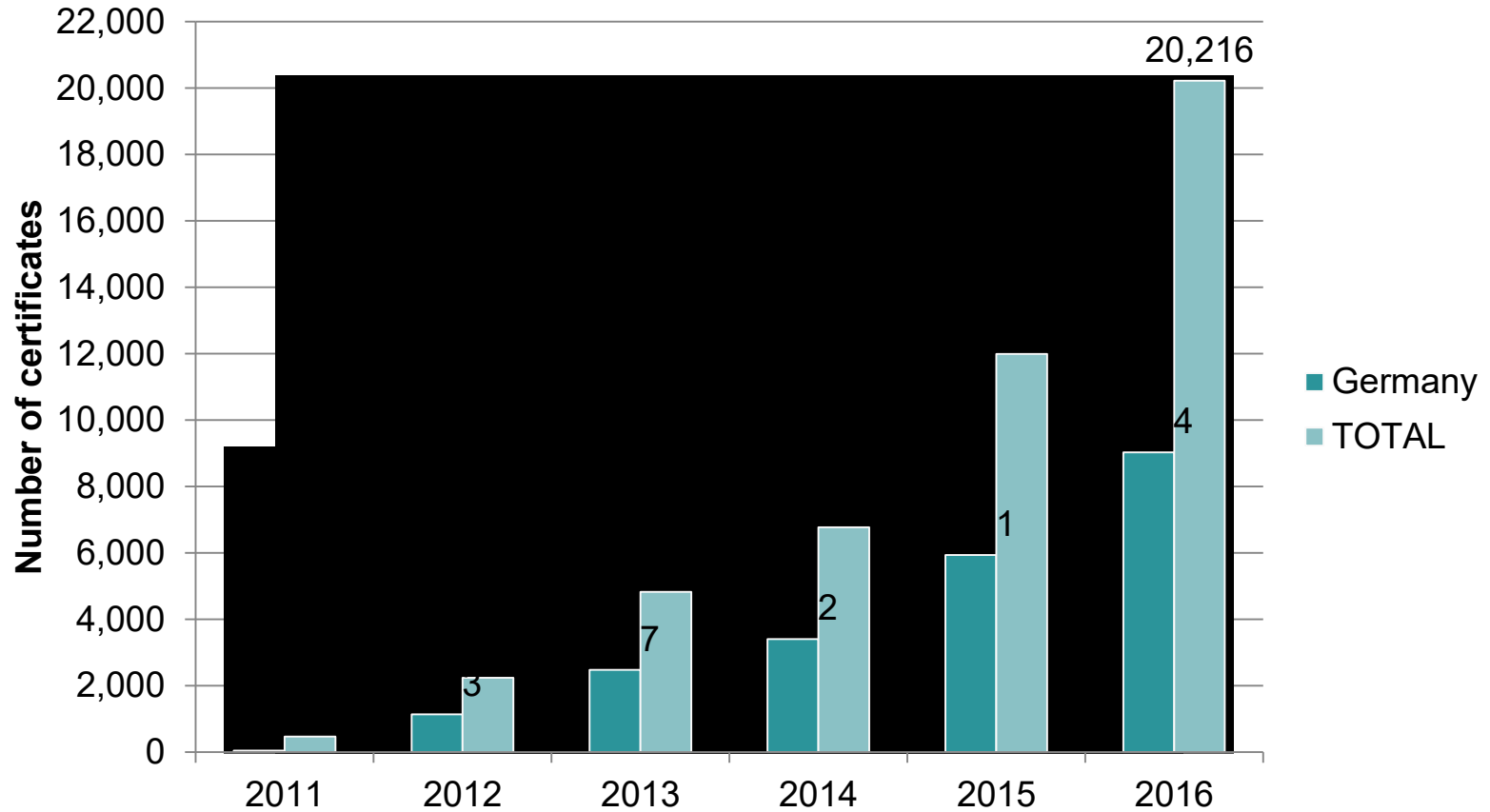
CURRENT IMPLEMENTATION STATE OF EMS

DEVELOPMENT OF THE SPREAD OF EMS & THE INFLUENCE OF MAIN DRIVING FORCES



