



# German experience regarding the implantation of ISO 50001 and its results

**Detlef Borst, Envidatec GmbH, Hamburg**



## Envidatec - Company History

- 2001 Head office in Hamburg, Competence center for efficient energy use
- 2004 Branch office as scientific center for R&D in Vienna
- 2007 Foundation of the omtec Energiemanagement GmbH, Vienna
- 2009 Orientation „Energy efficient into the future – DIN EN 16001“
- 2010 Foundation of the OOO Envidatec East (Ekaterinburg)
- 2011 Orientation „Energy efficient into the future – DIN EN ISO 50001“
- 2012 Start of OpenJEVis as R&D network (open source community)
- 2014 Start of the international JEVis partner network
- 2015 Setup an Envidatec subsidiary in Bangkok
- 2016 Setup of Envidatec South East Asia Ltd. in Singapore



## Envidatec Competences

**Energy  
Management System  
ISO 50001**

**Energy  
Efficiency Analysis**

**Energy  
Monitoring**

## Envidatec Business Units

**Energy Solutions**

**Short Term**

**Long Term**  
**- Service Contract  
(ESCO)**

**International  
Cooperation**

**Short Term**

**Long Term**  
**- Franchising**

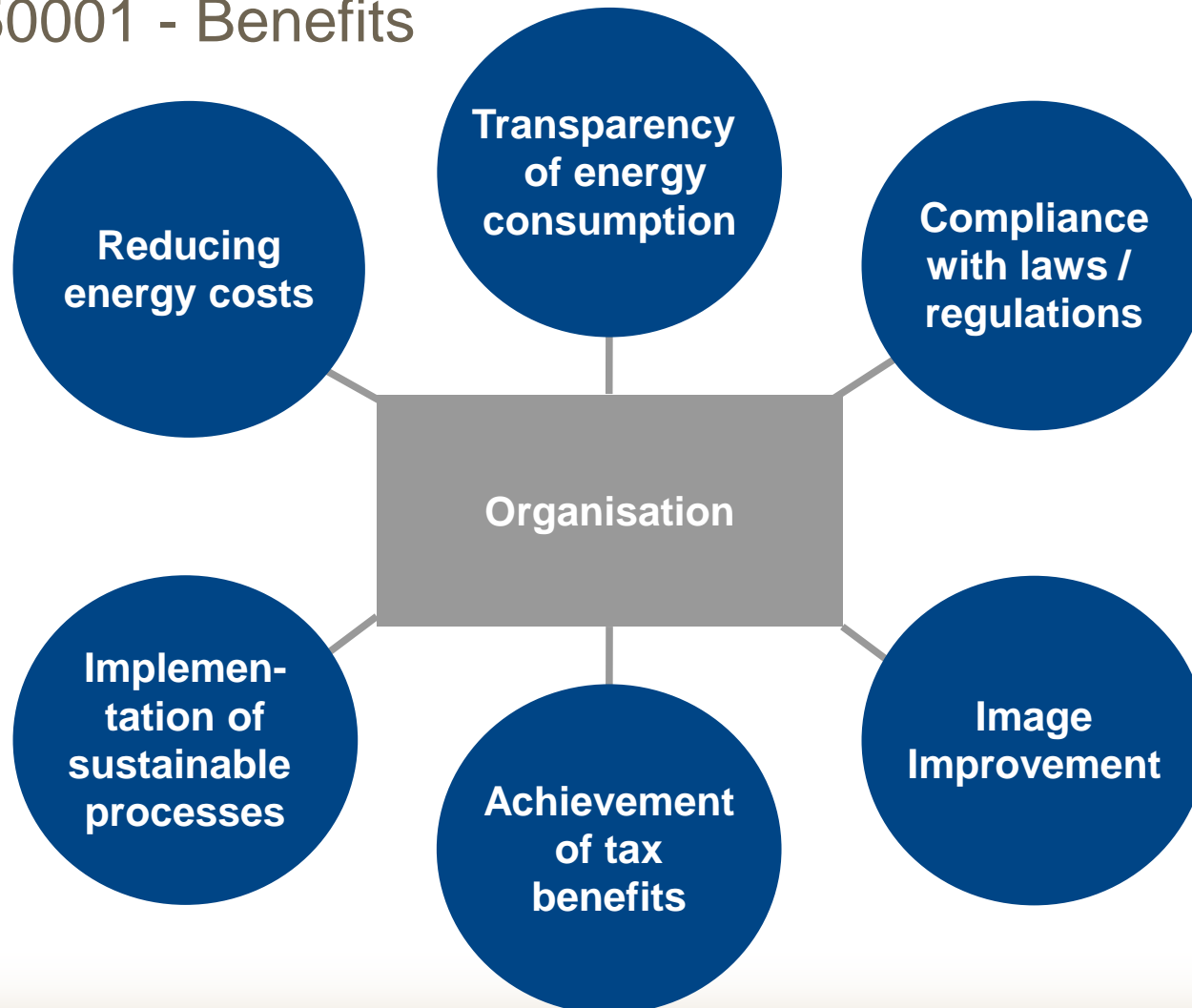
**JEVis Solutions**

**Short Term**

**Long Term**  
**- JEVis Services**



## ISO 50001 - Benefits





## Status of certified ISO 50001 Systems in the World

ISO Standard	Certificates 2015	Certificates 2016	Change	Germany	Portion
ISO 9001	1,034,180	1,106,356	7.0%	66,233	6.0%
ISO 14001	319,496	346,189	8.4%	9444	2.7%
ISO 50001	11,985	18,976	58.3%	9024	<b>47.6%</b>

Source: ISO Survey 2016

1. Germany (9,024 certificates)
2. UK (2,829 certificates)

....

Brazil (33 certificates - in middle of 2016)

Why does Germany have almost 50% of the world's certifications?



# German strategy for Implementing ISO 50001

**intensify the legal framework in 4 steps**

## Step 1 - 2011

**Tax rebates and subsidies for companies that implement the ISO 50001:**

→ Energy efficient companies often had in 1<sup>st</sup> year higher savings than costs through the implementation. Most of the energy-efficient industries implements it in 2012 to 2013

