

The Current State of Japan's LP Gas Policies

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Current State and Challenges

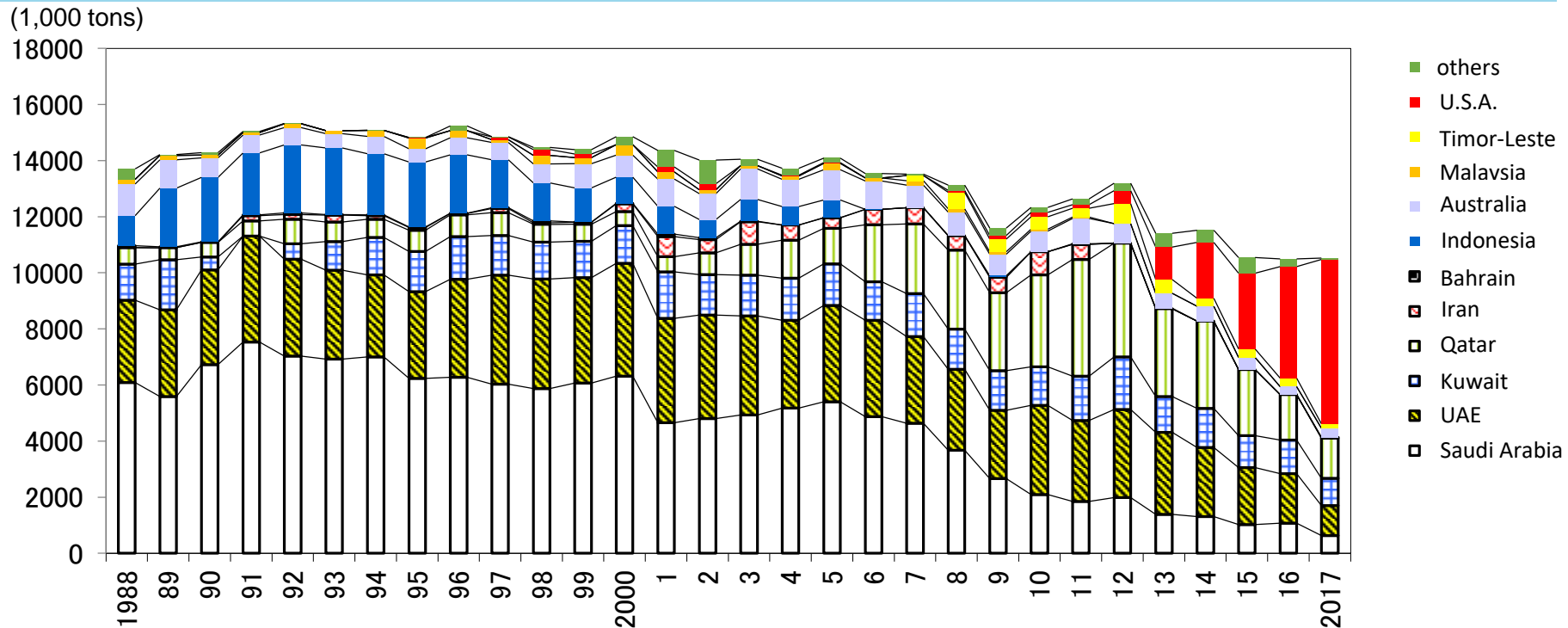
Diversifying supplying countries

<Current State>

1. aprx. 80% of the supply is imported
2. Imports from the U.S. have been increasing since 2012 (FY2018: aprx. 56%).
3. Imports from Australia and Canada were started

<Challenges>

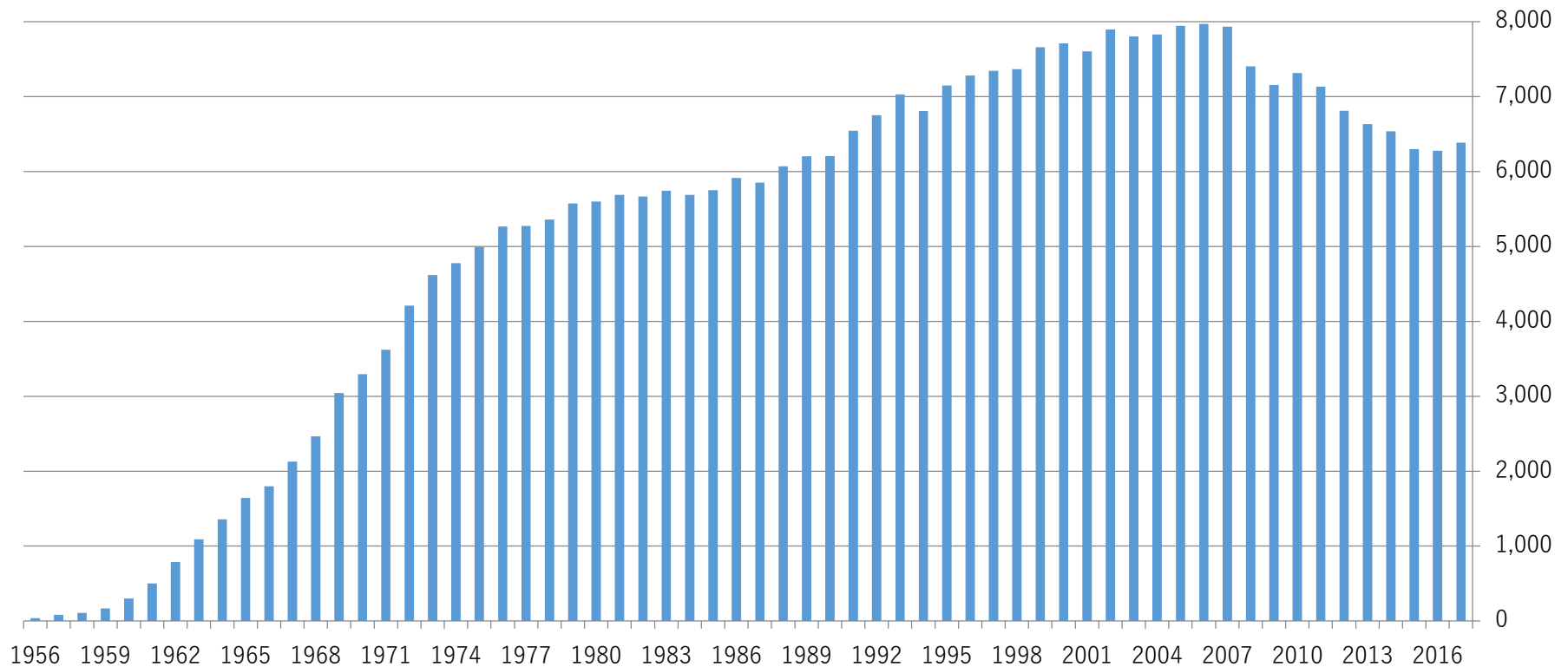
Further diversification of supplying countries



