UNIDO ENERGY MANAGEMENT SYSTEM / ISO 50001 PROGRAMME

EXPERT GROUP MEETING

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

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Issue Paper

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Background

Industrial Energy Efficiency is about achieving energy savings in industries. Energy Management Systems (EnMS) are a tool that enterprises can use to systematically integrate energy efficiency in their daily management practices. The development of an international standard (i.e. ISO 50001) for EnMS has resulted in having a method that is globally recognised. Yet ensuring that such method is getting disseminated globally and that enterprises are improving their energy performance through the implementation of EnMS requires comprehensive supporting frameworks that can promote and enable implementation on the one hand; and monitor, verify and certify enterprises' behaviour and performance on the other. Pursuing these dual goals in a soundly concerted manner will be critical to EnMS and ISO 50001 real impact and success, and the establishment of effective accreditation and certification schemes is envisaged to play a key role in bridging and supporting industrial enterprises and country governments energy conservation and sustainable industrial development goals.

Energy Management Systems

Energy Management Systems (EnMS) have emerged over the last two decades as a proven best practice methodology to ensure sustainable and progressing energy efficiency performance in industrial enterprises and other organizations. EnMS provide a structured and systematic approach on how to integrate energy efficiency in an enterprise management culture and daily practices. EnMS provide:

- A framework for understanding energy use and consumption
- Action plans to continually improve energy performance, including energy systems and production processes
- Metrics to track and quantify energy performance against a baseline of energy consumption
- Data and documentation to sustain and demonstrate energy performance improvements over time

EnMS seek to apply to energy use and consumption the same culture of continual improvement that has been successfully used by industrial firms to improve quality, environmental and safety practices.

Since 2000 national EnMS standards and associated certification schemes were developed in a number of countries and proved to be an effective policy-driven, market-based mechanism to promote dissemination of energy management best practices in industry and to support energy efficiency. Taking stock of the good results achieved through EnMS and standards at national level, in 2007 UNIDO launched a global initiative to advocate and promote the development of an international/ISO energy management system standard. The UNIDO's initiative created the momentum for and catalyzed the ISO process that subsequently led to the release on 15th June 2011 of ISO 50001 Energy management system – Requirements with guidance for use

ISO 50001 Energy management systems – Requirements with guidance for use

ISO 50001 provides requirements for an organization to establish, implement, maintain, and improve an energy management system. This voluntary standard applies to any organization that uses energy, including the industrial and commercial sectors, estimated as 60% of global energy use. ISO 50001 is

based on the well-known Plan-Do-Check-Act management system model that is already understood and implemented by organizations worldwide (ISO9001, ISO 14001, etc.).

Central elements of ISO 50001 include a requirement for top management commitment, engagement across the entire organization, attention to energy performance in operations, procurement and design, as well as an internal audit process to determine how well the organization is doing in achieving its targets.

A truly unique feature of ISO 50001, as compared to other ISO management system standards, is the emphasis on a data-driven approach to demonstrating not only the continual improvement of the EnMS, as characterized by the Plan-Do-Check-Act approach, but also the demonstration of continual improvement of the resulting energy performance.

As a practical matter, this dual emphasis means that an organization cannot remain in conformance with ISO 50001 solely through the creation and refinement of management policies, procedures, and processes, even when supported by documentation, records, training and other activities typically associated with a management system standard.

Achieving conformance requires that the organization continually improve its *energy performance* based on measurement and other data. While the method and amount of improvement is left to the organization, this emphasis on continual improvement of energy performance is what makes the potential impact of ISO 50001 so large (A. McKane for UNIDO, 2011)

Achieving impact and market credibility

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

The experience of national voluntary EnMS standards showed that the level of promotion and support provided by the policy framework played a significant role in determining the pace and degree of penetration of EnMS standards in the targeted groups of energy consumers.

The national experiences, confirmed by evidence gathered so far from the implementation of ISO 50001 across the globe, has shown that the effective implementation and auditing of EnMS/ISO 50001 do require practitioners and professionals with a new set of competencies and skills, which goes beyond those of traditional energy efficiency experts or management system auditors.

In order to help ISO 50001 to deliver as expected and needed, it is UNIDO's view that the following issues will have to be addressed:

1. Technically sound and effective implementation of EnMS/ISO 50001 depends on the availability of qualified experts/professionals to assist organizations and enterprises.

   This does require the development of EnMS/ISO50001 appropriate/tailored training curricula and personnel certification programs to ensure that technically well-equipped and competent EnMS/ISO 50001 experts and auditors operate in the market.

