VIEGAND MAAGØE

International Experiences

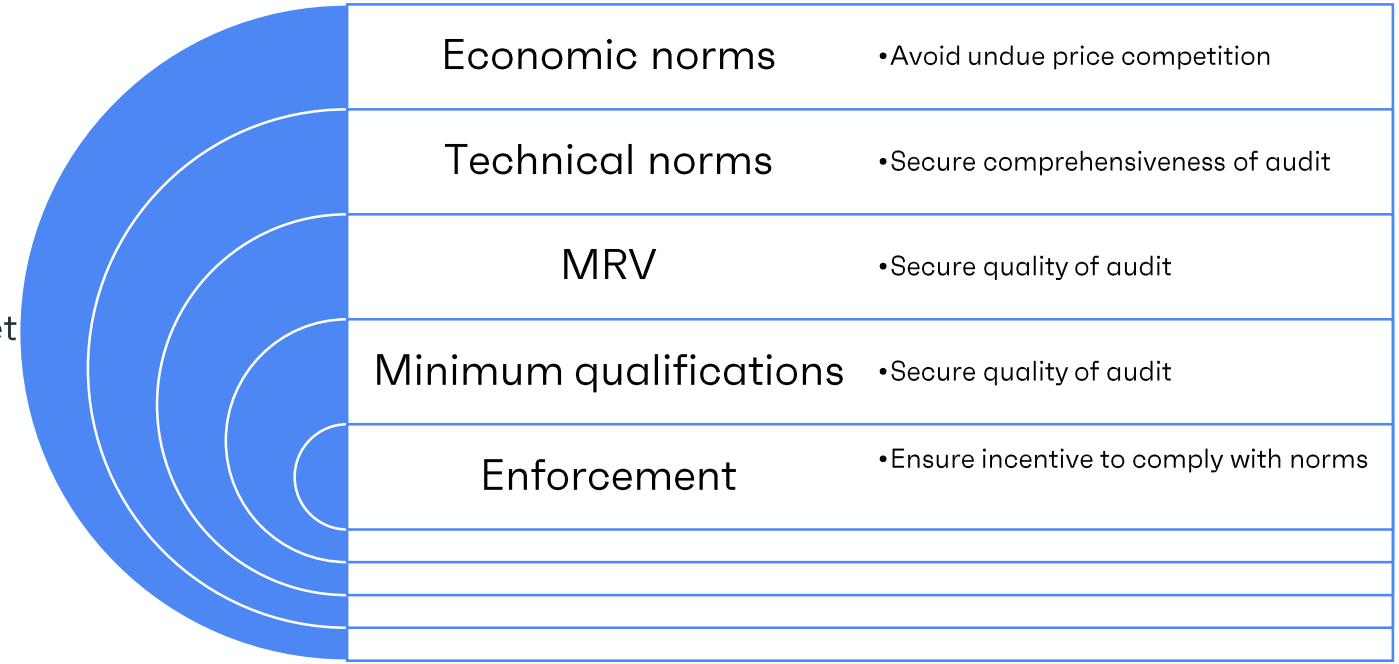
International Experiences with Norms and Standards for Energy Audits and Energy Management Systems



How regulation secures quality and efficiency

Key elements of an effective scheme

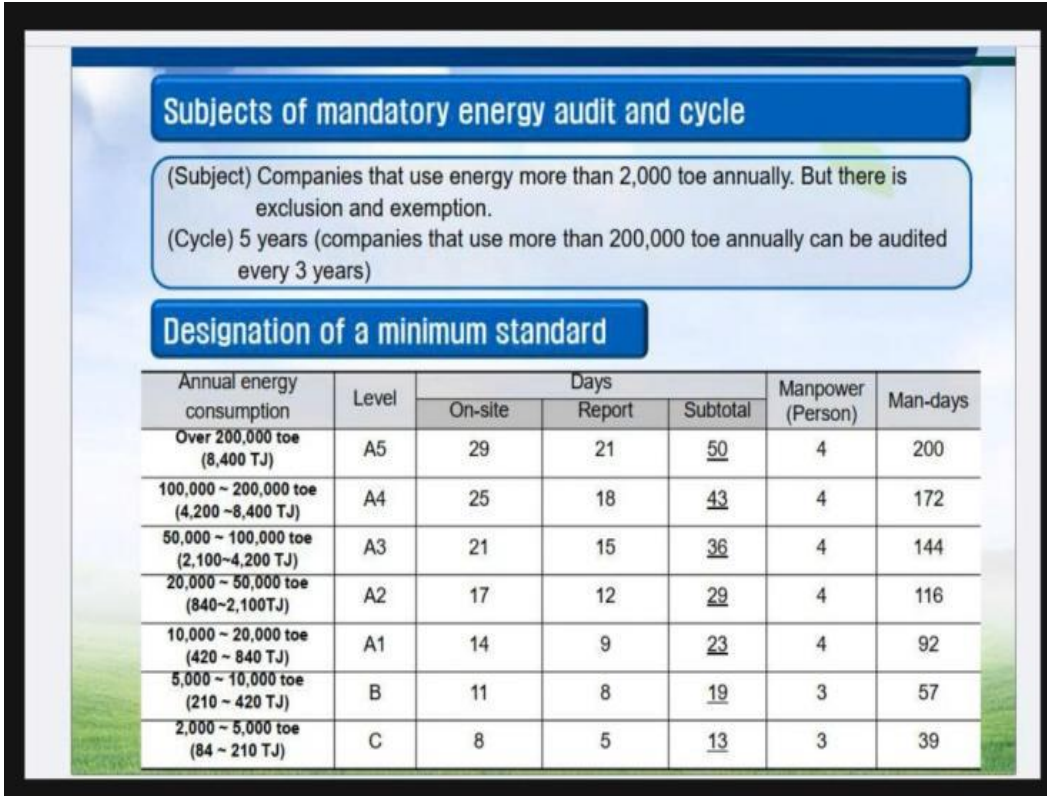
- **Technical and economic norms** can be a good early step.
- Regulation should evolve as the market matures.



