



ENERGY MANAGEMENT WORKING GROUP

**How governments can strengthen the quality infrastructure
to promote robust EnMS implementation—
Key Principles for International Engagement**

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TURNING BEST PRACTICE STANDARDS INTO ROBUST AND CONSISTENT IMPLEMENTATION

Global Standard Development



International Engagement



Local Implementation

- ISO 50001 Standard Technical Committee plays an important role in defining international best practice standards and guidance.

- Development of robust policies, programs, and resources for national and international use
- Sharing of best practices to ensure robust and consistent implementation of the standard

- Government, international organizations, utilities, energy service companies and others work on the ground to help organizations implement best practice standards



KEY PRINCIPLES FOR ISO 50001 SUCCESS

Building on years of input and engagement from ISO 50001 implementers from around the globe, the EMWG has distilled four “Key Principles” which define the value and need for international engagement to ensure mutual success in maximizing the value of ISO 50001 for business and the climate.

1. ISO 50001 provides a framework for measuring climate impacts
2. Qualified ISO 50001 professionals maximize global impacts
3. Robust ISO 50001 certification strategies support consistent global outcomes
4. International input strengthens the market relevance of ISO 50001 portfolio



PRINCIPLE 1

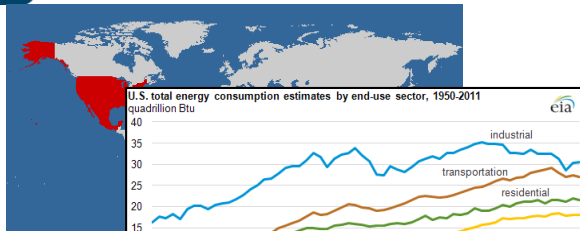
ISO 50001 provides a **framework for measuring climate impacts**

- Reliable data is critical to enable corporate and government leaders to make informed decisions regarding ISO 50001
- Internationally acceptable methods needed for data collection, M&V, and analysis on ISO 50001

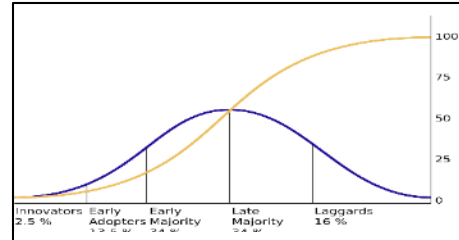
Example actions:

- Work with certification bodies to share ISO 50001 certification data; contribute toward forthcoming global IAF database
- Contribute to international forums conducting analysis on ISO 50001 implementation and impacts
- Develop case studies with data on the business value of ISO 50001
- Promote effective measurement and verification best practices for ISO 50001

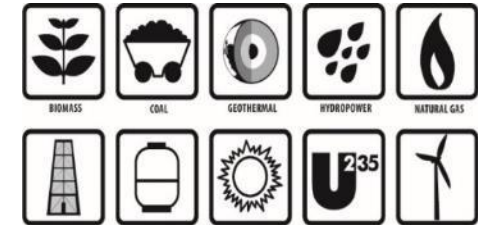
ISO 50001 IMPACTS METHODOLOGY



Country/Region specific energy consumption by sector



ISO 50001 EnMS uptake based on historical data



Energy consumption, emission intensity, and cost by source

ISO 50001 Impacts Methodology



Energy

Cost

Emissions



ISO 50001 IMPACTS ESTIMATOR TOOL (IET 50001 V-1.1.4)

- A non-linear ISO 50001 uptake model, based upon analysis of historic uptake of ISO 14001
- Addition of continual savings improvement beyond the first year savings
- Expanding the list of energy consumption by source as separate worksheets for each sector
- Addition of offsite electricity and steam multipliers to account for generation losses
- Reporting energy and emissions savings on a primary basis in the results table
- Contextualizing annual emission savings in number of passenger vehicle equivalent

ISO 50001 Impact Estimator Tool (IET 50001 V1.1.4)
This is version 1.1.4 of the tool. Some assumptions, parameters and methodologies are anticipated to change over time as the tool is further refined. Results generated by different iterations of this tool may vary.