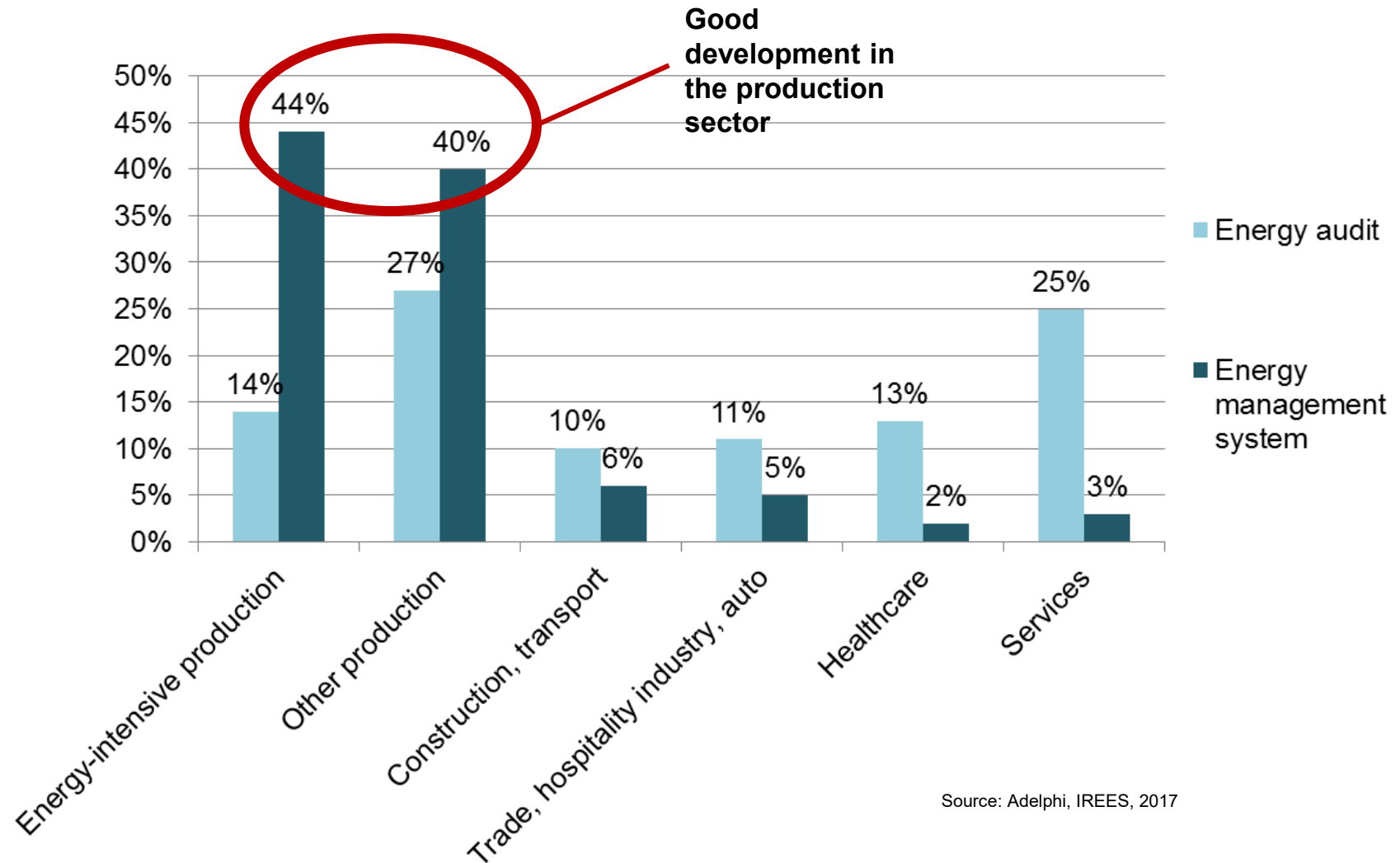
Source: ISO Survey; BAFA Background information to BesAR; GUTcert DAKKS; Evaluation report energy audits

