Does regulation of energy management systems work?
– Case of Energy Conservation Law in Japan

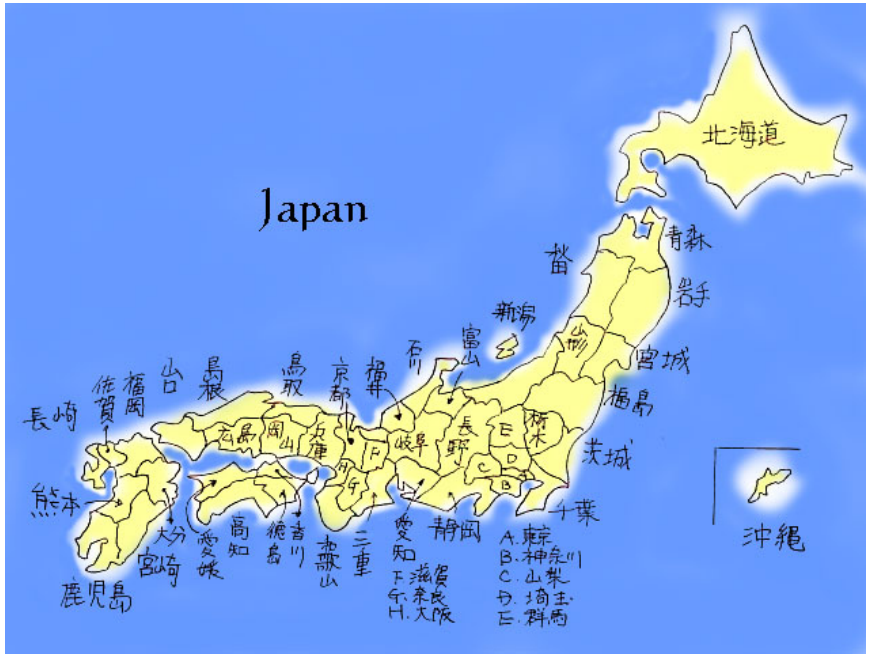
Osamu Kimura*, Fuyuhiko Noda

* Central Research Institute of Electric Power Industry, Japan

ECEEE 2014 Industry Summer Study, 5 June

CRIEPI
Central Research Institute of Electric Power Industry

Why Japanese energy management standard (EnMS)?



http://travel-mapper.com/country/jpn/jpn.shtml

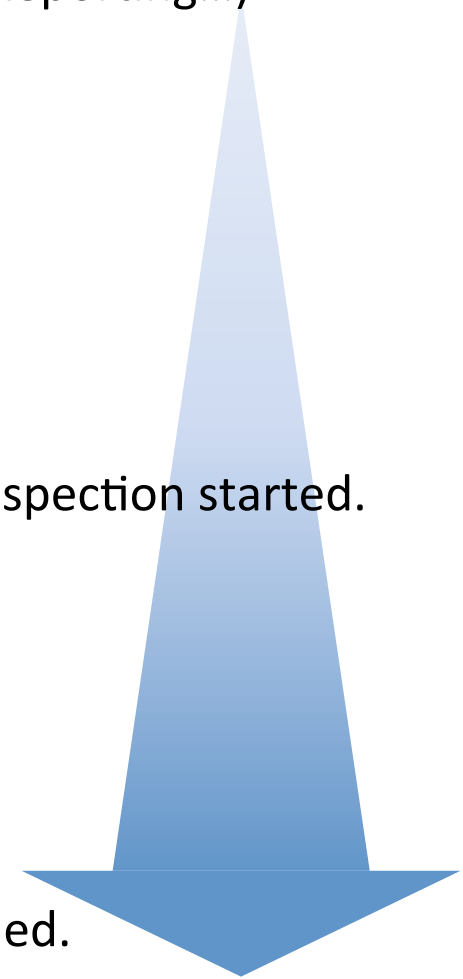
Similar, but also unique

- Mandatory for companies consuming > 1,500 kL-coe/yr
- High coverage (>12,000 companies, 98% of industrial energy use)
- High compliance
- Requires Certified Energy Managers
- Indicative target : 1% per year in energy efficiency

… Some insights for other EnMS programs?

