Evaluation Indicators for Energy Efficient Lighting MVE Policy

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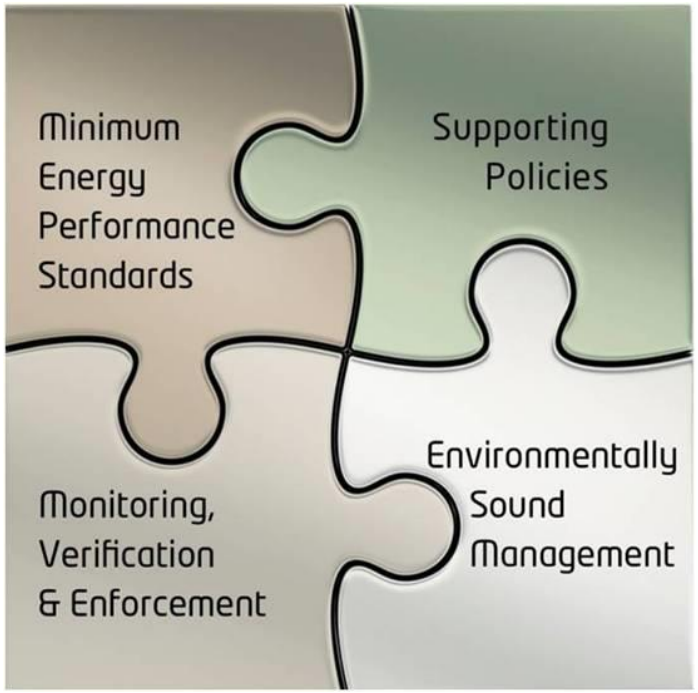
Overview

- Background to efficient lighting and MVE
- What are indicators
- Evaluation & indicators in the policy cycle
- MVE and compliance
- Lighting-specific indicators
- Practical considerations