ISO 50001- CERTIFICATES WORLDWIDE



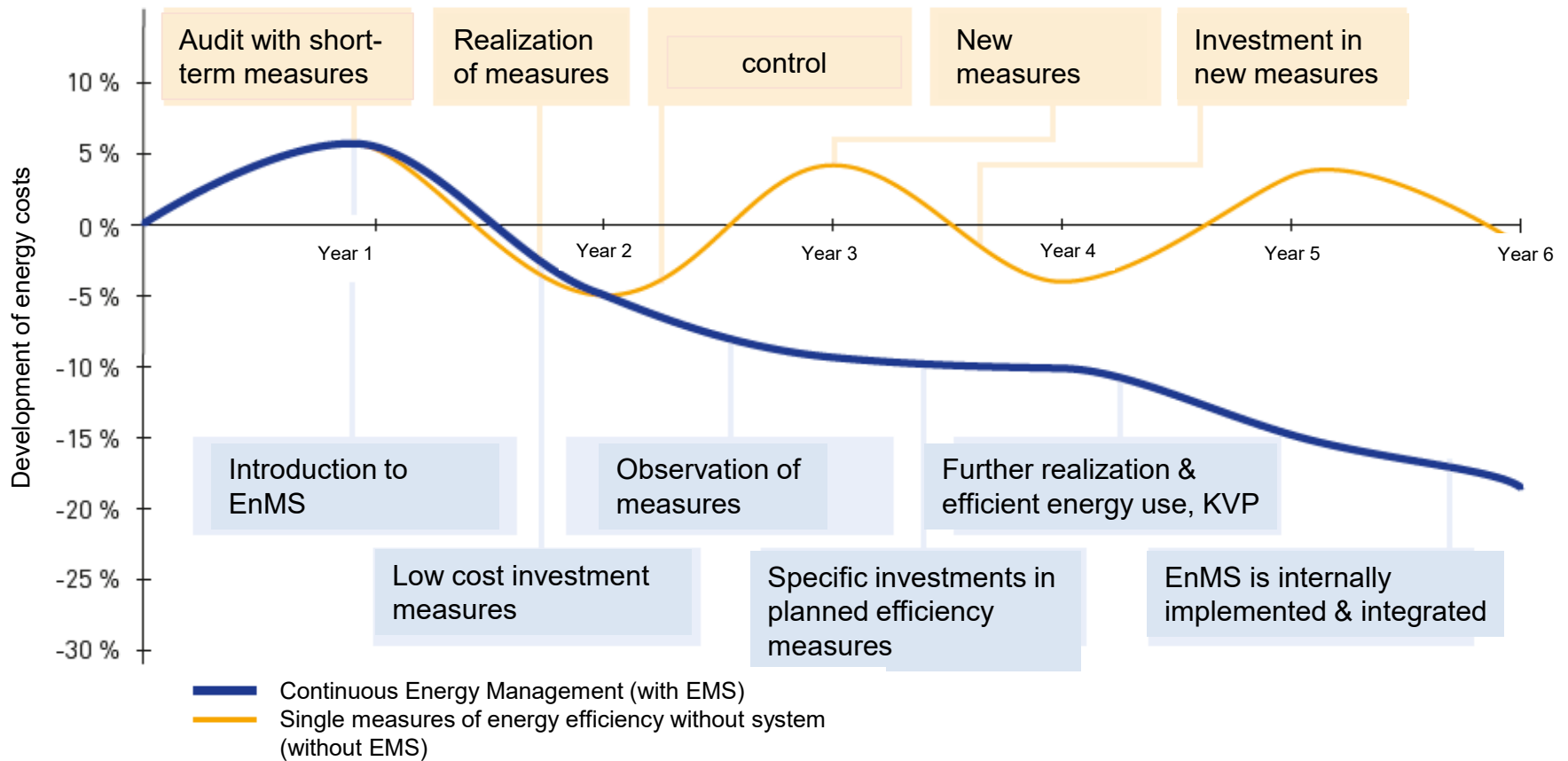
Source: The ISO Survey of Management System Standard Certifications (2011 - 2016)