## Step 2 - 2014

**Mandatory for companies with energy demand > 10 GWh/a**

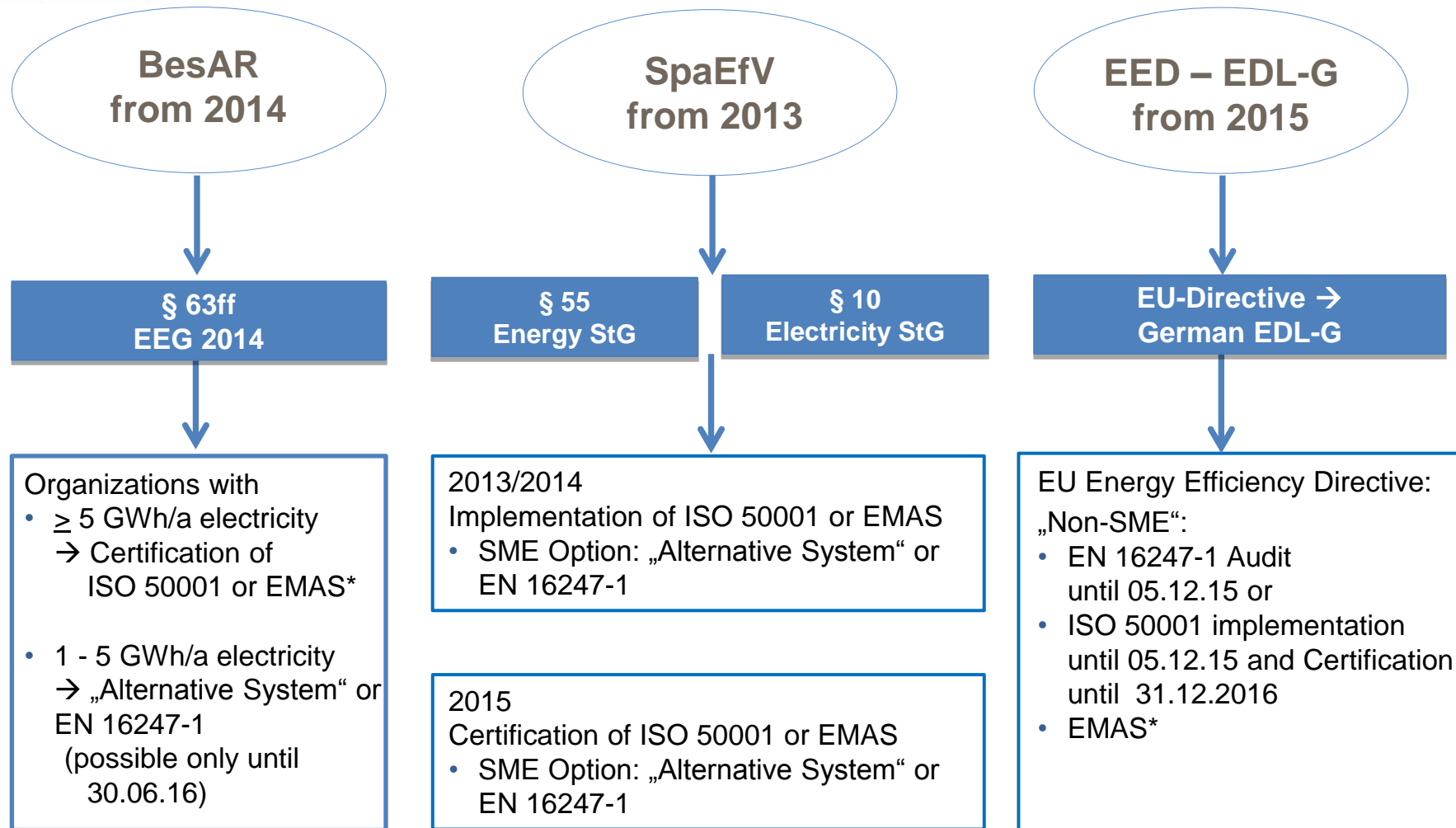
## Step 3 - 2015

**Mandatory for companies with energy demand > 5 GWh/a**

## Step 4 - 2016

**Mandatory for all Non-SME companies without a valid Energy Audit (EN 16247)**

**SME:**  
**> 250 employees**  
**OR**  
**> 50 M€ turnover**

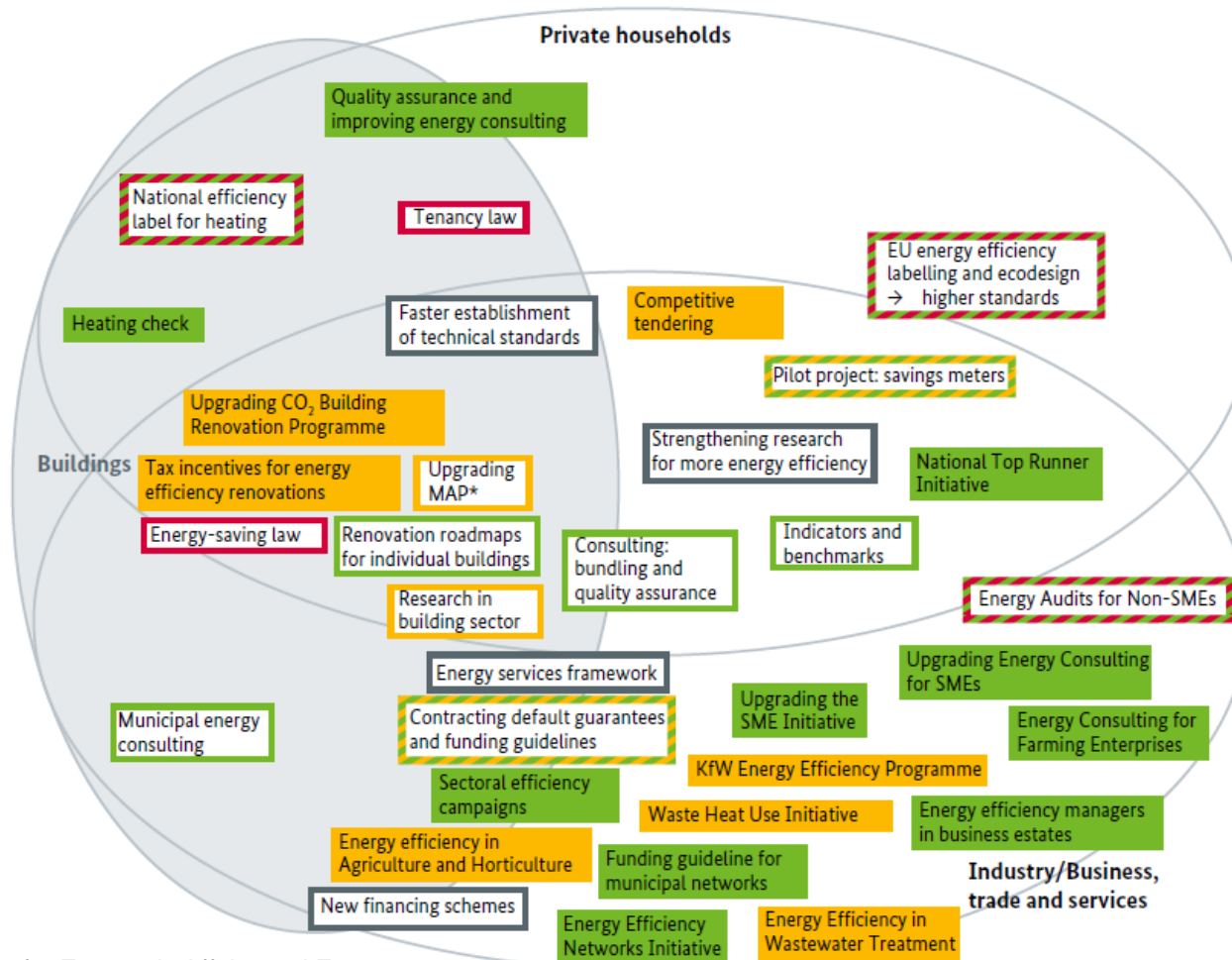


→ Since 2017: ISO 50001 or EMAS mandatory for all Non-SME

\* Eco-Management and Audit Scheme



# Short-term and long-term programs German NAPE



Source: Federal Ministry for Economic Affairs and Energy

Information Financial incentives Regulatory law

\* "Marktanreizprogramm" – Market Incentive Programme for Renewable Energies





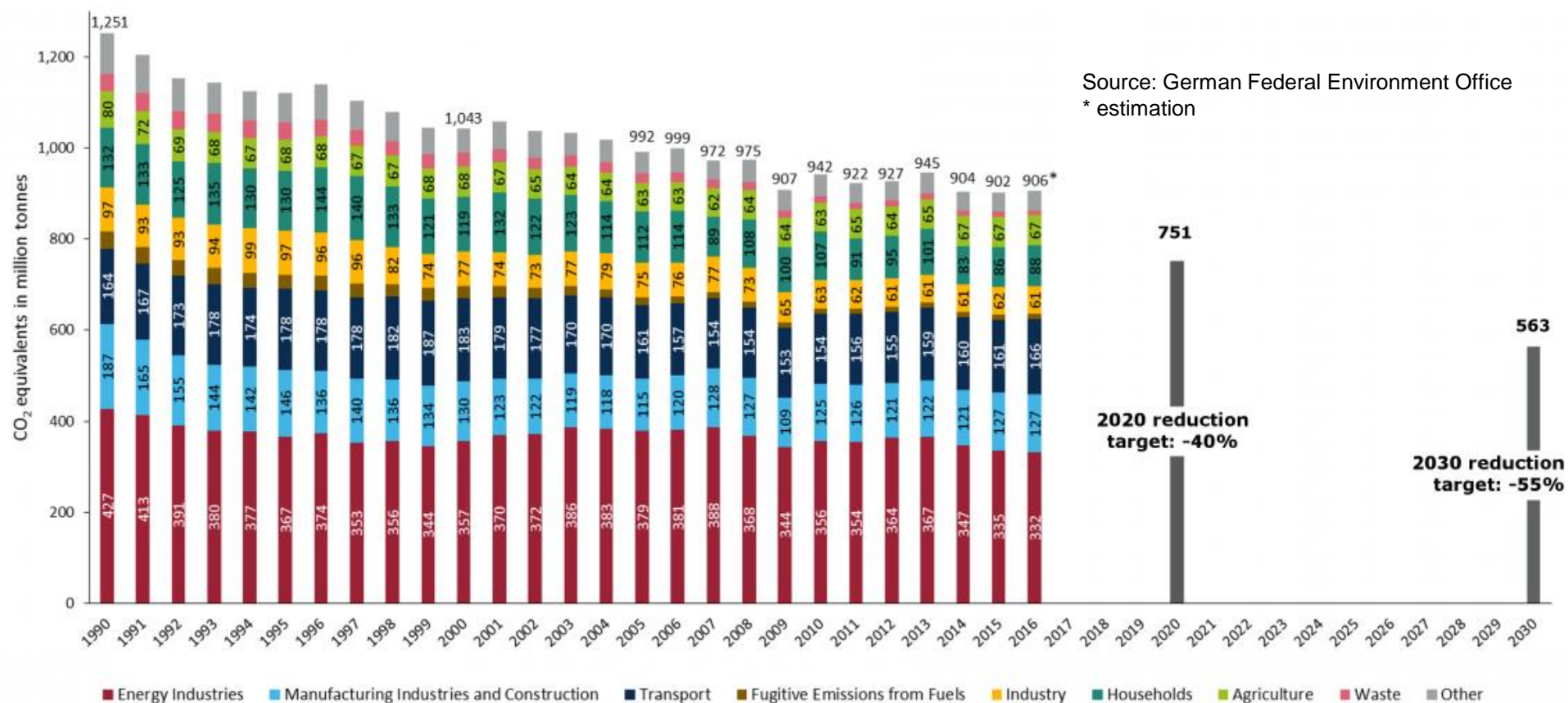
## Results of German “Energy Transition”

- All energy intensive industries had implemented ISO 50001 early to save taxes and receive subsidies
- Energy efficiency in (large) companies has improved significantly in recent years
