

**IPEEC-Energy Management Action NetworK
5th Workshop (At Sydney)
**Energy Efficiency in Small and Medium
Manufacturing Businesses in Japan
---Subsidized Energy Audit in Japan---****

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---Subsidized Energy Audit in Japan---

Outline

1. Introduction

1-1 **Why** is a focus on **EE&C** improvement in manufacturing **SMEs important?**

1-2 What **key policies** do we have in Japan?

2. **Subsidized Energy Audit** in Japan

2-1 What is Subsidized Energy Audit & what are the results so far?

2-2 What are the lessons learned?

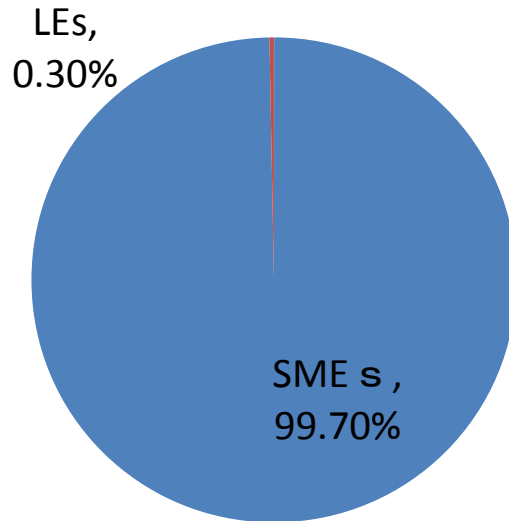
2-3 Ongoing challenges and Future plans

1. Introduction

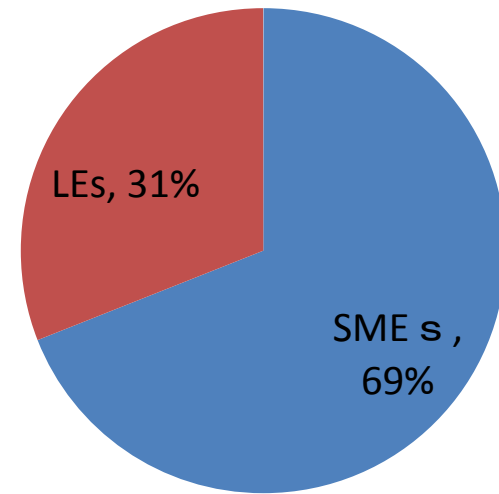
1-1 Why is a focus on EE&C improvement in manufacturing SMEs important?

- 1) Around 99% of the enterprises is SMEs.
- 2) Large enterprises are imposed EM measures by law.
- 3) Large enterprises have their own EM engineers.
- 4) SMEs do not have EM engineers and financial supports are not enough.

Number of Enterprises and Employees in Japan



Number of Enterprises



Number of Employees

Data Source: METI

Definition of Japanese SME in Industry

- **Capital: Less than or equal to 300 million yen or,**
- **Number of Employees :**

Less than or equal to 300 Employees

(Source: The Small and Medium Enterprise Agency)

2-2 What key policies do we have in Japan?

- 1) **Financial Support** for EE&C Projects / Introduction of E.E. Equipment
 - Tax Incentive / Low Interest Loan / Subsidies
- 2) **Technical Support**
 - Guidelines and Criteria for Energy Management and EE&C
 - National Program to Disseminate Good EMS (ISO50001 etc.)
 - **Free or Subsidized Energy Audit**
 - Preparation of Tools Such as Software Tools for Analyses and Evaluation - Simulation Available to SMEs
- 3) Provision of Useful **Information and Data**
 - National Database
 - Award System

2. Subsidized Energy Audit in Japan

2-1 What is Subsidized Energy Audit & the results so far?

- 1) **Outline** of Energy Audit(Diagnostic Studies) by ECCJ
- 2) **Flow** of Energy Audit Procedure
- 3) On site study by two experts (**on site Photo**)
- 4) **Concept** of ECCJ's Energy Audit

The results so far

- 1) **Energy-saving percentages** by Energy Audit
---Factories
- 2) Energy-saving percentages by Energy Audit
--- Buildings
- 3) **Examples** of proposals

1) Outline of Energy Audit (Diagnostic Studies) by ECCJ

- **Free of Charge**

Subsidized by METI

- **First step to Start Energy Conservation**

To Understand What is the Energy Conservation.
To Know the Start Point of Energy Conservation Activity

- **“Walk-through” type energy audit**

One-day on-site study by 2 experts(heat and electricity)