GETTING STARTED: KEY FOR USING THIS TOOL

INPUTS

STEP 1: KEY PARAMETERS AND VARIABLES

Parameter	Value	Units
ISO 50001 Uptake in 2018 (Y1)	0%	%
ISO 50001 Uptake in 2019 (Y2)	10%	%
ISO 50001 Uptake in 2020 (Y3)	20%	%
ISO 50001 Uptake in 2021 (Y4)	30%	%
ISO 50001 Uptake in 2022 (Y5)	40%	%
ISO 50001 Uptake in 2023 (Y6)	50%	%
ISO 50001 Uptake in 2024 (Y7)	60%	%
ISO 50001 Uptake in 2025 (Y8)	70%	%
ISO 50001 Uptake in 2026 (Y9)	80%	%
ISO 50001 Uptake in 2027 (Y10)	90%	%
ISO 50001 Uptake in 2028 (Y11)	95%	%
ISO 50001 Uptake in 2029 (Y12)	98%	%
ISO 50001 Uptake in 2030 (Y13)	100%	%

ISO 50001 Uptake

STEP 2: ENERGY CONSUMPTION BY SOURCE

Sector	Industrial			Commercial			Residential		
	Consumption (MMBtu)	Price of Energy (\$/MMBtu)	CO2 Emissions (MMT)	Consumption (MMBtu)	Price of Energy (\$/MMBtu)	CO2 Emissions (MMT)	Consumption (MMBtu)	Price of Energy (\$/MMBtu)	CO2 Emissions (MMT)
Manufacturing	1000	10	100	500	10	50	200	10	20
Food Processing	500	10	50	200	10	20	100	10	10
Chemicals and Allied Products	300	10	30	100	10	10	50	10	5
Textiles and Apparel	200	10	20	50	10	5	20	10	2
Transportation	100	10	10	50	10	5	20	10	2
Electricity and Heat	50	10	5	20	10	2	10	10	1
Other	50	10	5	20	10	2	10	10	1
Total	2000	10	200	1000	10	100	500	10	50

STEP 3: DELIVERED ENERGY CONSUMPTION BY SECTOR

Year	Industrial			Commercial			Residential		
	Consumption (MMBtu)	Price of Energy (\$/MMBtu)	CO2 Emissions (MMT)	Consumption (MMBtu)	Price of Energy (\$/MMBtu)	CO2 Emissions (MMT)	Consumption (MMBtu)	Price of Energy (\$/MMBtu)	CO2 Emissions (MMT)
2018	2000	10	200	1000	10	100	500	10	50
2019	1800	10	180	900	10	90	450	10	45
2020	1600	10	160	800	10	80	400	10	40
2021	1400	10	140	700	10	70	350	10	35
2022	1200	10	120	600	10	60	300	10	30
2023	1000	10	100	500	10	50	250	10	25
2024	800	10	80	400	10	40	200	10	20
2025	600	10	60	300	10	30	150	10	15
2026	400	10	40	200	10	20	100	10	10
2027	200	10	20	100	10	10	50	10	5
2028	100	10	10	50	10	5	25	10	2.5
2029	50	10	5	25	10	2.5	12.5	10	1.25
2030	25	10	2.5	12.5	10	1.25	6.25	10	0.625

RESULTS

NUMERICAL RESULTS:

Type in the year of interest within the defined adoption period to get results specific to that year.

Year	Sector	Energy Demand Savings			Emissions Savings		
		Consumption (MMBtu)	Price of Energy (\$/MMBtu)	CO2 Emissions (MMT)	Consumption (MMBtu)	Price of Energy (\$/MMBtu)	CO2 Emissions (MMT)
2030	Industrial	10.37	\$ 53.3	721	152	63.3	4,289
	Commercial	5.47	\$ 43.3	316	47	41.6	2,462
	Total (All)	15.85	\$ 96	1,037	218	104.9	6,751

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POTENTIAL IMPACT OF INDUSTRIAL AND SERVICE SECTOR ISO 50001 ADOPTION

By 2030 implementation of ISO 50001 across the commercial and industrial sectors globally could drive cumulative savings approximately of:

- 93 EJ of primary energy,
- \$600 billion in energy costs, and
- 6,500 Mt of avoided CO₂ emissions.

The projected annual emissions savings in 2030 are equivalent to removing 215 million passenger vehicles from the road.



PRINCIPLE 2

Qualified ISO 50001 professionals maximize global impacts

- Organizations need access to reliable, skilled ISO 50001 professionals in order to maximize their EnMS energy saving potential and return on investment
- ISO 50001 professionals need skills and expertise in *both specialized fields of energy efficiency and business management systems*

Example actions:

- Promote rigorous training and certification programs for ISO 50001 professionals (implementation consultants and auditors)
- Adopt ISO 50001 workforce programs and best practices promoted by leading international forums on ISO 50001
- Promote effective measurement and verification best practices for ISO 50001