- Awareness in Germany regarding EnMS is high
- Nearly all target groups know ISO 50001, even if not all have implemented yet
- The Energy Transition has also created many new jobs in Germany
- The Energy consumption has decreased - but less than planned:
  - More Renewable Energy
  - Less Nuclear Energy (Nuclear phase-out)
  - More Energy from Coal



# Results of German “Energy Transition”

## Greenhouse Gas Emissions in Germany





# The Power of Sensitization





## Main Players for the Implementation of EnMS

### The Organization:

According to estimations, the ISO 50001 in Germany concerns between 50,000 and 75,000 organizations. Nevertheless, "only" around 9,000 systems have been introduced. The greatest inaccuracy in the estimates is the often complex structure of company groups.

### The Consultant:

mainly small to medium size consulting firms with relevant experience in energy efficiency. Also individual freelancers but here often low quality for low price. Often no holistic approach.

### The certifier:

The certification usually needs 2 to 10 days depending on the size of the company and the number of sites

### The BAFA (German Federal Office of Economics and Export Control):

responsible for supervising the certificates and authorise the consultants. The BAFA also perform inspections and arranges penalties if obligatory companies have not implemented EnMS



## Energy Management Timeline (typical 3 to 12 months)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1. Energy Planning												
1.1 Input parameters for planning												
1.2 Energy Review												
1.3 Results of Planning												
2. Checking: Monitoring, measurement and analysis												
3. Evaluation of compliance with legal requirements and other requirements												
4. Competence, training and awareness												
5. Communication												
6. Energy Team												
<b>Certification Audit</b>												

Typical Effort:

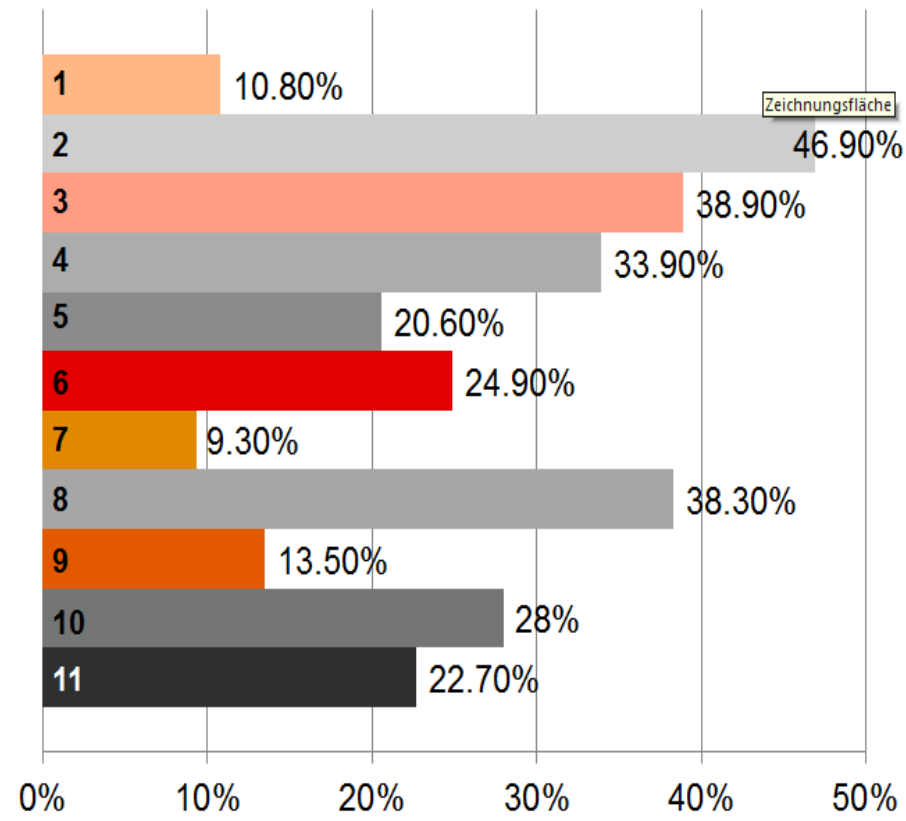
External consultant: 40 days, ~ 40,000 \$

Internal stuff: 60 - 80 days



## What are the barriers for organizations to improve EE?

1. lack of knowledge about energy savings
2. lack of knowledge about energy-saving technologies
3. Responsibility for energy issues not clearly regulated
4. Lack of time, high workload
5. Concerns about operations and production safety
6. The importance of energy costs is secondary
7. Too high information search costs for suitable technol.
8. too long amortization periods for investment measures
9. lack of capital for investment measures
10. available capital flows into more important investments
11. lack of motivation of the employees



Source: KfW Bank, Energieagentur NRW





## Envidatec's Experiences with ISO 50001

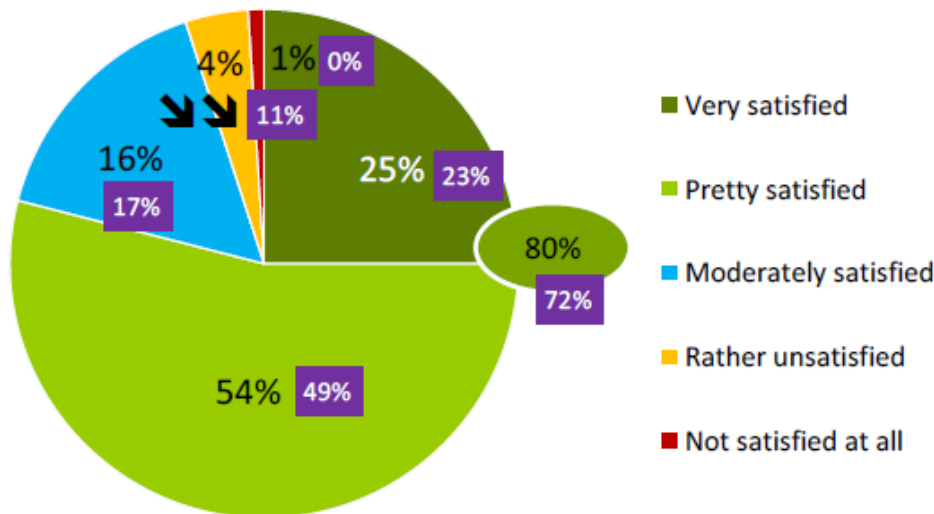
All our clients have experienced the implementation as an improvement for the organization. Main benefits are:

- Strongly increased transparency / knowledge about the energy relevant processes and areas
- Employee's awareness on energy: This is an essential approach of the continuous improvement process. Through training and awareness raising across the whole enterprise, ideas and savings initiatives are increasing significantly
- Higher budget for measures: the sensitization has an effect on the management as well. By involving them, the management approves investments more easily and more frequently
- Higher savings: More awareness and investment leads to higher savings
- Many quick savings were realized through organizational measures

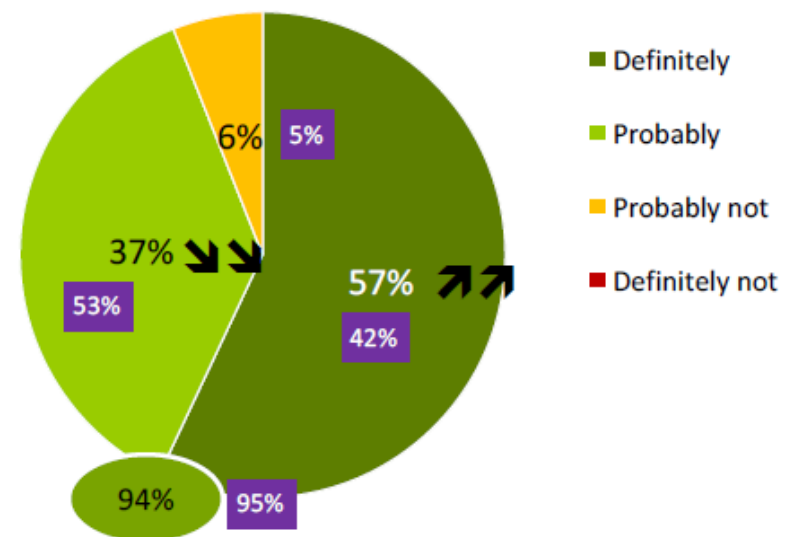
# Study about experiences with ISO 50001

Most studies are from certification bodies. One detailed is from AFNOR (Association française de normalisation, [www.afnor.org](http://www.afnor.org))

Perception of the EMS process



2015 WW figures



Source: AFNOR 2016





## Study about experiences with ISO 50001

The main intentions of the participants were according to this study:

- the exact identification of energy consuming areas/facilities (95%)
- weak factors such as long-term improvement of processes (85%)
- increasing the competence of staff (76%)
- the chance of savings (75%)

Savings through ISO 50001:

- Savings are usually between 2% and 30%
- This depends strongly on the type of organization and the characteristics of its processes
- 98% the companies saved more and/or faster than they expected
- At least half of the companies saved more than 5%

Source: AFNOR 2016



# Study about experiences with ISO 50001

Results of a TÜV Thüringen survey in Germany 2015:

- The energy efficiency in organisations with implemented ISO 50001 is 25% higher than in those without
- Through simple and fast measures (low hanging fruits) 10% to 15% savings are possible in average
- Up to 30% savings were reached 5 years after implementation
- In the long run, the savings through Energy Efficiency are much higher than through technological improvements

Source: TÜV Thüringen 2015



# Challenges by implementing ISO 50001

Main Challenge: Provide enough time

If you want to implement an ISO 50001, do it right!