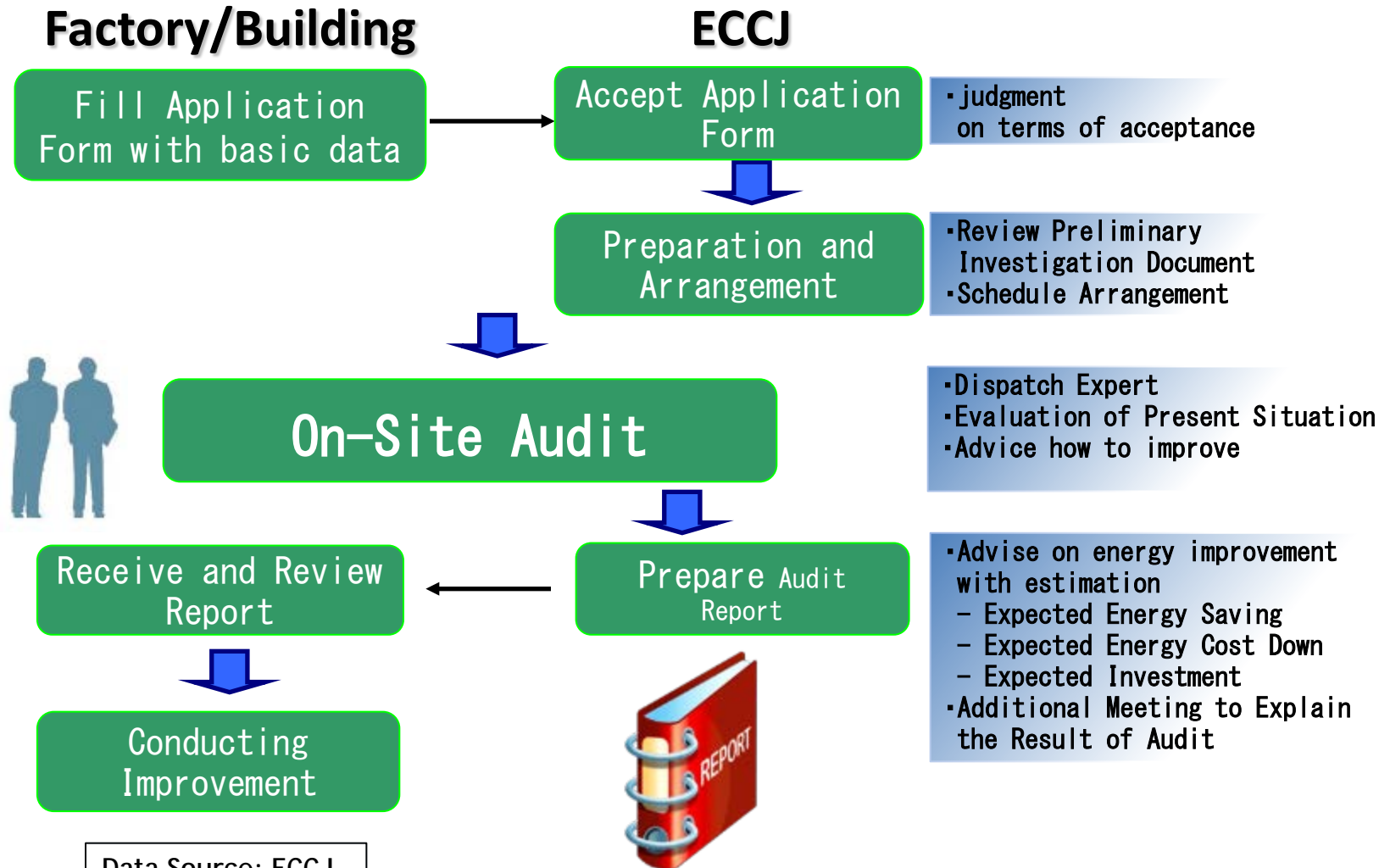
- **SMEs of energy consumption 100-1500kL-oe**

More than 1500kL-oe Enterprises are Designated as Energy Management Factory

- **Fair, Neutral, Impartial Audit**

ECCJ implements energy audit, and ECCJ is not a private sector
Impartial Advice without Focusing on Specific Energy Source, Equipment, Supplier