PRINCIPLE 3

Robust ISO 50001 certification strategies support consistent global outcomes

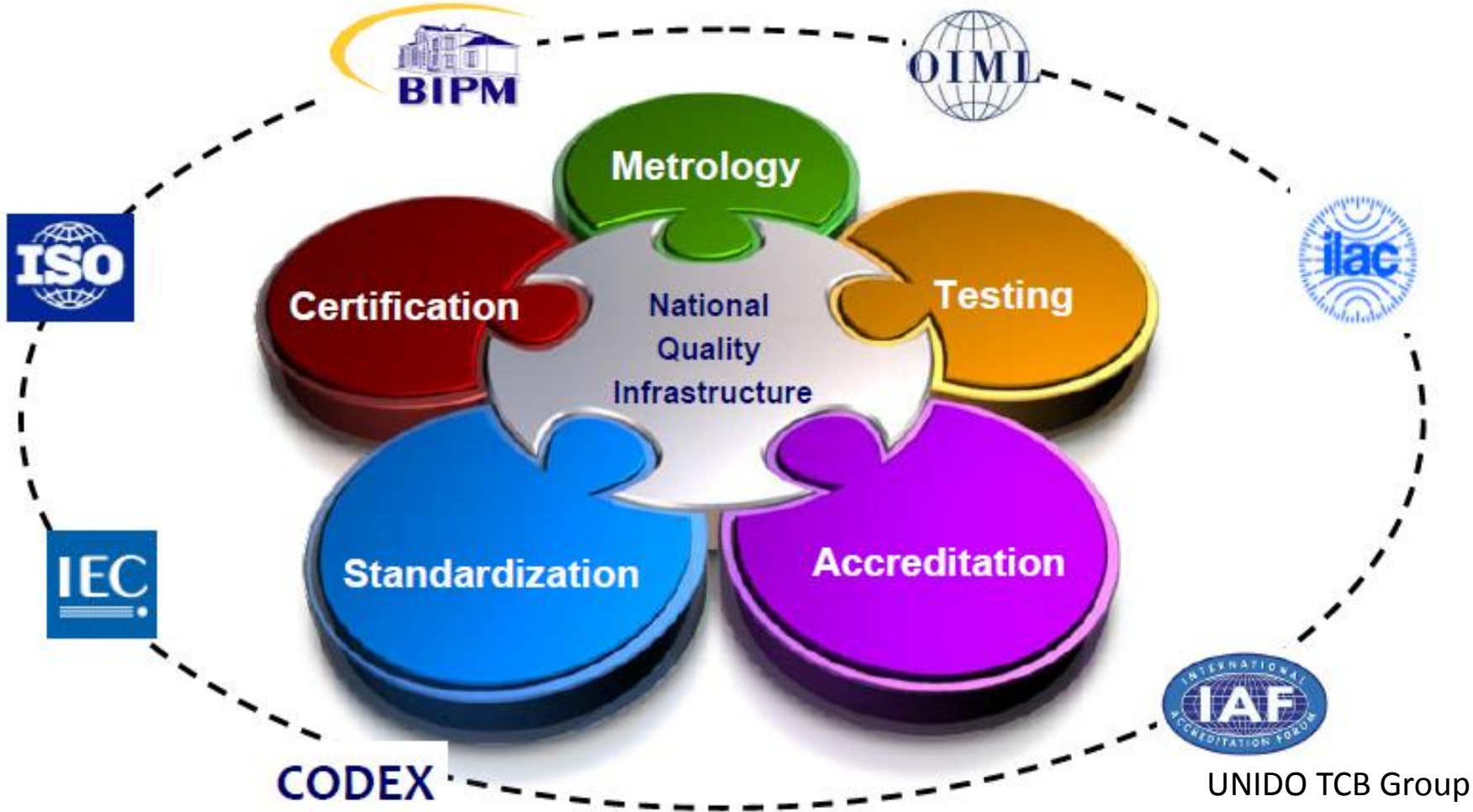
- Strong ISO 50001 certification outcomes require cooperation among many supporting actors: governments, national standards authorities, accreditation and certification bodies, training organizations, private sector end users, and ISO 50001 professionals.
- Each group contributes role in supporting quality ISO 50001 programs

Example actions:

- Facilitate cohesion among national bodies to ensure effective ISO 50001 program delivery
- Facilitation regional dialogue to reinforce strategies on quality ISO 50001 implementation



NATIONAL ISO 50001 QUALITY INFRASTRUCTURE & INTERNATIONAL LINKAGES





NEED FOR INTERNATIONAL CONSISTENCY AND COOPERATION ON QUALITY INFRASTRUCTURE



ISO/IEC/ ITU .. Globally accepted standards
Facilitate trade, technology diffusion, safety