CHOICE BETWEEN ENERGY AUDIT AND EMS IN DIFFERENT SECTORS



Source: Adelphi, IREES, 2017

CONTRIBUTION OF EMS AT COMPANY LEVEL



EnBW EnergyWatchers GmbH

PRACTICAL EXAMPLE: SYSTEMATIC ENERGY MANAGEMENT AT DAIMLER



- ▶ The Daimler (Mercedes-Benz) factory in Untertürkheim successfully implemented an EMS involving both, employees and management
- ▶ Top energy efficiency measures where: permanently information flow to employees on energy efficiency topics, heat recovery, increase of energy efficiency of the cool production, of the air conditioning and lightning modernization ...

▶ RESULTS

- Energy Saving of **182 GWh/a** (11%)
- Cost saving of **9,6 Mio. €/a**
- Investment of **4,6 Mio. €**
- Return of invest.: **210 %**
- CO₂-Reduction of **71.000 t/a**



PRACTICAL EXAMPLE: SALZGITTER FLACHSTAHL GMBH (STEEL PRODUCTION)

▶ The company has been working on energy efficiency for 40 years. To find new energy efficiency measures, the company developed its own energy management software in 2009

▶ Today over 800 measures have been found using this software as support for example (thereof several long term measures): pure oxygen to reduce fuel consumption in a heating furnace, high temperature recuperators, modernization of power plant using blast furnace gas, renewals of heating regulation and lighting, optimization compressed air consumption ...

▶ RESULTS

- Energy Saving of **896 GWh/a** (29%)
- Cost saving of **39 Mio. €/a**
- Investment of **269 Mio. €**
- Return of invest.: **14 %**
- CO₂-Reduction of **238.000 t/a**



BARRIERS OF THE IMPLEMENTATION OF EMS



HARD BARRIERS

- Lack of time and staff
- Lack of financial resources
- Amount of implementation costs
- Lack of expertise



MODERATED BARRIERS

- Lack of the awareness of the necessity for EMS
- Missing transparency of energy consumption and costs, as well lack of quality of available data
- Lack of information about the legal situation and support opportunities
- Lack of trust concerning external consultants
- Insufficient qualified supplier of energy service
- Insecurities about the political framework

Source: Forsa Befragung 2017 Energiemanagement 2017

INITIATIVE ENERGY EFFICIENCY NETWORKS (IEEN)



Agreement between the Federal Government of Germany and 22 associations and organizations of the economic sector

500 new Energy Efficiency Networks (EENs) in Germany

from December 3rd, 2014 until December 31st, 2020

- Increase energy efficiency for an international competitive position
- Potential saving of up to 75 PJ primary energy and 5 million tons greenhouse gas (German-government assessment)

Head Office by dena

- Enterprises can quickly achieve first steps for the implementation of an EMS according to ISO 50001 by participating at EENs
- Information on synergies between EMS & EEN currently in development
- The German government is currently checking the possibility of remission regarding the audit obligation

Partners:



Bundesministerium für Wirtschaft und Energie

Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit



DENA ACTIVITIES CONCERNING ENMS

- Printed manual Energy management
- Web-information, tools and documents within the communication campaign „Initiative EnergieEffizienz“
- Study to evaluate the contribution of EMS on energy savings
- Energy Efficiency Award: Price for particularly successfully EMS