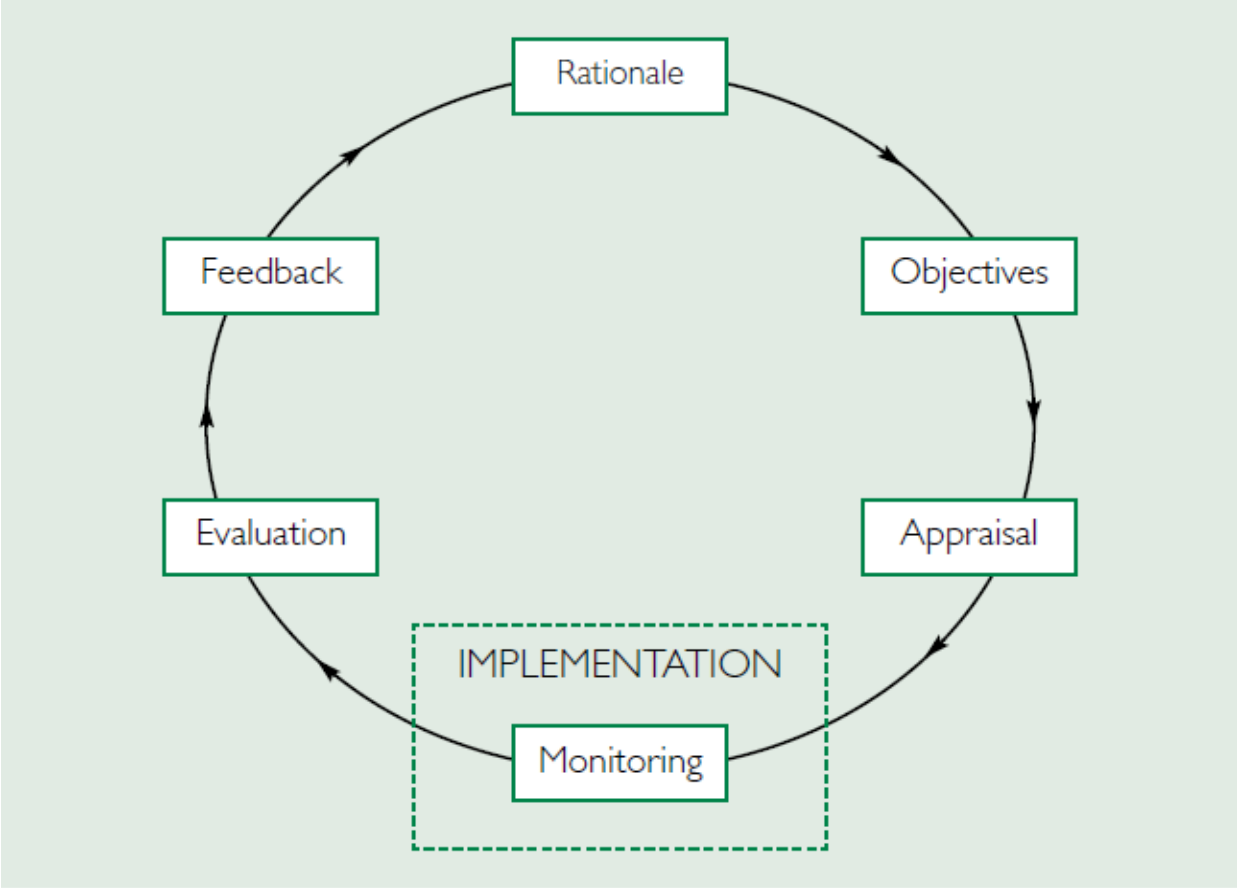
Background

- MEPS and supporting policy are highly effective for lighting products:
  - Large reduction in energy, carbon, consumer bills
  - Increased energy security, service
- MVE considered essential part to increase/ensure effectiveness of such policy
- Use of indicators important to track progress, and form part of any evaluation



http://www.enlighten-initiative.org

The policy cycle: Monitoring (including indicators)



Source: HMRC (2012)

What are indicators?

- Used to show progress of a program or intervention
- Can be subjective or objective

Features of a good indicator:

- Action focussed, or on an intervention outcome/aim
- Specific and measurable
- Reliable, simple

Timing:

- Indicators are collected on an ongoing basis, done in advance of an evaluation.
- Ideally measured prior to start of intervention for baseline