Korea

Minimum number of working hours

- Why regulate:
  - Competition drove down prices AND also quality
- Main requirements
  - Budget of man-hours and staff qualification
  - Reporting on actual hours spent
  - Audit report subject to independent verification
- Drawbacks of regulation
  - No ”one size fits all”
  - Time spent does not equal high quality
  - Re-audits need less time
- KEA is moving away from this regulation



Subjects of mandatory energy audit and cycle

(Subject) Companies that use energy more than 2,000 toe annually. But there is exclusion and exemption.
(Cycle) 5 years (companies that use more than 200,000 toe annually can be audited every 3 years)

Designation of a minimum standard

Annual energy consumption	Level	Days			Manpower (Person)	Man-days
		On-site	Report	Subtotal		
Over 200,000 toe (8,400 TJ)	A5	29	21	50	4	200
100,000 ~ 200,000 toe (4,200 ~8,400 TJ)	A4	25	18	43	4	172
50,000 ~ 100,000 toe (2,100~4,200 TJ)	A3	21	15	36	4	144
20,000 ~ 50,000 toe (840~2,100TJ)	A2	17	12	29	4	116
10,000 ~ 20,000 toe (420 ~ 840 TJ)	A1	14	9	23	4	92
5,000 ~ 10,000 toe (210 ~ 420 TJ)	B	11	8	19	3	57
2,000 ~ 5,000 toe (84 ~ 210 TJ)	C	8	5	13	3	39

India - China

India

- Audit costs are market based
- State subsidy of 50% is capped at certain amounts
- Detailed audit sector guidelines have been developed
- Auditors must be accredited
- Sample audit reports are verified.

China

- Main EE incentives: energy benchmarking regulation. Audits are seen as a tool for enterprises to secure compliance.
- National Energy Audit standard
- ”Standard cost norms” for energy audits in SOEs.
- Marked based audit pricing for private enterprises.

EU / Denmark

EU

- EE directive to set the framework for national regulation
  - Main purpose is to avoid a ”race towards the bottom” of audit prices and quality
  - Each member state to implement own legislation

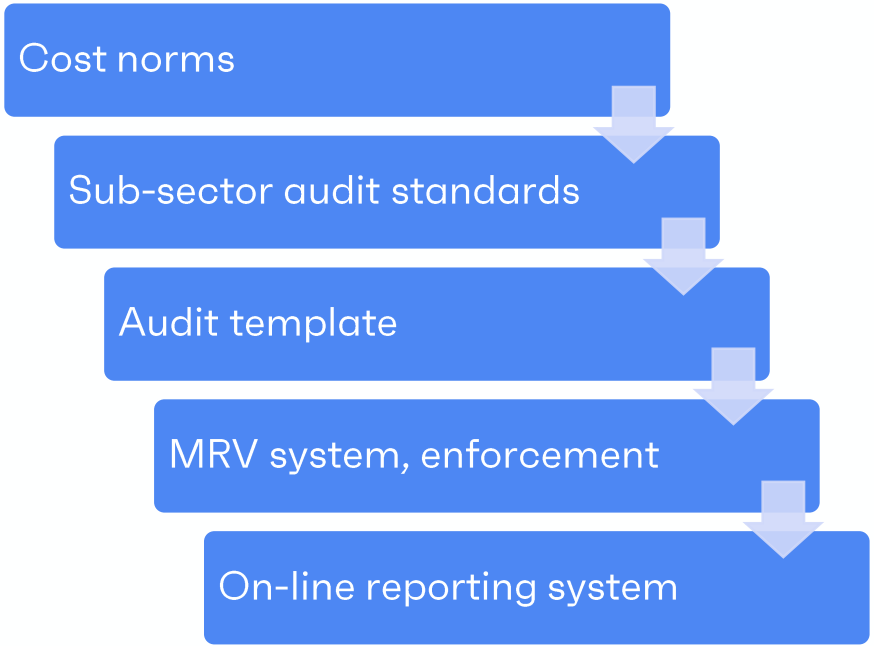
Denmark

- Certification of energy auditors
- A strict MRV system is key to quality assurance of energy audits
  - Approved
  - Approved with reservations
  - Not approved
- Detailed check lists guide the review
- Reviews also pinpoints weaknesses, leading to recommendations (for example additional training)

4. Recommendations for Vietnam

Develop an effective energy audit framework in VN

- Implement cost norms, as suggested
- Develop sector-specific technical standards or guidelines for major industrial sectors.
- Define mandatory minimum content for audits
- Establish a national MRV system to ensure quality and to improve the system, ensure enforcement
- Use online reporting and structured templates.



VIEGAND MAAGØE