



Outline of MOEJ LD-Tech Program

April 2024

Climate Change Projects Office, Climate Change Policy Division,
Global Environment Bureau,
Ministry of the Environment Government of Japan



Table of Contents



1. Introduction of “MOEJ LD-Tech” program
2. Structure: MOEJ LD-Tech Program
3. Categories: MOEJ LD-Tech List
4. Criteria: MOEJ LD-Tech Standard Table
5. MOEJ LD-Tech Products Catalog
6. Overview of LD-Tech Products
7. Application and Examination Procedure

1. Introduction of "MOEJ LD-Tech" Program



- The Ministry of the Environment, Japan (MOEJ), has been in need of a further policy instrument to achieve carbon neutrality by 2050.
- In response, "MOEJ LD-Tech program" was established in 2021 as a program to recognize and promote leading decarbonization technologies.

LD-Tech represents **"Leading Decarbonization Technologies,"** defined as the most effective equipment and instruments for reducing energy-related CO2 emissions.

■ **"Leading "** in LD-Tech means:

- That the technology elements applied in the equipment and instruments are leading.
- That the combination or application of the technology elements are leading.
- That the efficiency has been dramatically improved in a short period.

■ **"Decarbonization"** in LD-Tech means:

- Technologies with the highest level of "LD-Tech Standard" in terms of energy consumption reduction or CO2 emission reduction.

"equipment and instruments" includes any equipment combination or technical elements, which businesses and consumers can purchase.

Features of MOEJ LD-Tech program

1 Catalogue of the largest CO2 reduction products

"MOEJ LD-Tech Products" indicate the leading equipment or instruments which are approved by MOEJ as the most effective ones for reducing energy-related CO2 emissions.

2 Variety of equipment or instruments

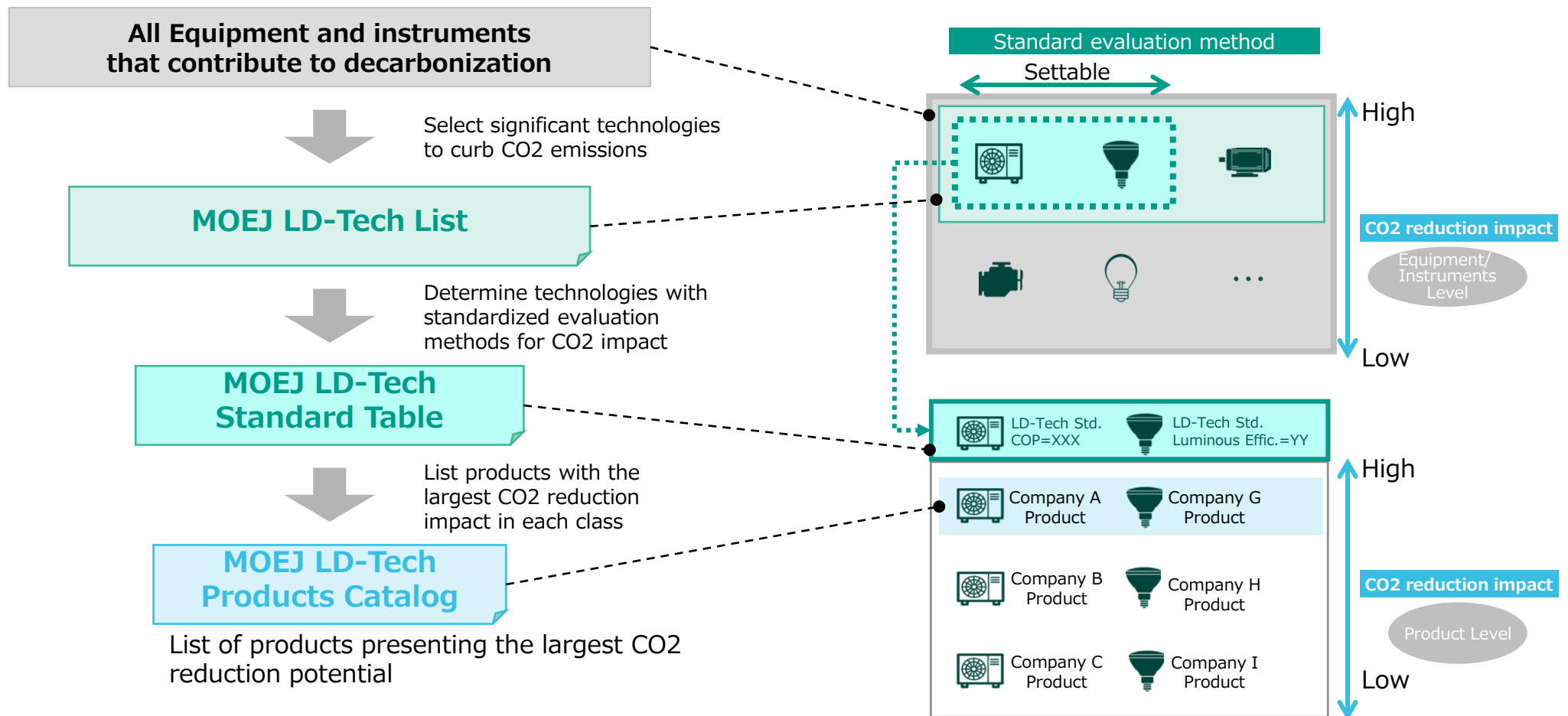
"MOEJ LD-Tech Products Catalog" covers a wide range of equipment or instruments not only for residential-use but also for business-use, such as public facilities, office building or factories. Moreover, renewable energy generation and waste management are included.