Types of indicators

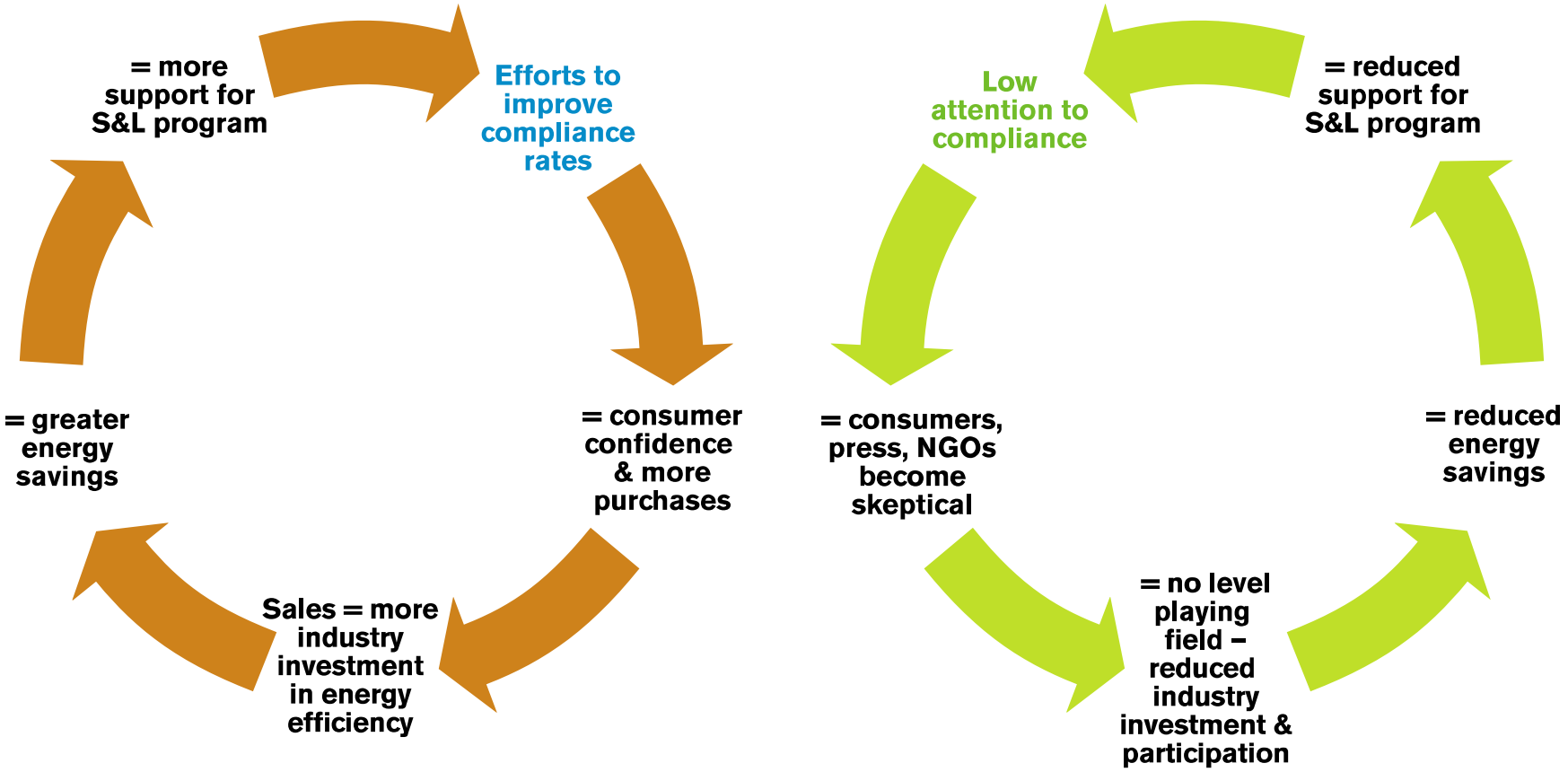
Two main types:

- **Process indicators** monitor the implementation of the programme as well as programme inputs
- **Impact/outcome indicators** monitor the progress in achieving the programme's objectives

What is monitoring, verification, enforcement (MVE)?

- **Monitoring** of MEPS/other programme is ongoing collection and analysis of data (also market surveillance).
- **Verification** is the process of determining, through testing, whether a product actually performs according to the energy performance value claimed by suppliers.
- **Enforcement** is how regulators respond to non-compliance.
- **Compliance** is the general term for programme participant's actions in relation to programme requirements.

Compliance circle: virtuous or vicious



Source: Ellis *et al* 2010

Simple logic model for MVE policy

INPUTS	OUTPUTS		OUTCOMES/ IMPACTS
	Activities	Participation	
• Resources • Regulators • Laboratories • Manufactures • Partners	• Analyse registration data • Store surveys • Sales data • Analysis of import/export • Lamp performance tests • Enforcement activity	• Staff • Policy people • Industry • Lab staff	• More compliant products • More efficient lamps • Reduced GHG • Lower running costs

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Process indicators

Programme **input** indicators relate to:

- Financial resources
- Equipment, staff available

Indicators related to **activity** on how well programme implemented, if it is reaching the intended target with acceptable quality, eg:

- Number of tests, surveys undertaken
- Proportion of the market covered

Process indicators for MVE intervention (inputs)

What were the inputs?

Indicators include:

- Number of (full time) staff each year
- Money invested in the programme each year (budget)

Process indicators for MVE intervention (activity)

how much activity occurred, coverage, etc.