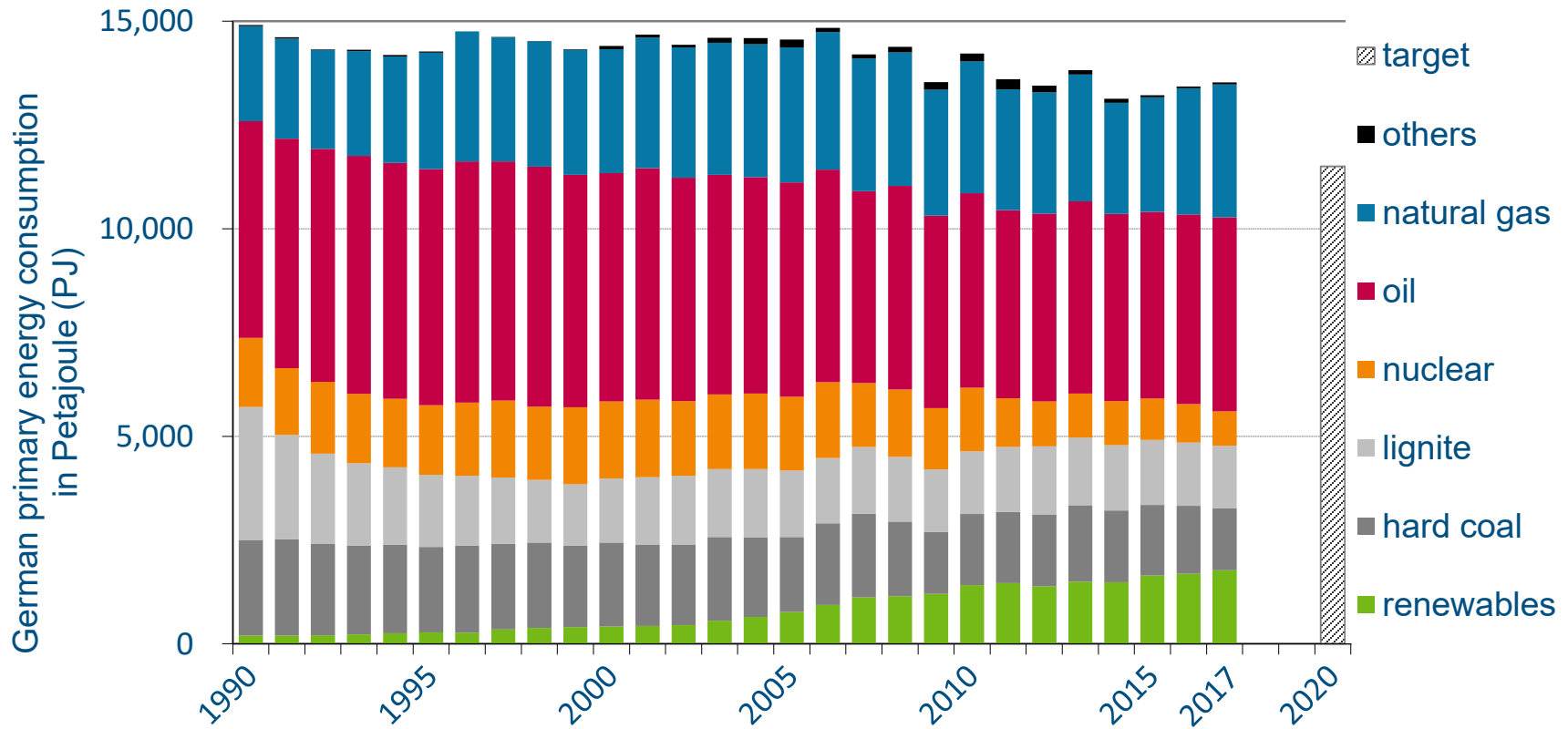
THANK YOU FOR YOUR ATTENTION.