(Too) long history of regulation

1948	Regulation on Thermal Management established. (Management Standard, Certified Managers, Reporting…)
1980	Energy Conservation Law established.
1993	Reporting became mandatory.
1997	Annual 1% improvement target introduced. Inspection started.
1999	Investment Plan became mandatory.
2003	Commercial sector included.
2006	Scope expanded.
2010	Company-level regulation introduced. PDCA became clear. Benchmark targets included.



Three distinctive features of Japanese EnMS

1. Specifies energy performance indicators (EnPIs) and target
   - EnPI: Energy use divided by a production/activity index
   - Indicative target: 1% improvement per year (in average)
   - If failed to achieve, the reason must be explained in reporting

2. Specifies measures/actions to be taken
   - For major equipment/processes,
     e.g. boilers, furnaces, motor-driven systems…
   - specific measures/actions are indicated
     e.g. stop when not using, reduce air-pressure…
   - from four perspectives
     i.e. operation, measurement and reporting, maintenance, replacement/new-installation.

Example of a measure required in the EnMS

Section 6-1-(1)-c.

Concerning electric systems such as pumps, fans, blowers and compressors, the pressure and output volume should be reviewed, and ***management manuals*** *should be established on multi-unit control and speed control….*

Three distinctive features of Japanese EnMS (cont.)

