



Inclusive and Sustainable Industrial Development



UNIDO's Energy Efficiency programme

The Energy Management Systems Approach

Vienna, 8 April 2014



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UNIDO

UNIDO is a specialised agency in the United Nations System, which has the following mandate:

- Promote and develop **sustainable industrial development** in developing countries and transition economies;
- **Improve livelihoods** in the world's poorest countries by making use of global resources and experience

In the past years, UNIDO has taken an active role in the global development agenda focusing its activities on three thematic priorities



Poverty reduction through
productive activities



Trade Capacity Building.



Energy and Environment

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The energy and climate change programme

“Promoting integrated energy solutions for inclusive and sustainable industrial development”

Focus areas



Industrial Energy Efficiency

Renewable energy to promote energy access and productive uses

Low emission technologies



DOUBLING THE GLOBAL RATE OF IMPROVEMENT IN **energy efficiency.**



DOUBLING THE SHARE OF **renewable energy** IN THE GLOBAL ENERGY MIX.



ENSURING **universal access** TO MODERN ENERGY SERVICES.

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Industrial Energy Efficiency, an integrating approach

Energy Management Systems

- Energy management as a main element of enterprise operations
- Requires a permanent change in corporate culture
- Initiator of the process which lead to the development of ISO 50001 in 2007



Systems optimization measures

Technical measures that generate changes in operational practices may result in saving of 10-30% of energy use

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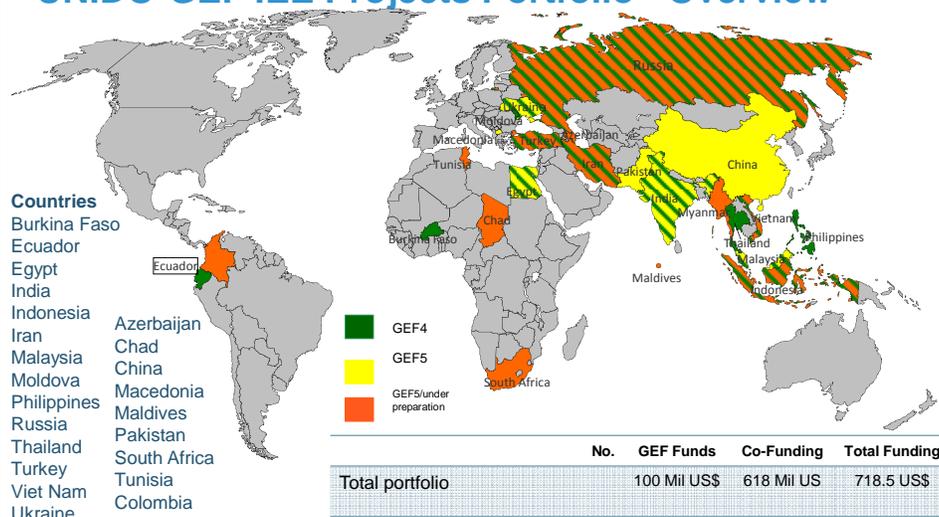
Example of UNIDO IEE/EnMS/ISO 50001 country project

Project objective	To reduce GHG emissions and enhance competitiveness of industry through improved energy efficiency and the transformation of the market for industrial energy efficiency products and services
Project components:	
Policy and institutional support	Development and establishment of: <ul style="list-style-type: none"> ✓ National Energy Management Standard compatible with ISO 50001 ✓ National IEE Monitoring, Verification and Benchmarking Programs ✓ IEE Best-Practice Information, Dissemination and Recognition Programs ✓ Fiscal and other incentives for IEE
Capacity-building	<ul style="list-style-type: none"> ✓ Energy Management Systems (EnMS) Expert Training ✓ System Optimization (SO) Expert Training (steam, pumps, compressed air, ..) ✓ Development and provision of tools to assist industry in developing and implementing EnMS and system optimization projects ✓ Training of industry energy managers and engineers
Pilot IEE projects	✓ Implementation of pilot EnMS and SO projects in selected enterprises
Financing for IEE	✓ Development of IEE investment supporting schemes in partnership with international as well as national financing institutions

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UNIDO-GEF IEE Projects Portfolio - Overview



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UNIDO EnMS/ISO 50001 Portfolio as of March 2014

Operational in 12 countries
Preparatory activities in 8 countries

Ongoing projects

South Africa Thailand
Moldova Viet Nam
Russia Philippines
Turkey Egypt
Ecuador Indonesia
Malaysia Iran

Under development or planned

South Africa Azerbaijan
India Kazakhstan
Ukraine Tunisia
Macedonia Myanmar

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UNIDO EnMS/ISO 50001 Capacity Building Programme

½ day Awareness Seminar

Target group:

Top management

Objective:

To buy in EnMS, System Optimization (SO) and project technical assistance

2 day USER Training

Target group:

Management repr., energy managers and other personnel of enterprises

Objective:

Enable to start develop and implement EnMS

EXPERT Training

Target group:

EE consultants, ESCOs, ISO 14001 experts and others

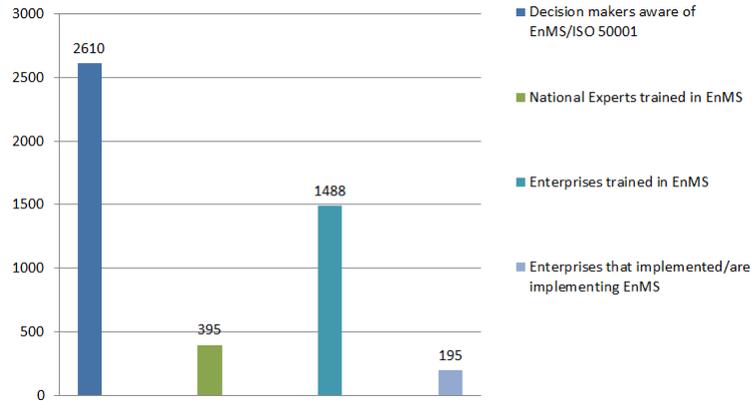
Objective:

Equip to provide EnMS dev. & impl. TA and training to enterprises

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Preliminary results EnMS Capacity Building Programme



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UNIDO EnMS/ISO 50001 – auditor training experiences

Malaysia and South Africa have been the only two to pursue capacity building programmes for lead auditors

Auditor training focused on the following objectives:

1. Good understanding of the elements of an EnMS,
2. Understanding of energy management as it applies to different industrial sectors.
3. Being able to conduct EnMS audits- internal (first party), buyer (second party) and (third party) certification.
4. Qualify for national auditor registration if all other national criteria are met.

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UNIDO EnMS/ISO 50001 – auditor training experiences

Malaysia	South Africa
Target audience: national certification body – SIRIM QAS	Target audience: national certification body – South African Bureau of Standards
Prequalification requirements: technical degree with experience in energy auditing	Prequalification requirements: knowledge and experience in the certification of other ISO management system standards
Duration: 3 days, theoretical	Duration: 5 days, theoretical
People trained: 25	People trained: 35 – 29 passed qualification exam

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ISO 50001 – from pilot to wide dissemination

ISO 50001 will succeed in delivering the expected impact and benefits to organizations and countries only if it is implemented properly and widely, if

1. Technically sound and effective implementation of EnMS/ISO 50001 depends on the availability of qualified experts/professionals to assist organizations and enterprises
2. Key success indicators will be
 - the ability to demonstrate to organizations and to the market the tangible benefits of implementing EnMS/ISO50001
 - the level of policy support granted and/or regulation attached to the implementation EnMS/ISO50001.

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ISO 50001 Challenges ahead – Workforce & Certification

Market penetration & impact of ISO 50001 on global EE will heavily depend on benefits delivered and market credibility → Added Value

Challenges being faced by ISO 50001:

1. ISO 50001 is different → issue of energy performance
2. Lack of internationally recognized **Expert** training/certification programs
3. Lack of internationally recognized **Auditor** training/certification programs
4. Development of credible EnMS/ISO50001 certification systems for **Companies** → measuring and verifying performance

Opportunities:

1. Diversity of national approaches for certification of ISO50001 EnMS and related workforce (eg ISO 13759 measuring energy balance and calculating efficiency)
2. Growing concern about credibility of certification schemes in some countries → risk of undermining overall/global impact of EnMS/ISO50001
3. Leading countries interested and few initiatives on which to build

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Survey of personnel certification schemes

- Survey was sent to countries in Summer 2012
- 12 respondents (11 countries, 1 country with 2 schemes) and assessed intention of countries to implement personnel certification schemes for EnMS experts and auditors and the planned requirements
- Main findings:
 - In 2012, only 3 countries had personnel certification programmes for EnMS experts, and 3 for auditors.
 - The requirements to be met by experts are quite varied and there are even fewer clear requirements for auditors.
- To be repeated in Spring 2014

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Sustainable Energy Standards project

In 2012 UNIDO established a collaborative research project to Focus on standardization aspects of energy issues

“develop a consistent approach and a high level UNIDO strategy on standards and conformity assessment in sustainable energy”

- project was originated by countries' demand
- Focused on 2 key streams
 - Renewable energy technologies: assessing the adoption of standards, particularly for technology manufacturing countries; and the benefits and challenges for trade in non manufacturing countries.
 - For energy efficiency measures: expand the work on metrology, adding aspects of certification of both management systems as well as industrial equipment

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Scope of the research

“Achieving impact and market credibility - Policy and conformity assessment frameworks for EnMS/ ISO 50001”

- Research paper being developed
 - To be validated at an expert group meeting (8 to 10 April, Vienna)
1. Trends and updated best-practice policy options to support EnMS/ISO 50001 implementation
 2. Recommendations for “sound and effective” certification and accreditation schemes for EnMS/ISO 50001,
 3. Stock-taking of current and emerging tools, methodologies and standards to support EnMS implementation in organizations
 4. Insight in the potential of ISO 50001/EnMS to support the development of a global energy performance evaluation framework

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Future project activities

UNIDO PMs continue develop projects to promote EnMS, implementation and certification, and also:

- Further integrate Standards and Energy approaches
- Global initiative on industrial energy efficiency benchmarking
- Initiative on monitoring, reporting and verification of energy consumption, energy savings, and derived abatement of emissions of greenhouse gases
- Energy-efficient design and low-carbon technology in manufacturing sectors
- Dissemination of energy management systems (EnMS) and system optimization to small economies in transition and developing countries

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partner for prosperity

Heat transfer systems normalization in China

Components

- ✓ Developing national technical regulations for heat transfer equipment (boilers and heat exchangers)
- ✓ Upgrading national laboratory capacities
- ✓ Training experts in Heat systems optimization
- ✓ Demonstrating energy efficient heat exchanger technologies

Counterparts China Special Equipment Inspection and Research Institute (CSEI) / General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ)

Budget : 5,375,000 (GEF 5) + 40,500,000 USD (cofinancing)

Planned Implementation period June 2014 – May 2018

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For more information visit:
<http://www.unido.org/energy>

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