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e info@iipnetwork.org w iipnetwork.org

Energy Management Programmes: Lessons learnt from evaluations in Denmark, Ireland and Sweden

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Amelie Goldberg and Julia Reinaud

Presentation Outline

1. Why energy management systems (EnMS)?
2. Research Aim and Methodology
3. Overview of three countries' programmes
4. Drivers and mechanisms for effective EnMS implementation
5. Lessons learnt from evaluations

Importance of energy management systems (EnMS)

- A tool for driving continuous improvement of energy performance
  - Active across different divisions within a company
  - Commitment by top management is integral with EnMS
  - Helps measure energy use, and identify and prioritise practices and technologies
- Can deliver significant co-benefits
  - Taking these into account reduces payback times
- New focus on ISO 50001 and how governments can promote its adoption

Research Aim and Methodology

- Aim of the paper: provide lessons learnt on how governments can encourage widespread adoption of EnMS

- Method
  - Focus on 3 countries with good EnMS experience
  - Synthesis of evaluations: government reports, academic papers, comparison studies
  - Develop a framework that identifies key elements of programmes supporting EnMS (i.e. EnMPs)

Results: selection of evaluations…

- Sweden: Programme for Energy Efficiency in Energy-Intensive Industries **(PFE)**
  - Björkman & Petersson, 2011. ECEEE Summer Study.
  - Swedish Energy Agency, 2011
  - Petersson, 2011. ECEEE Summer Study
- Denmark: Agreement on Industrial Energy Efficiency **(DAIEE)**
  - Danish Energy Authority, 2002
  - Ericsson, 2006
  - Gudbjerg, 2011 ECEEE Summer Study
- Ireland: Large Industrial Energy Network **(LIEN)** and Energy Agreements Program **(EAP)**
  - O'Sullivan
  - SEAI, 2010.

Overview of three countries' programmes

	Denmark	Sweden	Ireland
Voluntary EE programme	DAIEE	PFE	LIEN and EAP
EnMS mandatory in?	2001	2004	2006
Coverage (as a proportion of final industrial demand)	65% (2005 figure)	55%	50%
Estimates of savings achieved*	10-15% during the first years of EnMS implementation. 2.7% annual savings. 2.4 PJ 1996-2003	Gross annual electricity savings of 1.45 TWh per yr or 5% savings over 5 years	(LIEN) Annual energy savings of 2% per year. 5.2% EE improvement in 2008.

*see full paper for more information, references and assumptions

Denmark

Drivers & Incentives

- Tax rebates
- Subsidies for independent audits and Special Investigations (up to 50% of cost)

Mechanisms for effective EnMS implementation

- Mandatory Special Investigations
- Training, direct technical assistance
- Must implement measures < 4 yr PB
- Workshops and seminars
- Case studies and guidelines

Energy Management Systems

- Mandatory within voluntary programme since 2001
- National and EU standard initially
- Transitioning to ISO 50001

Adapted from: Reinaud, Goldberg and Rozite, 2012

Sweden

Drivers & Incentives

- Tax rebates

Mechanisms for effective EnMS implementation

- Mandatory Energy Reviews, Procurement and LCC
- Training on the above
- Must implement measures < 3 yr PB
- Workshops and seminars
- Manuals on EnMS

Energy Management Systems

- Mandatory within voluntary programme since 2004
- National and EU standard initially
- Transitioning to ISO 50001

Adapted from: Reinaud, Goldberg and Rozite, 2012

Ireland

Drivers & Incentives

- Extensive support
- Peer-to-peer exchange
- Grants for Special Investigations
- Special Initiatives

Mechanisms for effective EnMS implementation

- Mandatory Special Investigations
- Training, direct technical assistance
- Workshops and networking
- Guidelines, benchmarks, tools, case studies

Energy Management Systems

- Mandatory within voluntary programme since 2006
- National and EU standard initially
- Transitioning to ISO 50001

Adapted from: Reinaud, Goldberg and Rozite, 2012

Lessons learnt from evaluations

- Uptake of EnMS is correlated with a well designed energy management programme and linked to a policy package
- Companies witnessed clear benefits from EnMS implementation
- Attribution of energy savings to EnMS is difficult
- Greater staff capacity to manage energy thanks to EnMS
- EnMS is a management issue
- Quality assurance devolved to certification bodies
- Lessons from 3 countries' programmes could benefit policy makers in other countries considering developing EnMPs.

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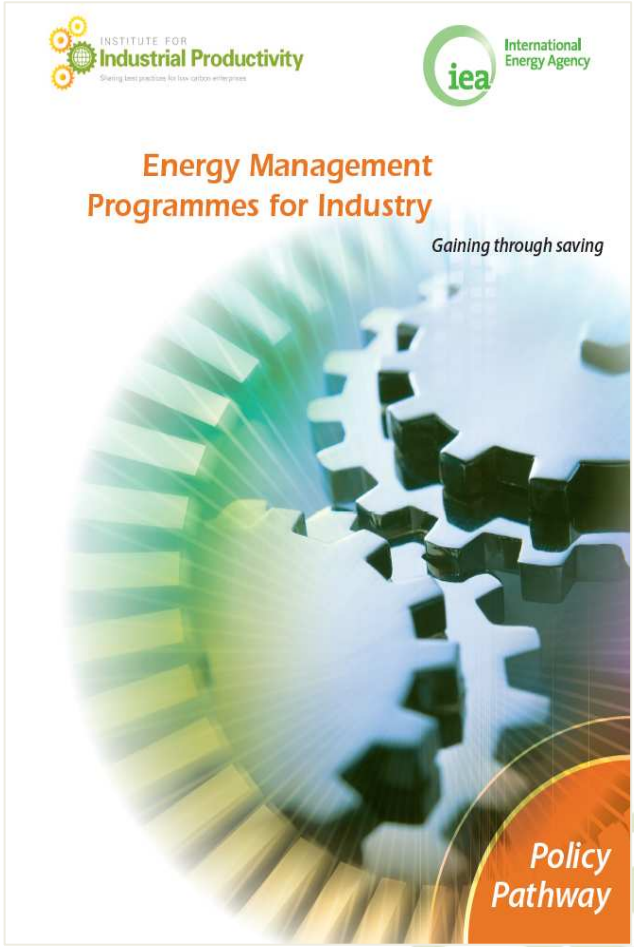

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e info@iipnetwork.org w iipnetwork.org

Amelie.goldberg@iipnetwork.org
Julia.reinaud@iipnetwork.org

iipnetwork.org
Twitter.com/iipnetwork
Linkedin.com/company/institute-for-industrial-productivity