It needs usually more time than expected:

- Provide the responsible employees with enough time to carry out their tasks sustainably
- Set-up the energy team with enough employees from all departments involved
- The Management must support the EnMS continuously and must be involved regularly



# Challenges by implementing ISO 50001

Other Challenges are:

- Knowledge Transfer: all employees must be trained regularly for awareness rising
- Evaluating of the energy data (find correct and reliable data sources, challenges in measurement of data, etc.)
- Good planning in the beginning saves from many surprises later

Bad Experiences:

- Some companies are interested in the certificate only
- Some consultants offer for low prices very low quality

## German Best Practice #1 – Tchibo Manufacturing GmbH

### Key Facts:

- One of the largest German Coffee Producer
- Purchase raw coffee from many countries in the world
- Owns two large roasting plants in Germany (Hamburg and Berlin) and one in Poland (Marki)
- Implemented ISO in 2014 in these 3 plants





## German Best Practice #1 – Tchibo Manufacturing GmbH

### Success story:

- Saves energy and costs through realized energy optimization measures
- Got many new ideas for Energy Efficiency
- Employees are motivated to support energy savings and creates many new ideas
- Started several new Energy Efficiency projects in the last 3 years (ventilation, lighting, energy monitoring, ...)

### Main challenges:

- More workload for the internal employees than expected
- Pressure of time before certification. But high motivated energy team



## German Best Practice #2 – Hamburg Port Authority (HPA)

### Key Facts:

- Hamburg is the third largest harbour in Europe and the second largest container harbour in Europe
- HPA owns more than 100 buildings, 41 ships and many special facilities like cars, trucks, trains, cranes, bridges, watergates etc.
- HPA is one of Hamburg's largest employer with 1,800 employees and that one with the largest area (about 10% of the area of Hamburg)
- Implemented ISO 50001 in 2016
- Receive no tax rebates as a public organization but Implementation is mandatory due to European Energy Efficiency Directive





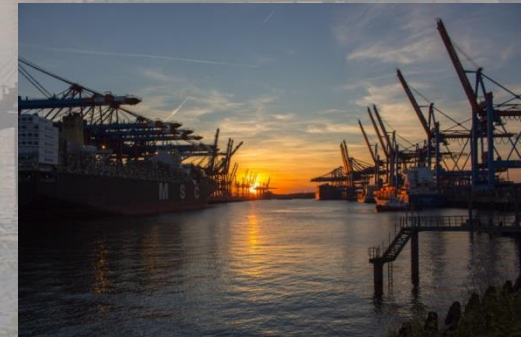
## German Best Practice #2 – Hamburg Port Authority (HPA)

### Success story:

- Get the first time a real overview about the energy consumption in all their facilities
- Have managed to develop a unified corporate strategy regarding energy efficiency. HPA is a public authority and due the many locations this was the main challenge.
- Saves significant costs through energy optimization measures
- Developed many new ideas for Energy Efficiency projects
- Employees are motivated to support energy savings

### Main challenge:

- Bring all people from the numerous facilities to one table





## German Best Practice #3 – Plastic Omnium Automotive

### Key Facts:

- PO is one of the world leaders in automotive exterior components
- Produces various plastic elements for cars, such as bumpers, energy absorption systems, fenders, front-end modules, and fuel tanks.
- Owns 115 plants in more than 30 countries
- Implemented ISO 50001 in its German plants in 2012
- Main reason for the early implementation was competitiveness



## German Best Practice #3 – Plastic Omnium Automotive

### Success story:

- Our fastest ISO 50001 implementation (2 months)
- Due to short deadline for tax decrease application
- Due to very intensive work with the energy team a fast dissemination of knowledge and awareness rising were reached
- Many optimization measures where identified through trained employees
- Started several new Energy Efficiency projects after implementation

### Main challenge:

- Time pressure during the implementation of the EnMS during the normal working load



Thank you for your attention!

Contact:

Envidatec GmbH

Veritaskai 2

21029 Hamburg

Germany

Phone: +49 40 300 857 - 0

Email: [detlef.borst@envidatec.com](mailto:detlef.borst@envidatec.com)