3 Recognition of transition technologies

"MOEJ LD-Tech Products" include transition technologies such as gas-powered products which have potential for contributing to significant reduction of CO2 emissions in the short run for some uses. Thus, these are recognized as "MOEJ LD-Tech Oriented".

2. The Structures of MOEJ LD-Tech Program

- The products presenting the largest energy-related CO2 reduction potential are listed on “MOEJ LD-Tech Products Catalog”.
- The certification criteria and thresholds (called “LD-Tech Standards”) are summarized in “MOEJ LD-Tech Standards Table”.



3. Categories : MOEJ LD-Tech List



- “MOEJ LD-Tech List” is the list of equipment and instruments (technological categories) recognized as important CO2 reduction options by MOEJ.

Main Requirements for MOEJ LD-Tech

A.
High CO2 reduction potential

1. Equipment or instruments can be adopted at the sector or sub-sector with **high CO2 emissions**.
- 2-a. Equipment or instruments with **high CO2 reduction efficiency**.
- 2-b. Equipment and instruments with **high power generation efficiency of renewable energy**.

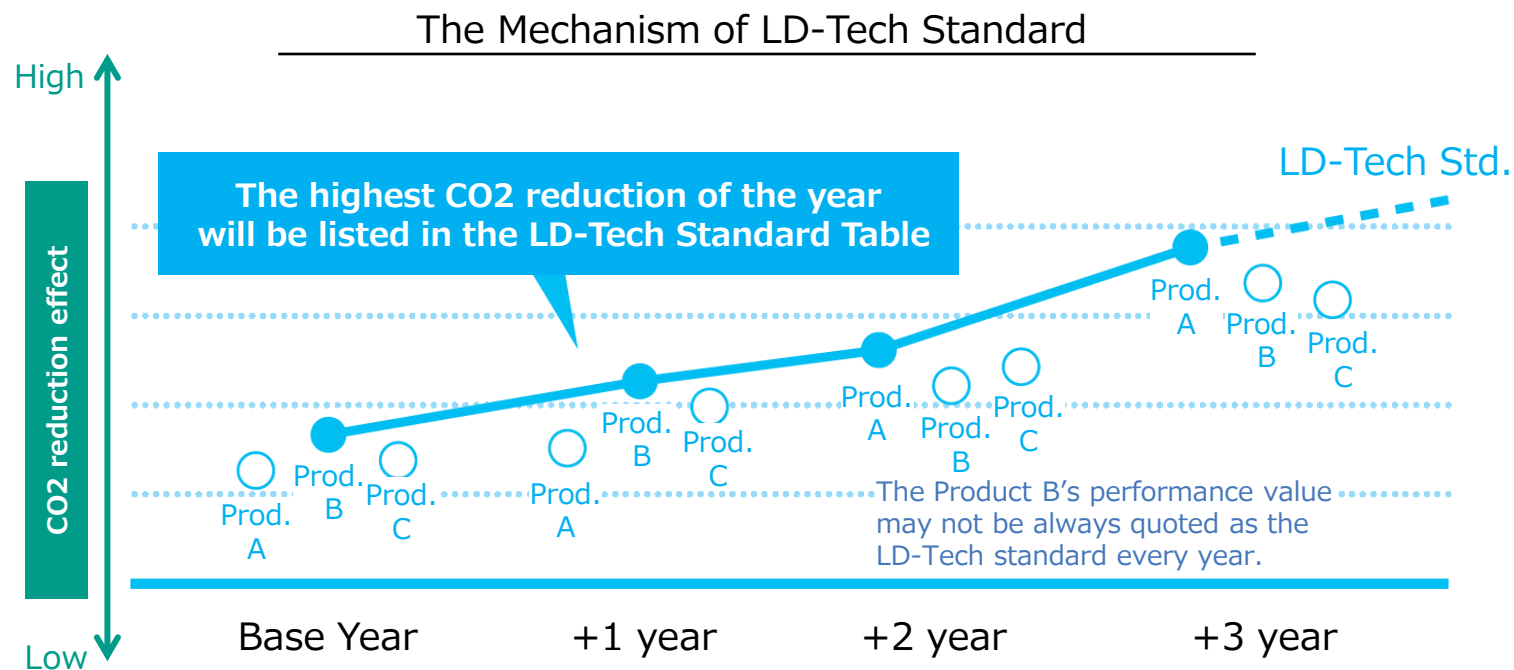
B.
Difficulty of equipment introduction

1. Equipment or instruments are for **sale or will be commercialized by 2030**.
2. Equipment or instruments without **specific restrictions or barriers for market deployment**.