- Number of lamp tests undertaken
- Proportion of the market covered
- Number of store surveys

MVE Impact and outcome indicators (monitoring)

Monitoring the progress of achieving the programme objectives, such as:

Product performance:

- Number of lamps sold by technology
- Average efficiency (efficacy) of products sold (or on market)
- Average features of lamps (eg power, lifetime)
- % compliant with regulations (MEPS, labelling)

Product price:

- Average price of lamps (retail, wholesale)

Data sources:

- Registration, import/export
- Store surveys, market research

Impact and outcome indicators (verifying)

Verifying the claims of products on the market:

- Number of non-compliant products
- The type of non-compliance (number, %) (eg administrative, performance)
- The extent of non-compliance

Data sources:

- Laboratory testing, store surveys

Impact and outcome indicators (enforcement)

Enforcement response:

- Number of products subject to action
- The level (extent) of response taken

Data sources:

- Enforcement body (based on monitoring and verification testing, and actions undertaken)

[Care needed - not always a good reflection of whether efficiency/compliance is improving]

Examples of MVE indicators

- China – analysis of registration data to provide annual average efficiency (monitoring)
- Australia – CFL labelling compliance

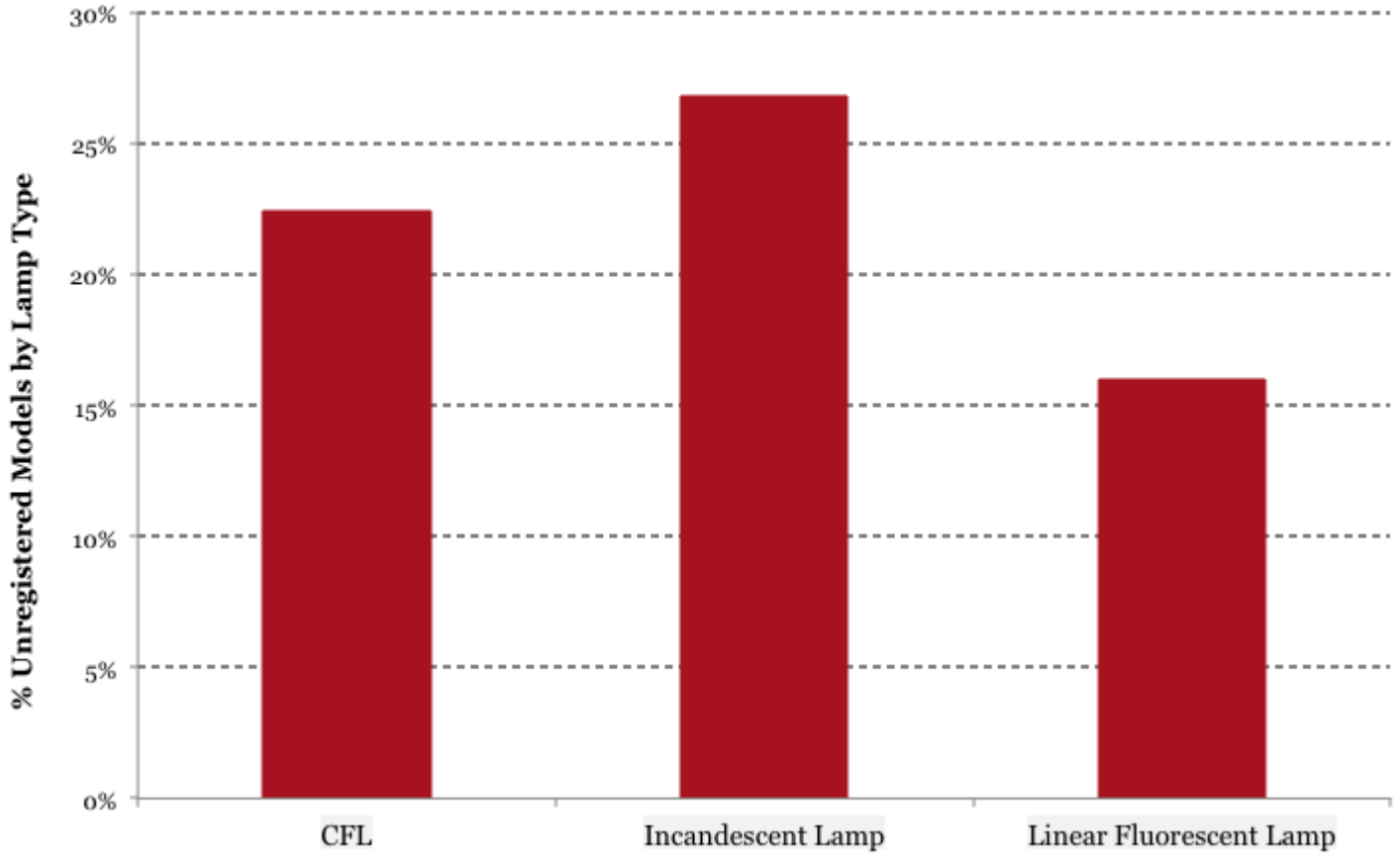
To follow…

Average energy efficiency level of lighting, 2010, China

Products		Evaluation indicators	Unit of indicators	2010 average energy efficiency level		Increase compared to 2009 (%)	
				By Model	By Sales Volume	By Model	By Sales Volume
Self-ballasted fluorescent lamps	5-8W - RR series	Minimum initial lumen efficacy	lm/W	46.80	47.10	1.70	—
	5-8W - RB series			50.40	51.10	1.00	—
	9-14W - RR series			53.8	55.1	1.32	—
	9-14W - RB series			57.5	59.1	2.13	—
	15-24W - RR series			58.7	62.1	2.09	—
	15-24W - RB series			63	66.1	0.96	—
	25-60W - RR series			60.6	68.1	0.17	—
	25-60W - RB series			63	71.1	0.17	—