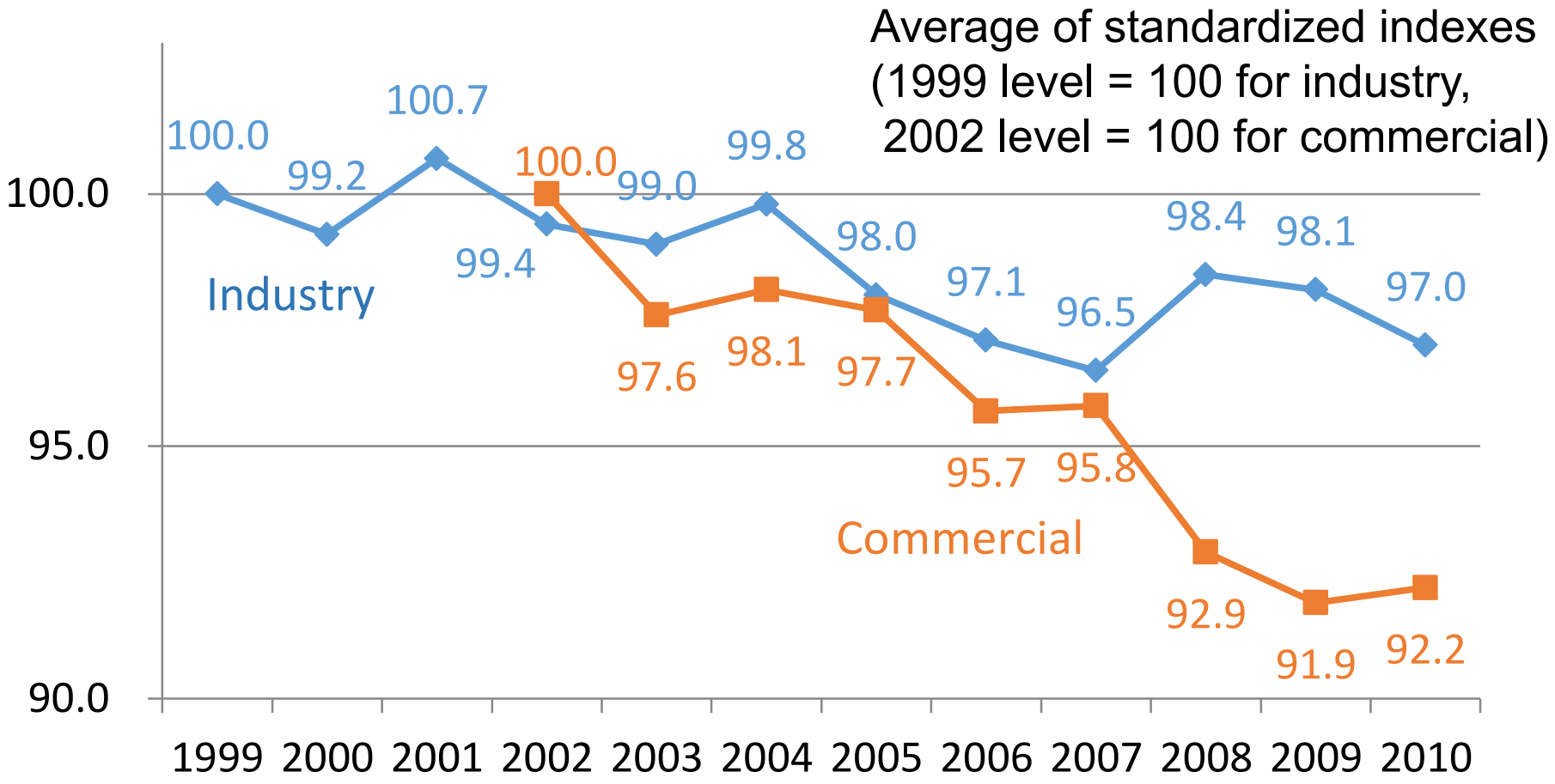
3. Reporting and enforcement

- Annual reporting to the government
  - Energy use, energy intensity, their five-year trend etc.
  - Mid- to Long Term Investment Plan

- "Onsite-Survey" (inspection)
  - 400 to 800 companies per year
  - Firms consuming > 3,000 kL-coe/yr: all
  - Firms consuming > 1,500 kL-coe/yr: randomly selected

- High compliance rates
  - Average score: 85 to 95 out of 100-point scale

Energy intensity index of regulated firms



- Decreasing less than the target level (1% per year)
- Additional impact even more limited

Is it effective? – results of interviews

The target to improve energy intensity by 1% annually has a positive impact. It helps us to persuade top management to make energy efficiency investments.

(Company C, paper and pulp)

Reporting of investment plan is a good "pressure".

It encourages us to take a longer-term perspective.

(Company L, automobile components)

After being designated by the regulation, we started looking for possible ways to save energy and adopted various measures to achieve the 1% improvement target.

(Company K, automobile components)

Is it effective? – results of interviews (cont.)

Our management standards are more detailed than the EnMS standard required by the regulation.

(Company A, cement)