2. Widespread implementation and accelerated penetration of EnMS/ISO 50001 will depend on:

   a) the level of policy support granted to the implementation of EnMS/ISO50001, either through incentives or regulatory measures;

Substantial experience and different solutions for EnMS policy best practices and programs exists in OECD countries. While early ISO 50001 related efforts have been taken in few countries outside OECD, a key challenge is the identification and development of effective, nationally appropriate and progressive EnMS/ISO 50001 policy frameworks.

b) the ability to demonstrate to organizations and to the market the tangible benefits of implementing EnMS/ISO50001

The quality and transparency of the conformity assessment (accreditation and certification) for EnMS/ISO 50001 and its capability to evaluate energy performance improvements will play a critical role in determining the real and perceived value of ISO 50001 implementation and certification, for the market as well as for policy-makers.

Since the publication of ISO 50001, the ISO Technical Committee (TC) 242 – Energy Management has worked on a portfolio of related new standards, expected to be published during the biennium 2014-2015, namely:

- ISO 50002 – Energy audits
- ISO 50003 – Requirements for bodies providing audit and certification of EnMS
- ISO 50004 – Guidance for the implementation, maintenance and improvement of an EnMS
- ISO 50006 – Measuring energy performance using energy baselines (EnBs) and energy performance indicators (EnPIs)
- ISO 50015 – Measurement and verification of organizational energy performance- General principles and guidelines (JWG with ISO/TC 257)

In terms of conformity assessment aspects, ISO 50003 is intended to be used in conjunction with *ISO/IEC 17021:2011 Conformity assessment -- Requirements for bodies providing audit and certification of management systems*. ISO 50003 will provide the additional requirements reflecting the specific technical area of Energy Management Systems (EnMS) needed to assure the effectiveness of the audit and certification. In particular, it addresses the additional requirements necessary for the audit planning process, the conducting of the on-site audit, the initial certification audit, auditor competence, duration of EnMS audits, and multi-site sampling.

The portfolio of additional standards will provide the basis for developing harmonized and credible national certification schemes as well as common tools, including for measurement and verification of organizational energy performance. However, successful implementation, especially in developing countries will need to be supported by a suitable policy and regulatory framework as well as assistance to build the necessary capacity of existing relevant institutions and market players.

Expert Group Meeting expected Outputs and Outcomes

The Expert Group Meeting (EGM) being organized by UNIDO, aims to bring together policy makers, leading EnMS/ISO 50001 implementation and conformity assessment experts and other EnMS/ISO 50001 relevant professionals to discuss, share experiences and possible solutions on the key issues and challenges associated with the broad and effective dissemination of EnMS and ISO 50001, with some special attention to the areas of certification and accreditation.

The EGM is expected to deliver the following **outputs**:

1. Updates on trends and best-practice policy options to support EnMS/ISO 50001 implementation
2. Recommendations for "sound and effective" certification and accreditation schemes for EnMS/ISO 50001, taking into account both the uniqueness and the policy-driven nature of ISO 50001
3. Stock-taking of current and emerging tools, methodologies and standards to support EnMS implementation in organizations
4. Insights into the potential of ISO 50001/EnMS to support the development of a global energy performance evaluation framework

In terms of **outcomes,** the EGM is envisaged to lead to:

1. Support for the broader international debate and cooperation on ISO 50001 conformity assessment
2. Development of national and international programs, initiatives and action plans aimed to further support the global dissemination of EnMS/ISO 50001 as key best-available practice/technology to achieve national and international goals for sustainable industrial development and Climate Change mitigation.

About the UNIDO Energy Management System/ ISO 50001 Programme

The promotion and support of Energy Management System /ISO50001 implementation is a main pillar of current UNIDO Industrial Energy Efficiency (IEE) Programme. As of February 2014 the UNIDO IEE/EnMS/ISO 50001 Programme consists of a portfolio of 12 ongoing country projects and 8 projects under preparation or discussion. The portfolio is largely funded by the Global Environment Facility (www.thegef.org). Within the scope of these projects UNIDO provides institutional and policy development support, it builds capacity of enterprises and consultants for energy management systems (EnMS) and ISO50001 implementation. Across the portfolio, EnMS/ISO 50001 technical advisory services provided by UNIDO have included the following:

a. Facilitate adoption of ISO 50001 as national energy management system standard;

b. Support development of policy programs to promote and/or support EnMS implementation;

c. Assist national accreditation and certification bodies in setting up EnMS/ISO 50001 conformity assessment infrastructure;

d. Develop national cadres of competent EnMS/ISO 50001 consultants/practitioners to assist companies in and to offer services for EnMS/ISO 50001 implementation

e. Provides training EnMS implementation courses and tools for enterprises and service providers;

f. Support directly EnMS/ISO 50001 implementation in project partner enterprises

UNIDO's approach for sustainable EnMS/ISO 50001 implementation is hinged on the transfer of knowledge, skills and tools through training, on-the-job practice and coaching by international experts. Trained national experts then become resources for the UNIDO projects in training enterprises' managers/engineers and provide technical assistance for implementation.