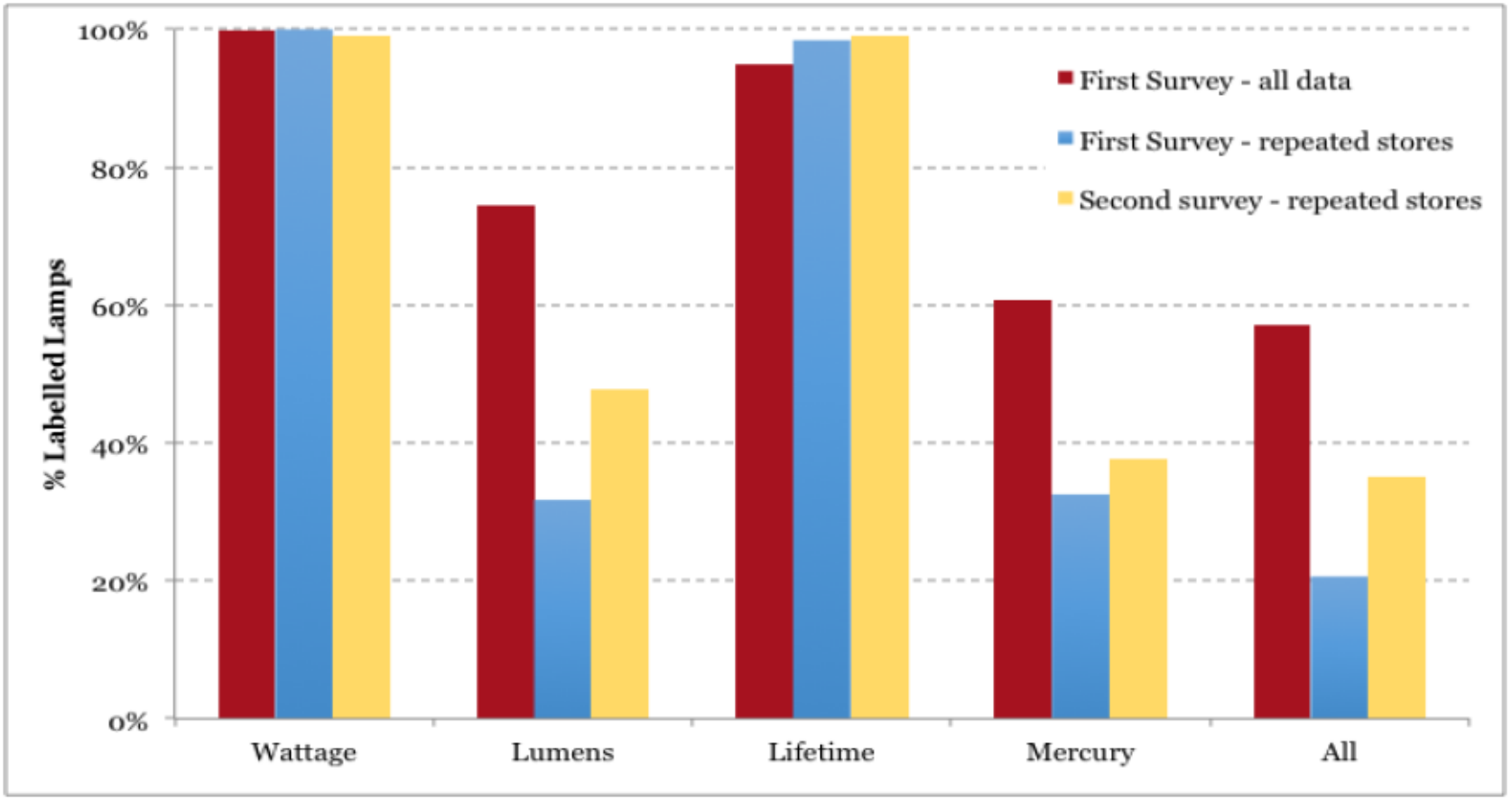
Source: CNIS (2012) White paper for the energy efficiency status of China energy-use products

Lamps in Australia, Unregistered, 2013



Source: E3 (2013)

CFL labelling compliance, Australia, 2013 & 2014



Source: MEA (2014)

Practical considerations

Issues of lamps:

- Different technologies (unlike appliances), different lifetimes, features. Usually, the focus should be on service, not technology. Though useful to monitor this, and can be easier to track.

Data collection:

- Use of product registration systems makes analysis much easier.
- Store surveys are relatively low cost market surveillance
- Laboratory tests are more expensive, time consuming

National energy consumption, impact evaluation:

- Need to either measure energy consumption, or (more usually) model impact
- Attribution and counterfactual are challenging, difficulty of no control group
- Need baselines or measurements at the start of MVE programme

Resources

- en.lighten toolkit, available at http://www.enlighten-initiative.org
- lites.asia reports, eg ‘Label display market surveillance’, available at: http://www.lites.asia/
- CLASP, eg MV&E Guidebook, available at: http://www.clasponline.org
- IEA ‘Energy efficiency indicators: essentials for policy making’, available at: http://www.iea.org

Summary

- Evaluation is an integral part of good policy making
- Developing evaluation indicators is a key step towards tracking MVE progress and evaluating policy effectiveness
- Process indicators measure the inputs and working of the programme/intervention, eg:
  - Funding amounts, number of staff, number of tests, etc
- Impact/outcome indicators measures the impact of the programme, and tied to objectives, eg:
  - Compliance rates, average efficiency of products on the market
- Some evaluation impact indicators are key to evaluation of main policies (eg MEPS) not just MVE

Thank you!