Sector	Examples of Equipment and Instruments in the LD-Tech List
Industry & Commercial (Cross-industry)	Heat Pump Packaged Air Conditioner Turbo Freezing Machine Water-cooled chillers and heat pumps
Industry (sector-specific manufacturing equipment, etc.)	Red LED lamp Electric Hydraulic Excavator Innovative Glass Melting Process
Transportation	Electric Vehicle Fuel Cell Vehicle Electrical Two-wheel Vehicle
Residential	Closed Pellet Stove, Residential Fuel Cells(ENE-FARM, PEFC), home energy management system(HEMS)
Energy Conversion	Solid-Oxide Fuel Cell (SOFC) Equipment Biomass Gasification Equipment Solar Cells Transformerless Power Conditioner (for solar power generation)

4. Criteria: MOEJ LD-Tech Standard Table

- The highest performance achieved in each predetermined class of the targeted equipment and instruments is recognized as the LD-Tech Standard, which is updated annually.
- This table expresses that the performance qualities of equipment are competed for each year.



- ✓ The LD-Tech Standard is a standard to demonstrate the “Best” quality that should be targeted at the applicable fiscal year by MOEJ.
- ✓ Most performance qualities are based on Japanese Industrial Standards (JIS).

5. MOEJ LD-Tech Products Catalog



- MOEJ LD-Tech Products Catalog indicates the products with the largest CO2 reduction impacts in Japan.
- MOEJ updates the list through solicitation for relevant manufactures annually.

Products/ models

- ✓ The product categories are on the “MOEJ LD-Tech Standard Table”(Latest edition)
- ✓ Already for sale (or to be released within the fiscal year)
- ✓ Manufactured or sold domestically

Applicants

corporations or subsidiaries who manufacture or sell relevant products/models in Japan

Examination Criteria

- The product categories are applicable on the MOEJ LD-Tech Standard Table.
- The principles and mechanisms are explained scientifically.
- The CO2 reduction performances, which candidate products/models have, are equal or superior to each “LD-Tech standard”
- The evaluation methods for the performance are in accordance with the predetermined rules in “MOEJ LD-Tech Standard Table”.

To be certified as LD-Tech Products, the above criteria must be passed.

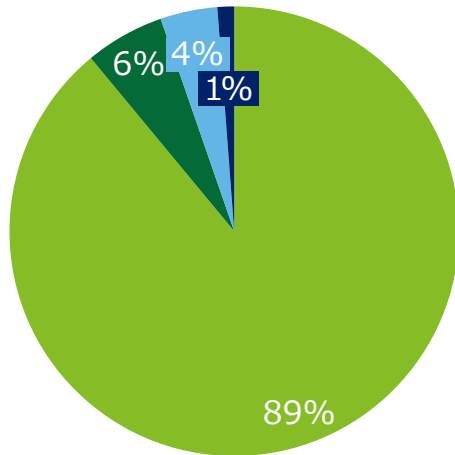
6. Overview of MOEJ LD-Tech Products



- “MOEJ LD-Tech Products” certify more than 660 products/models every year.
- The products/models registered most are heat pump chillers and steam boilers.

Summary of LD-Tech Products (FY2023)

- More than 660 product series were certified as “LD-Tech products” in FY2023
- Total applicants in FY2023 were 53 entities.



- Industry & Commercial (Cross-industry)
- Industry (sector-specific manufacturing equipment, etc.)
- Residential
- Energy Conversion

Top 5 of MOEJ LD-Tech Products in 2023

	Equipment or Instruments	Models	Relative Ratio
1	Air-Source Heat Pumps	94	14.1%
2	Steam Boilers (Once-Through boiler)	56	8.4%
3	Steam Boilers (Fire-tube boiler)	50	7.5%
4	Gas Heat Pumps	45	6.7%
5	Hot Water Boilers	39	5.8%

7. Application and Examination Procedure

- The Certification Committee, a panel of multiple experts appointed by MOEJ, examines the contents and propriety of the applications.
- The MOEJ publishes these products as “LD-Tech Products” on its website.