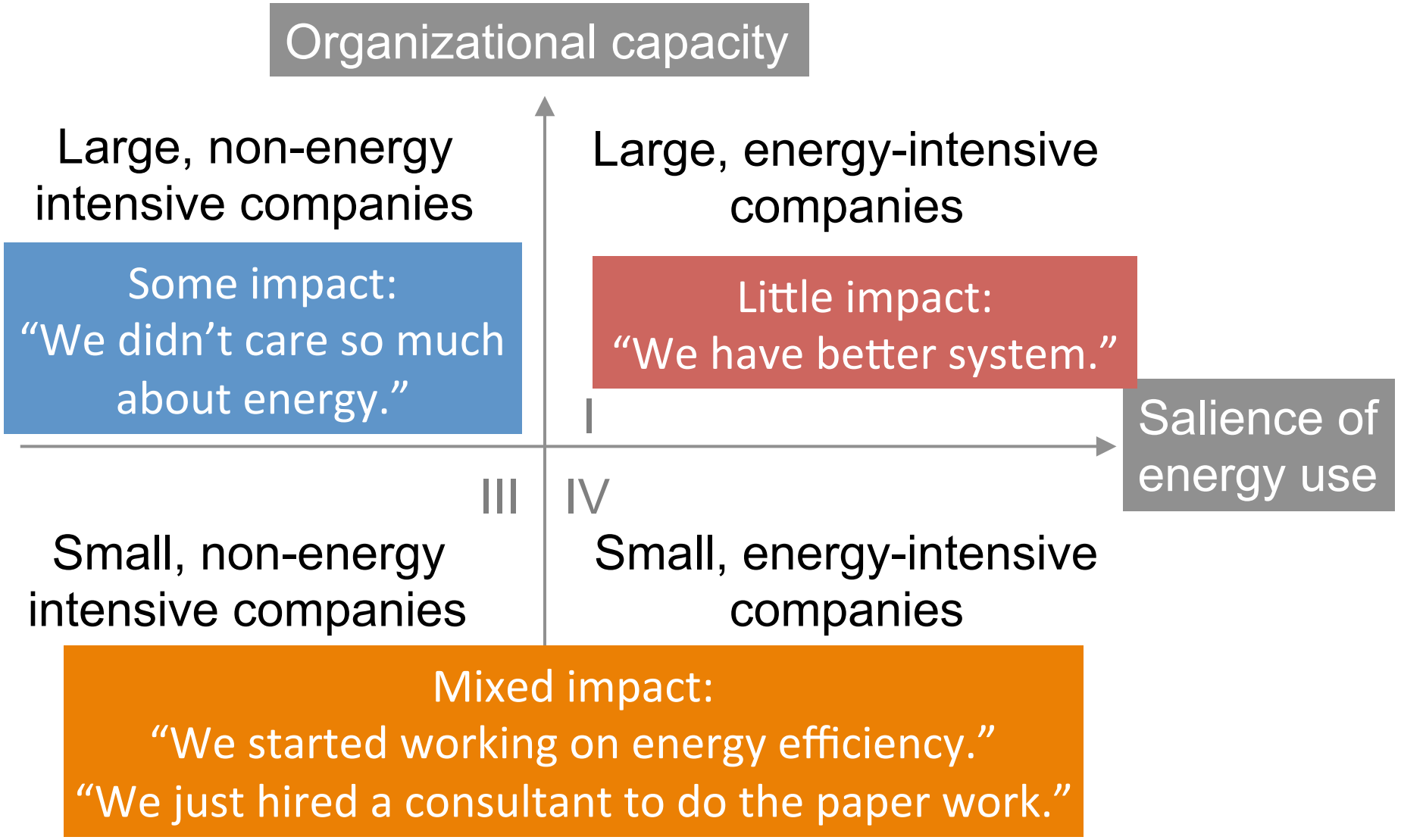
The major motivation for energy conservation was cost concern. Regulation was not so important.

(Company B, paper and pulp).

Compliance by “paper work” in smaller firms

Lots of manuals and documents produced for compliance,
but seldom integrated into business process…

Varied impacts of the EnMS regulation



Insights from Japanese EnMS regulation

1. Regulation works, to some extent.

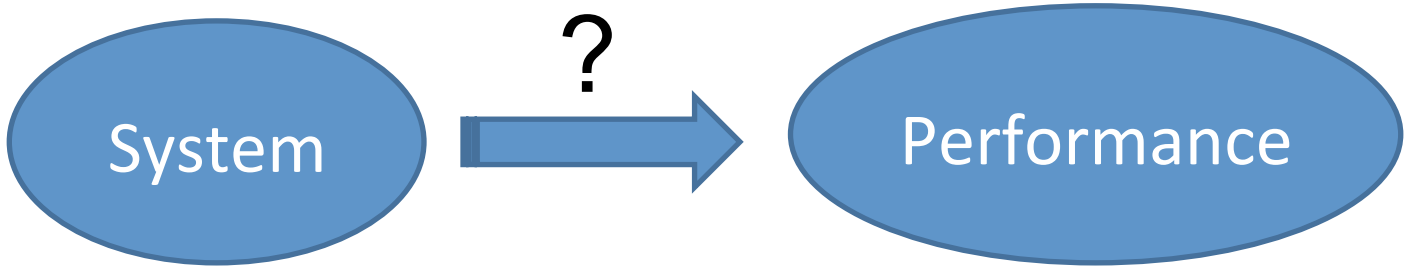
- enhanced firms to establish basic management systems.
- reminded the importance of energy conservation.

2. Specified performance target can serve as a reference.

3. Impact of regulation varies depending on firm's characteristics.

4. Smaller firms without enough organizational capacity can not utilize management system they established.

Information programs should support EnMS



Case of Japan: EnMS

1% improvement per year

Information, know-how
on specific actions/measures

Specified actions/measures in EnMS

END
Thank you!

Osamu Kimura

o-kimura@criepi.denken.or.jp

CRIEPI
Central Research Institute of Electric Power Industry