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Question and Answer Period

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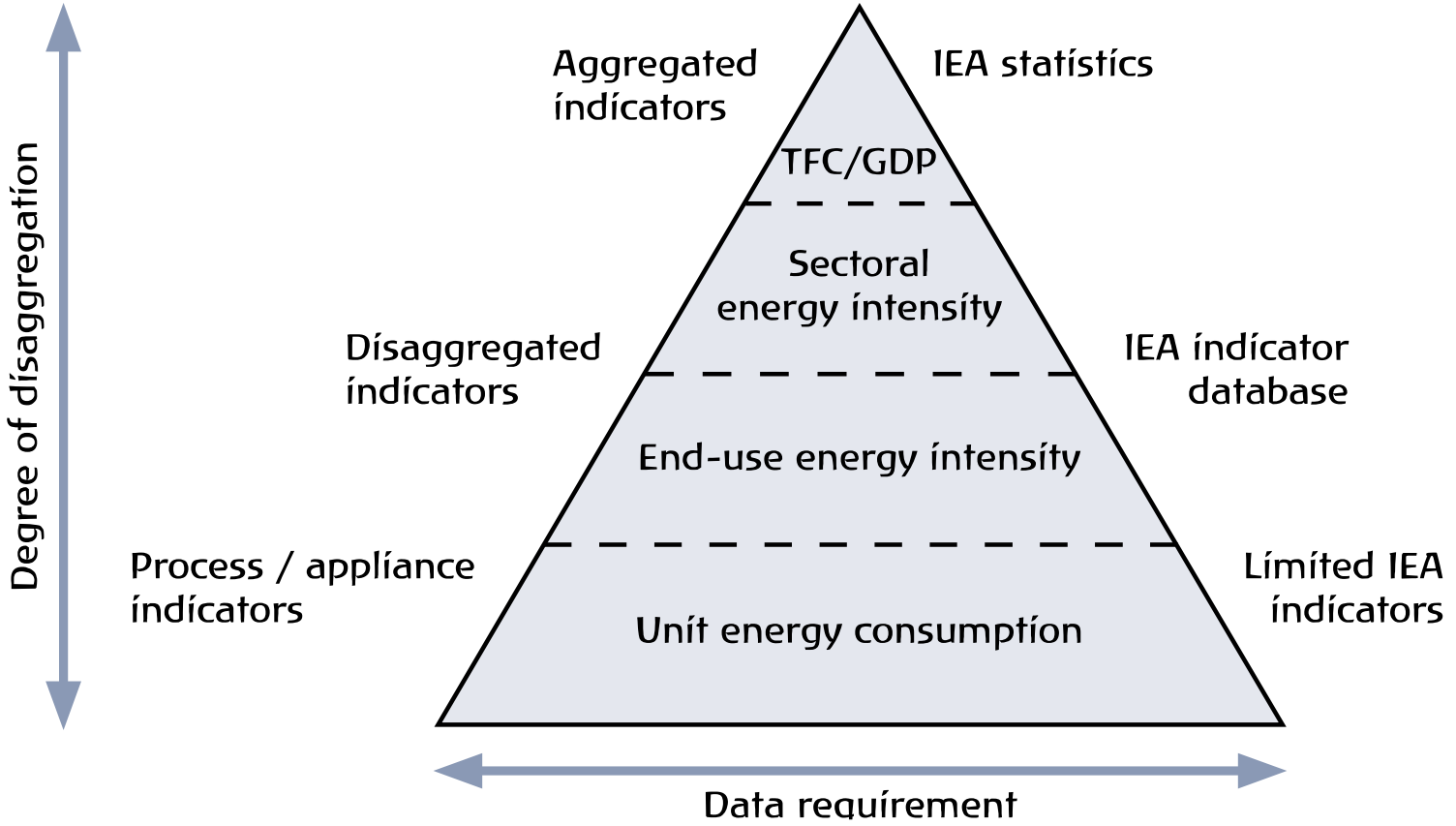