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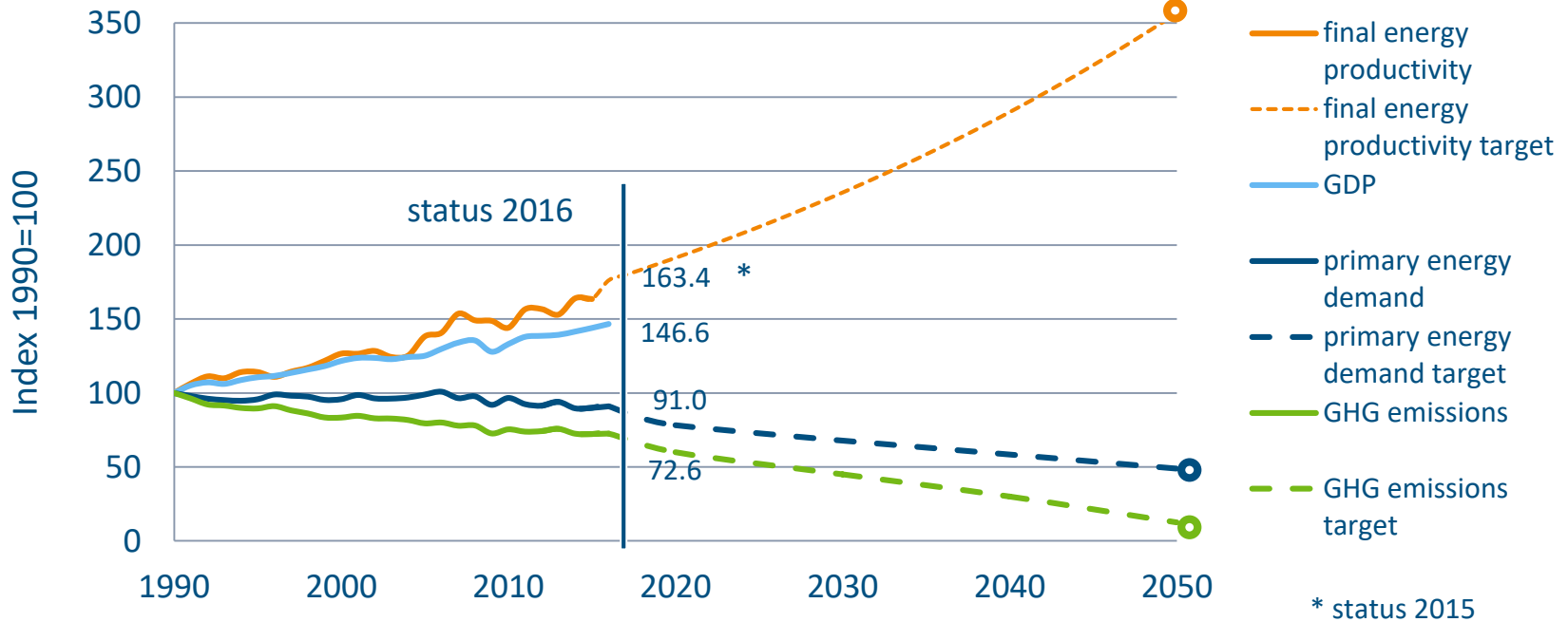


PRIMARY ENERGY CONSUMPTION



Source: AGEB 2018

DECOUPLING OF ECONOMIC GROWTH



National targets:

● +2.1% final energy productivity p.a.

● 2020/2050: 20/50% reduction vs. 2008

● 2050: 80-95% reduction vs. 1990

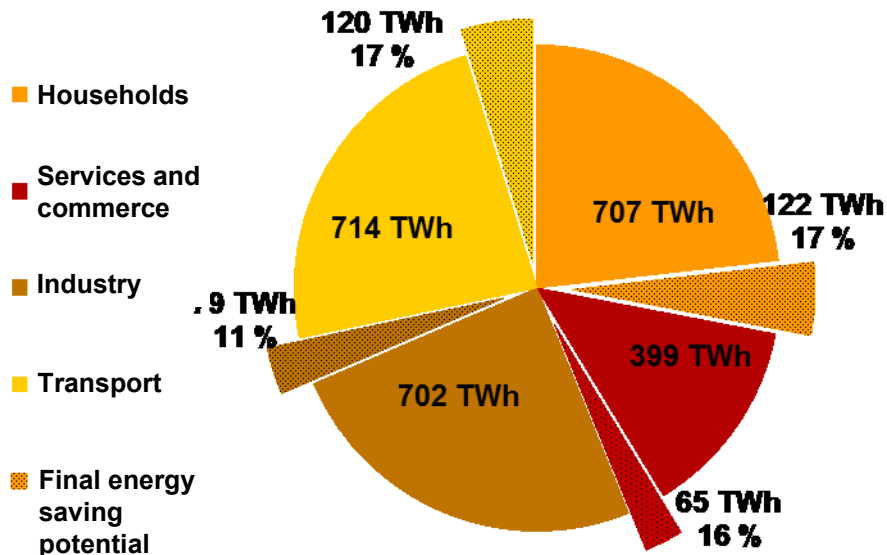
Source: Ecofys 2017 based on UBA 2017, World Bank 2017, AG Energiebilanzen 2017