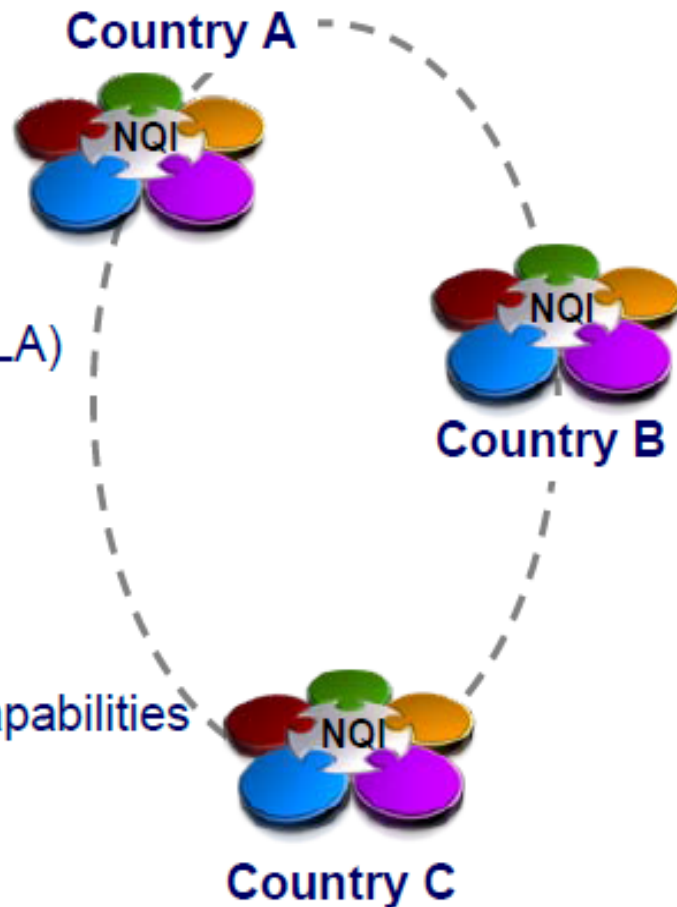
IAF - Certified once, accepted everywhere
IAF Multilateral Recognition Arrangement (MLA)



ILAC- Tested Once Accepted everywhere
IAF Mutual Recognition Arrangement (MRA)



BIPM- Mutual recognition of measurement capabilities
CIPM- MRA



UNIDO TCB Group



PRINCIPLE 4

International input strengthens the market relevance of ISO 50001 portfolio

- The ISO 50001 family of standards continues to grow and strengthen based on feedback from stakeholders
- Participation in the standard development and revision process provides two-way benefits: standards remain reflective of stakeholder needs and effective, and national programs remain up-to-date with current standards and best practices

Example actions:

- Participate actively in ISO Technical Committee 301
- Engage private sector to obtain input on ISO 50001 experiences and barriers
- Recognize achievements of ISO 50001 certified organizations to encourage uptake of the standard



ENERGY MANAGEMENT LEADERSHIP AWARDS

GLOBAL LEADERSHIP AND CASE STUDY AWARDS

- Raise profile of energy management systems (EnMS) such as ISO 50001 as a **broadly-applicable solution with proven, successful outcomes**
- 35 organizations submitted case studies that described their ISO 50001 implementation and results.
- Evaluated by a panel of 16 international experts.
- **Insight Awards:** All submissions receive CEM Energy Management Insight Awards for their participation.
- **CEM Award of Excellence in Energy Management:**
 - 3 winners selected and announced,
 - public recognition at CEM7 in June 2016.
- 2017 Awards program launching in Fall 2016!

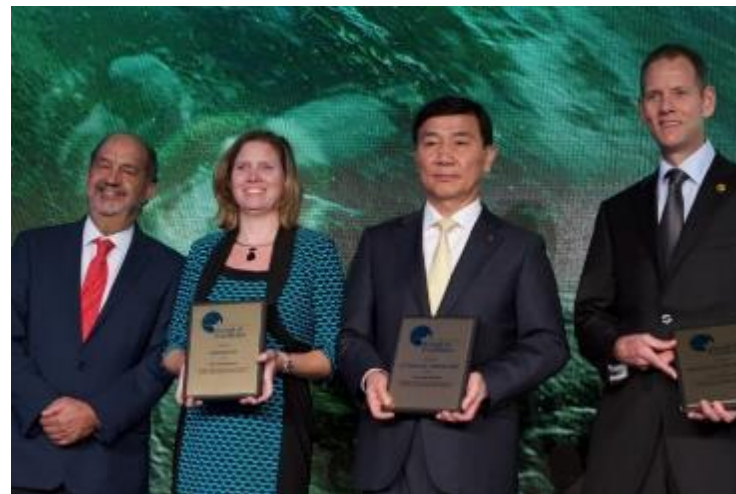




CEM7 featured the awards ceremony for the inaugural winners

Videos:

- Value of ISO 50001 described by the winning companies:
<https://youtu.be/6tXoa8IoSds>
EMWG members: Please share!
- [Video](#) of awards ceremony at CEM7
(Skip to ~15:50)



2016 Award of Excellence Winners