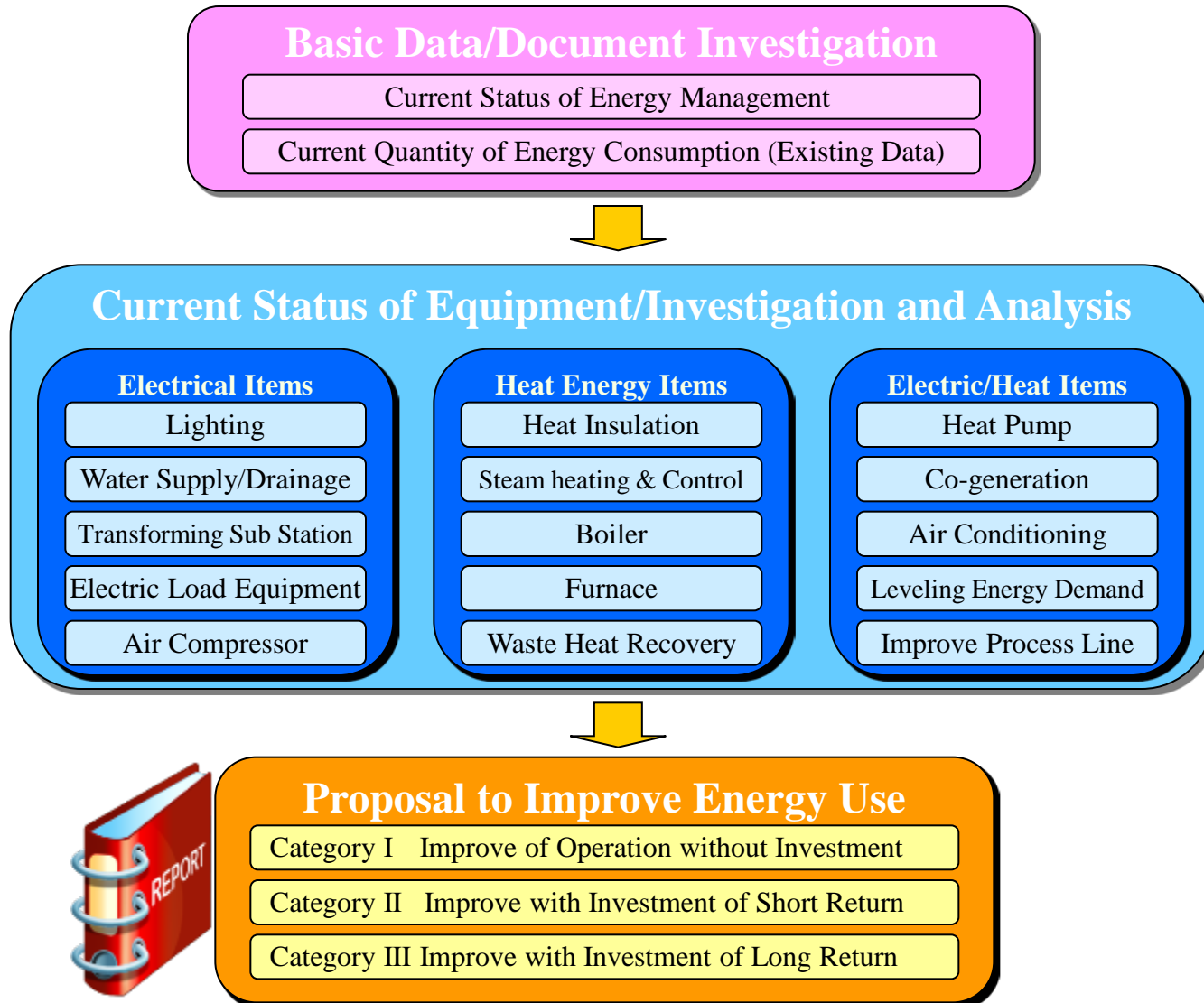
2) Flow of Energy Audit Procedure



3) On site study by two experts



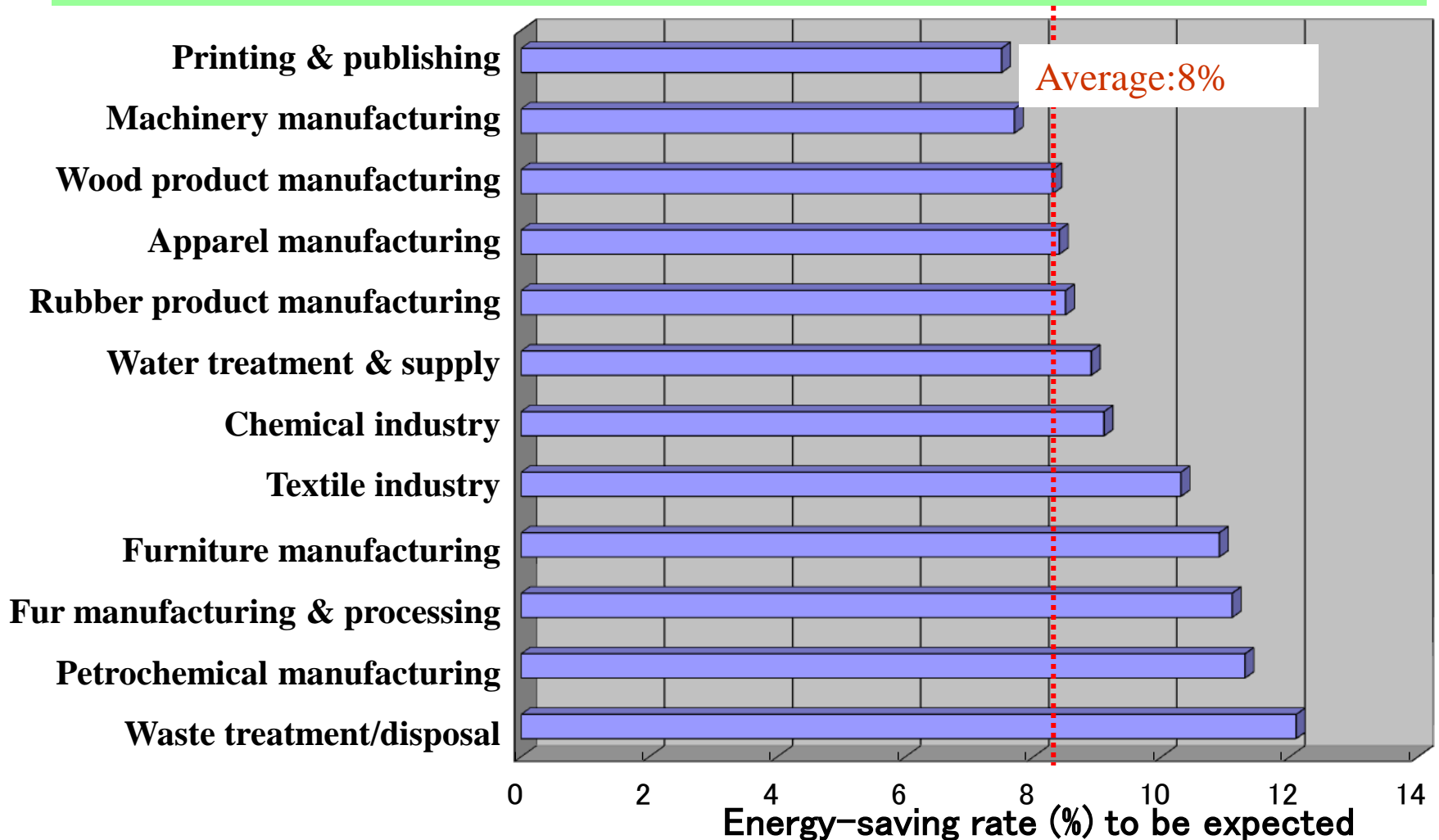
4) Concept of ECCJ's Energy Audit



The results so far?

- Expected energy saving in audit report reaches to **6 to 8 %** of the factory's energy consumption
- According to the questionnaire survey, **one-third** of the proposals has already been **carried out** and the other one-third of the proposals is under consideration.