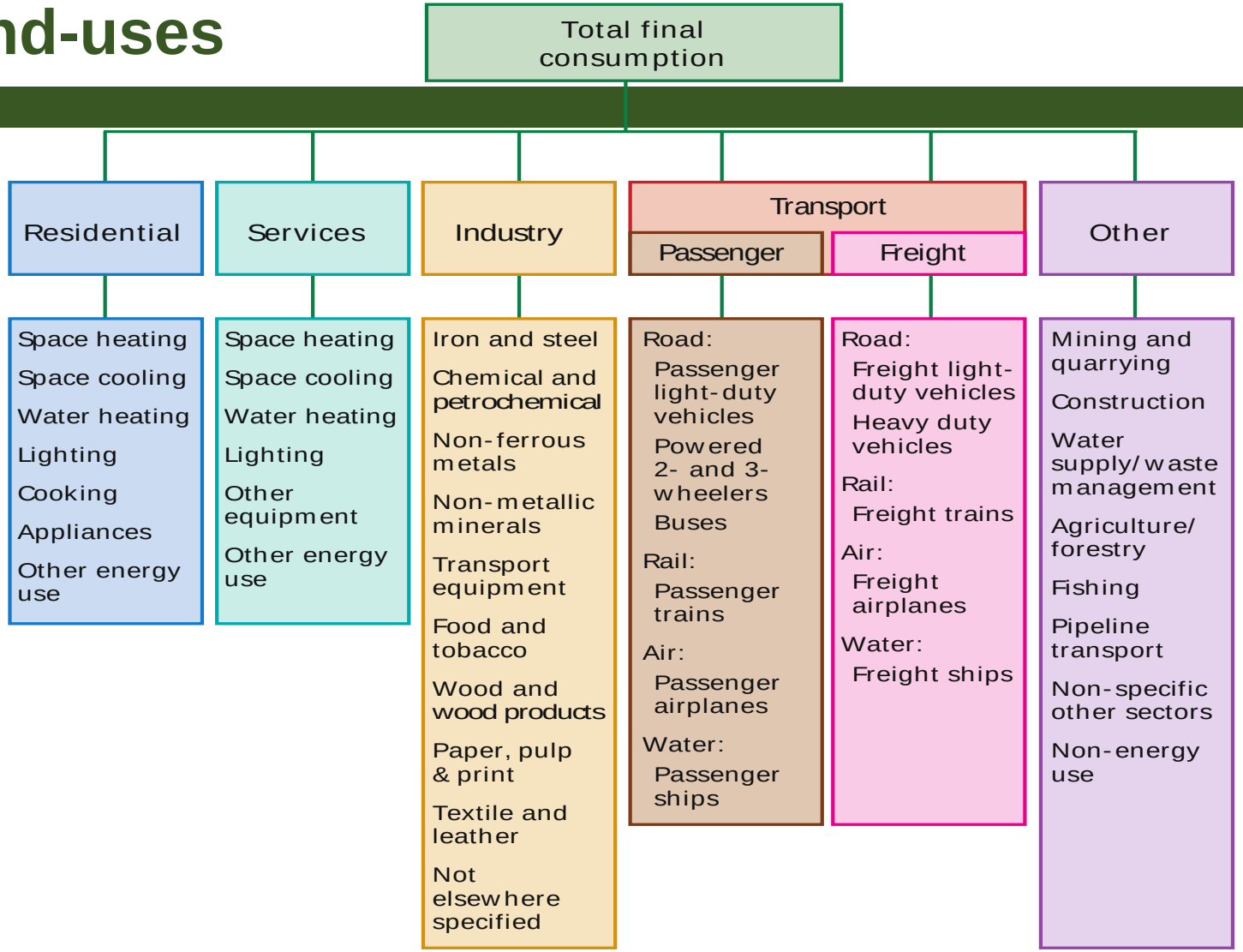
The IEA energy efficiency indicators pyramid



Source: IEA (2014)

IEA disaggregation - sector, sub-sector, and end-uses



Source: IEA (2014)