ASSESSMENT OF ENERGY EFFICIENCY POTENTIALS – DENA STUDY

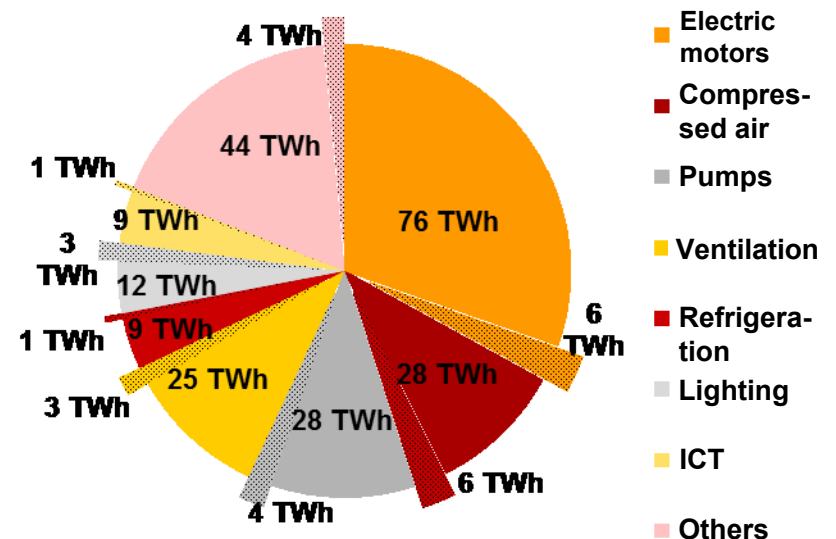
 Profitable final energy saving potential until 2020 compared to 2008:

- BAU scenario approx. 670 PJ (7 %)
- Energy efficiency scenario approx. 1,400 PJ (15 %)