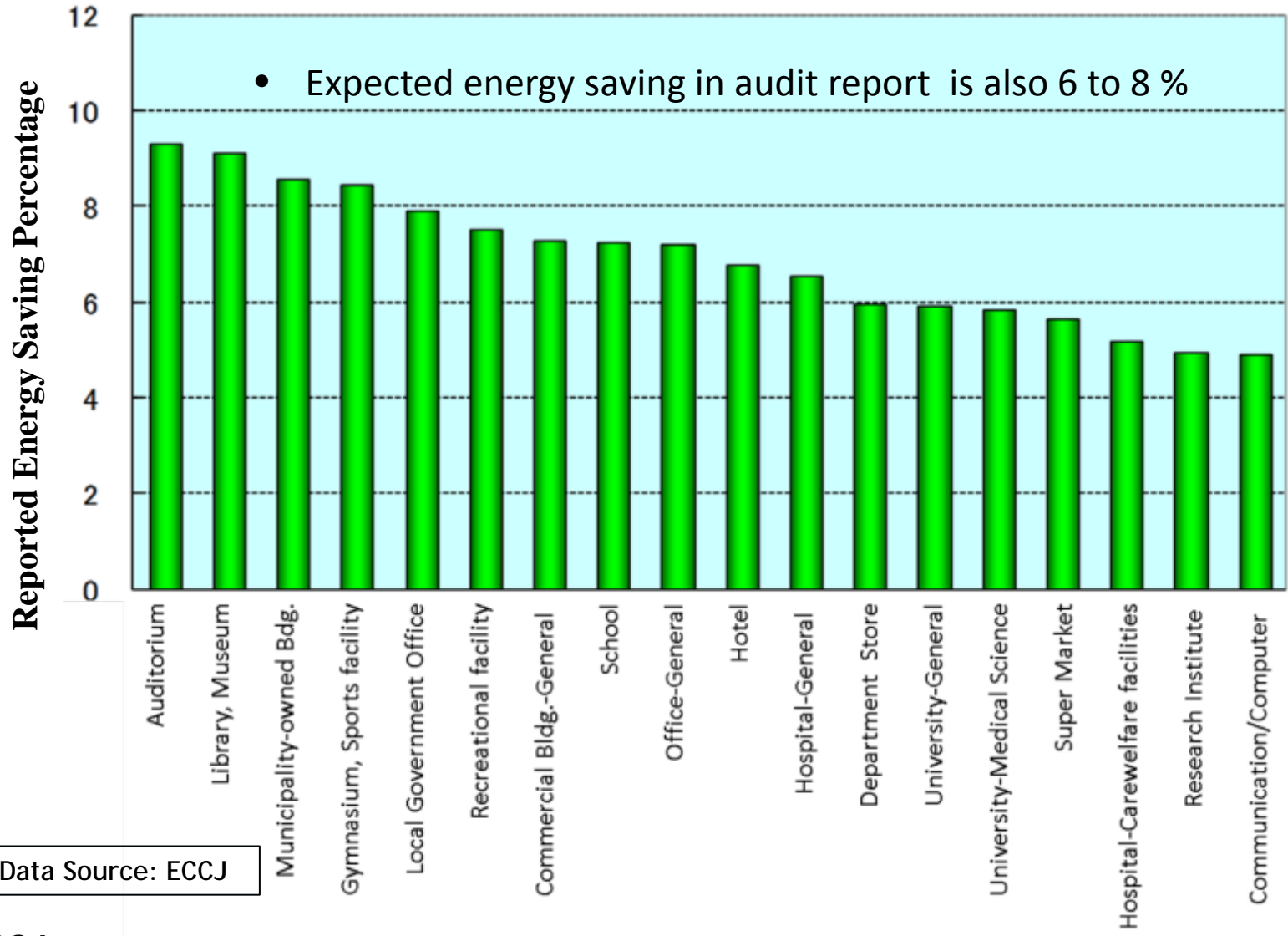
1) Energy-saving percentages by Energy Audit ---Factories



Data Source: ECCJ

Total proposals are equivalent to 46MI/y

2) Energy-saving percentages by Energy Audit -- Buildings



3) Examples of proposals

The followings are some of the proposals in the reports of energy audits.

Business type (Note 1)	Number of employees	Main improvement proposals concerning energy conservation	Classification (Note 2)	Annual estimated effect	
				Energy conservation ratio (Note 3)	Monetary amount of conservation
Food manufacturing business (1,300 kL/year)	160	(1) Optimization of boiler's air ratio	I	9.2%	6.5 million yen
		(2) Maintenance of steam trap and recovery of drain-off	I		
		(3) Maintenance of thermal insulation for steam line	II		
		(4) Thermal insulation for boilers and heaters	II		
Plastic products manufacturing business (720 kL/year)	72	(1) Recovery of steam drain-off	I	13.5%	5.3 million yen
		(2) Thermal insulation of injection molding machine	II		
		(3) Install inverters to hydraulic motors	II		
		(4) Install high-efficiency transformers	III		
Ceramic products manufacturing business (1,450 kL/year)	68	(1) Inverter control of dust collection fans	II	14.9%	11.8 million yen
		(2) Recovery of exhaust heat from tunnel kiln	II		
		(3) Quantitative control of compressors	II		
		(4) Install regenerative burner for tunnel furnaces	III		

Data Source: ECCJ

4. What are the lessons learned?

1. About 1/3 of the EM recommendations is not implemented
2. Major part of the recommendations is regarding utilities

5. Ongoing challenges and future plans

1. Financial support for EE&C Projects
/ Installation of E.E. Equipment.

Thank You

Very Much



**For More Information
The Energy Conservation Center, Japan
<http://www.eccj.or.jp>**



The Energy Conservation Center, Japan