

# The Energy Efficiency Directive Impact on the Industry Sector: Importance of Energy Management



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## 1. Problem statement

**European industries** are submitted to a growing number of regulations.

Restrictions are put on  $CO_2$  emissions but also on energy consumption, to limit their impact on climate change and become more energy efficient and competitive.

For energy-intensive companies it is important to cope with **new obligations** and have access to tools that can help them comply with the requirements, esp wrt the **EU2030 policy** and its fixed target for increasing energy efficiency by **30%**, next to reducing GHG by **40%** and increasing renewable energy to min **27%**.

# 2. The Energy Efficiency Directive<sup>[1]</sup>

o Released in December 2012 / transposed in June 2014

The EED was created to reach the 20% EU target for reduction of energy consumption (20-20-20 target [2]). It introduces legally binding measures covering the whole energy chain.

### Measures for industry:

- o Mandatory energy audit before Dec. 2015
- Energy consumption reduction target (defined at national level)

Audit exemption possible: if company is certified via an approved energy management system (ex: ISO 50001).

- → In both cases it means that companies have to:
- conduct regular energy reviews,
- determine their performance
- identify, evaluate, implement energy savings options
- monitor the impact on energy efficiency

# 3. Energy policies across Europe

National energy policies organized in 3 main groups<sup>[3]</sup>

## Prescriptive policies, eg:

- Mandatory or voluntary agreement between government and industry
- Most commonly used
- Commitment from both sides
- Often involve ISO 50001
   certification

#### Economic policies, eg:

- Taxes (energy)
- Financial incentives (dedicated funds, tax reduction/exemption)

#### Supportive policies, eg:

- Information campaigns
- Energy audit training
- Best practice information sharing
- → A balanced policy mix seems to be the most efficient to drive changes

**Energy Efficiency** 

Voluntary

agreements

Taxes

Financial

(European policies)

(national policies)

Independent

bodies

Government

COUNTRY

Carbon ETS

Industry

EEO Scheme

Energy

→ Overall: energy management system is the key driver for continuous energy performance improvement

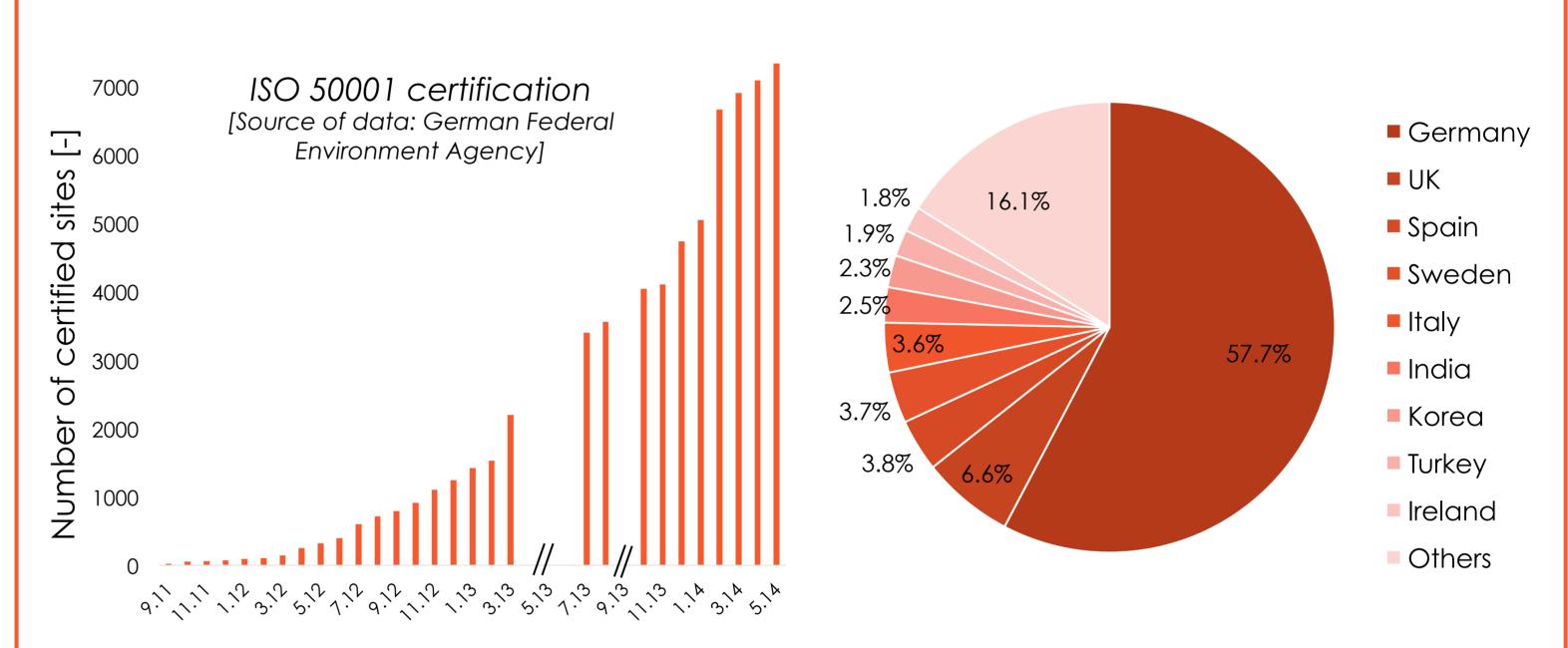
# 4. Energy management (ISO 50001)

ISO 50001 is the worldwide reference for an effective energy management system (EnMS). It is based on a **continuous improvement** principle, and builds on ISO 9001 and ISO 14001.

The core of the technical part is called the energy review:

- → Determine the energy profile of the site
- → Evaluate its performance
- → Generate an energy baseline
- >Identify, evaluate, implement improvement options
- similar requirements as in energy audits

Certifications are increasing worldwide with Germany as leader.



Strong importance for companies to develop powerful EnMS but also tools and models to have a good understanding and control of the energy consumption.

#### 5. Available tools

How to carry out an an energy review?

Different tools/methods depending on the level of detail:

- Energy and mass balances
- Trend analysis

Figure: European and national

o Leadership commitment

o Strong and innovative

Benefits for industry:

○ energy taxes

o Fulfill regulations

competitiveness

o **1** public image and

o energy cons. + CO<sub>2</sub>

methodologies and tools

policies applying to industry

How to cope with it?

o EnMS (ISO 50001)

Internal auditors

- First stage, global picture
- Key Performance Indicators
- Second stage, benchmarking
- Best Practice Technology (BPT)
  - ables) Deeper
- Regression analysis (single/multi variables)Process integration, optimisation
  - analysis

Techno-economic energy **models**<sup>[4]</sup>, gathering methods previously mentioned, are promising tools for energy management, identifying **trade-off** between investment and energy performance.

#### Limitations, eg:

- Confidentiality issues
- Lack of proper guidelines to conduct the review
- Need for appropriate KPI's and benchmarks [5]
- Need for the integration of real time data [5]

On top of these challenges, barriers coming from the **energy efficiency gap issue** have to be overcome involving high commitment from management

Conclusion: Innovative approaches and efficient tools for energy management will likely play a key role in the next decades, in order to reach the ambitious targets for 2030 and beyond.

Sources: [1] European Directive 2012/27/EU on Energy Efficiency, Official Journal of the European Union, 14.11.2012
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  [5] Bunse K. et al. 2011, Integrating energy efficiency performance in production management gap analysis between industrial needs and scientific literature. Journal of Cleaner Production 19, 667-679