Final energy consumption 2008 and saving potential 2020



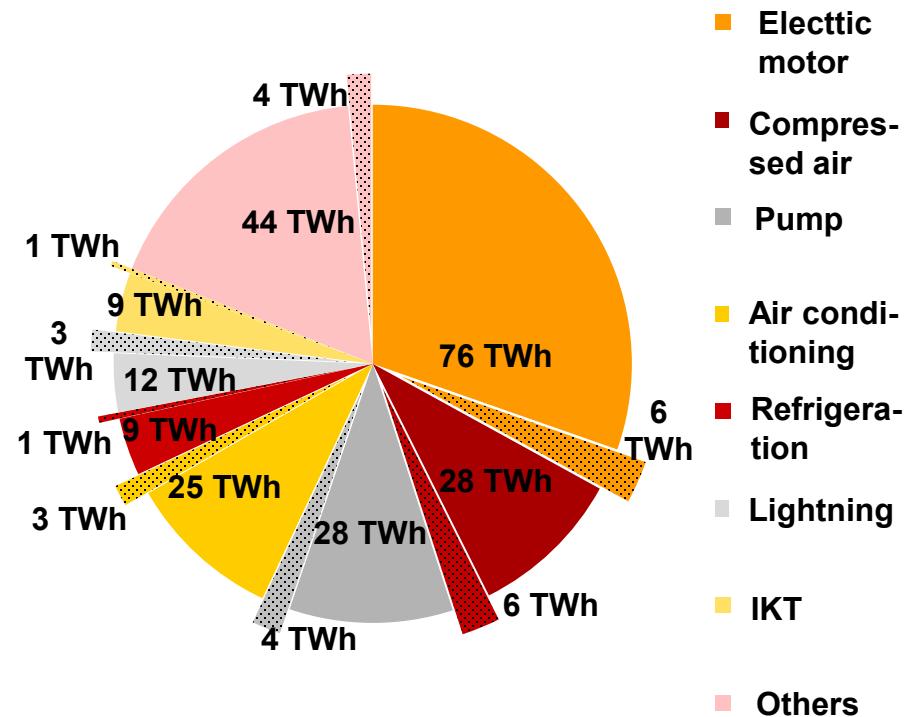
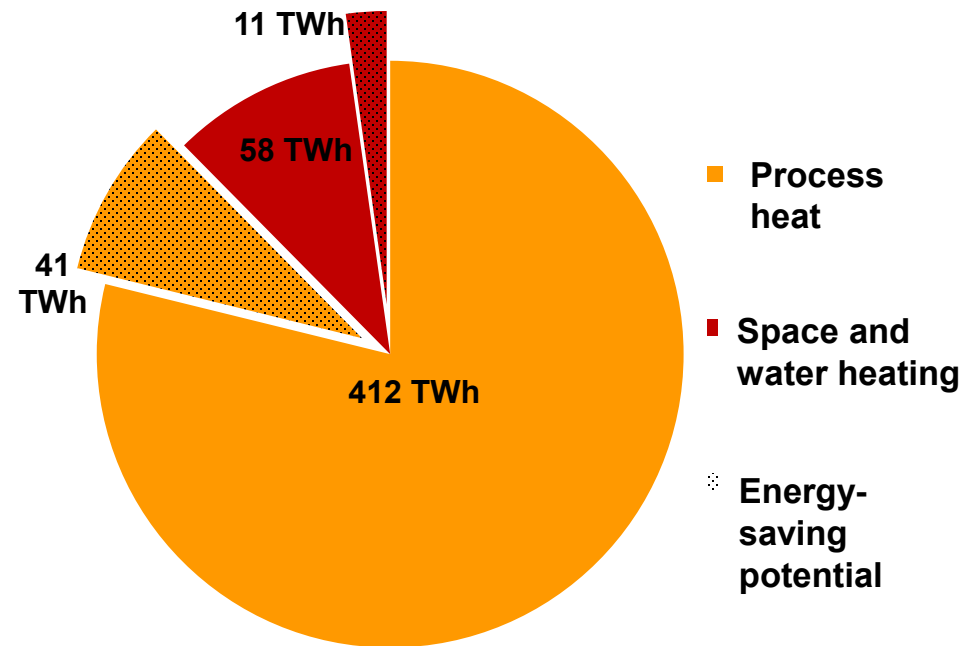
Industrial electricity consumption 2008 and saving potential 2020



ENERGY-SAVING POTENTIAL FOR 2020 IN INDUSTRY

Heat and Fuel

Electricity



Source: BMWi Energy Data 2012; Energy Efficiency Scenario in dena-Study EnEffV Sys 2012

OBLIGATION TO CARRY OUT ENERGY AUDITS IN GERMANY SINCE 2015

- Enterprises that are not SMEs are obliged to carry out an energy audit at least every 4 years
- Enterprises are exempted from the obligation, if they implement:
 - Energy management system according to ISO 50001, or
 - Environmental management system according to Regulation (EC) No 1221/2009 of the European Parliament and the Council
- Compliance of energy audit with DIN EN 16247-1 „Energy audit. General requirements“
- Registry of energy auditors (in part managed by dena)
- Spot checks of obligations fulfilment

ADVANTAGES OF ENERGY EFFICIENCY FOR INDUSTRY AND TRADE

Energy efficiency potentials for interdisciplinary cross-sector technologies in companies