Household and businesses

Current State of Domestic Demand

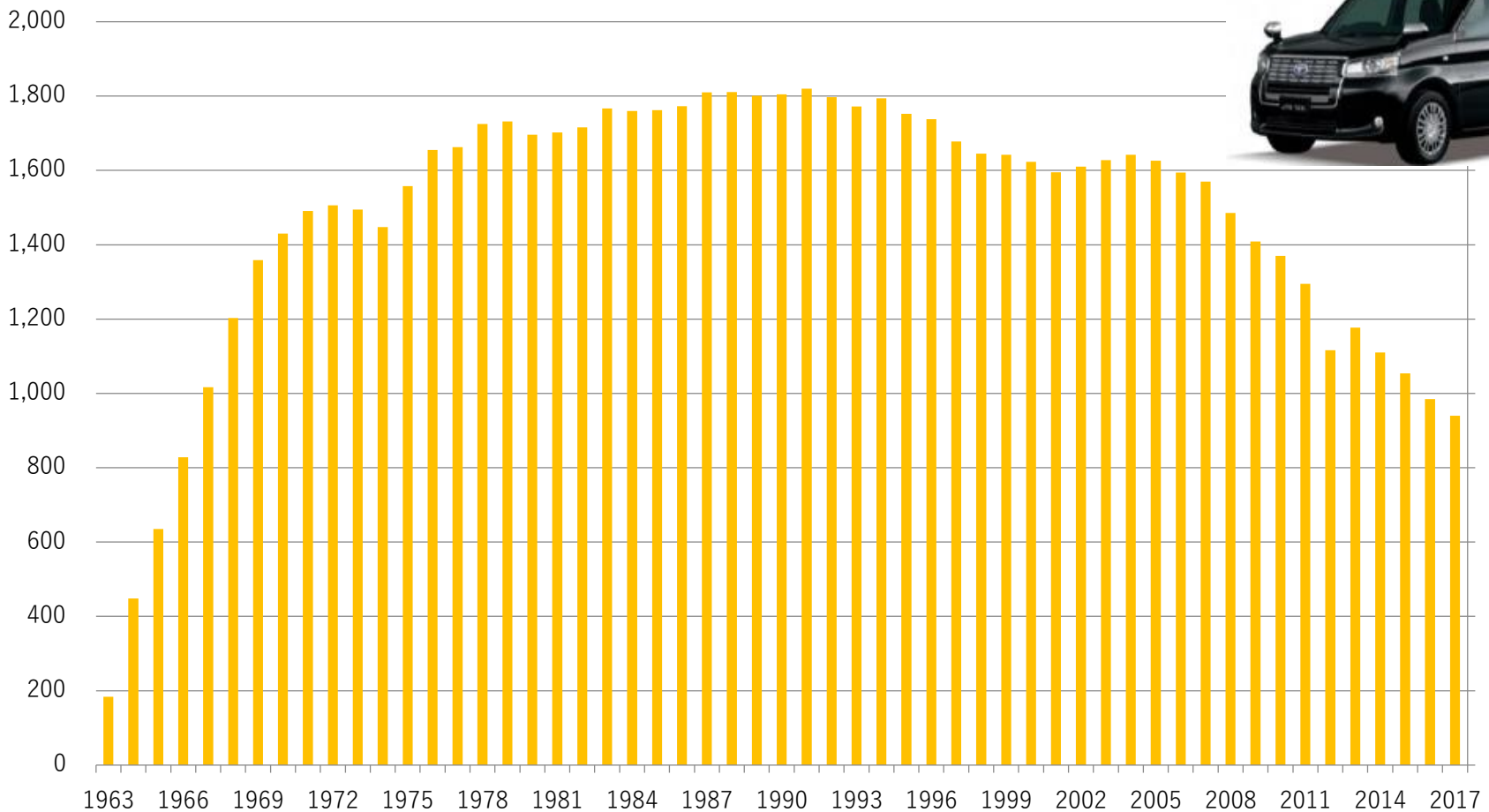
1. Household and business use accounts for 44% of the total demand (FY2017).
2. The number of households with LP gas demand: aprx. 24.4 million, or 44% of the total households (city gas: 46%; electricity: 10%).



Transport

Current State of Domestic Demand

LP gas consumption in transportation sector, has been decreasing as the use of fuel-efficient vehicles increases (e.g., JPN TAXI).

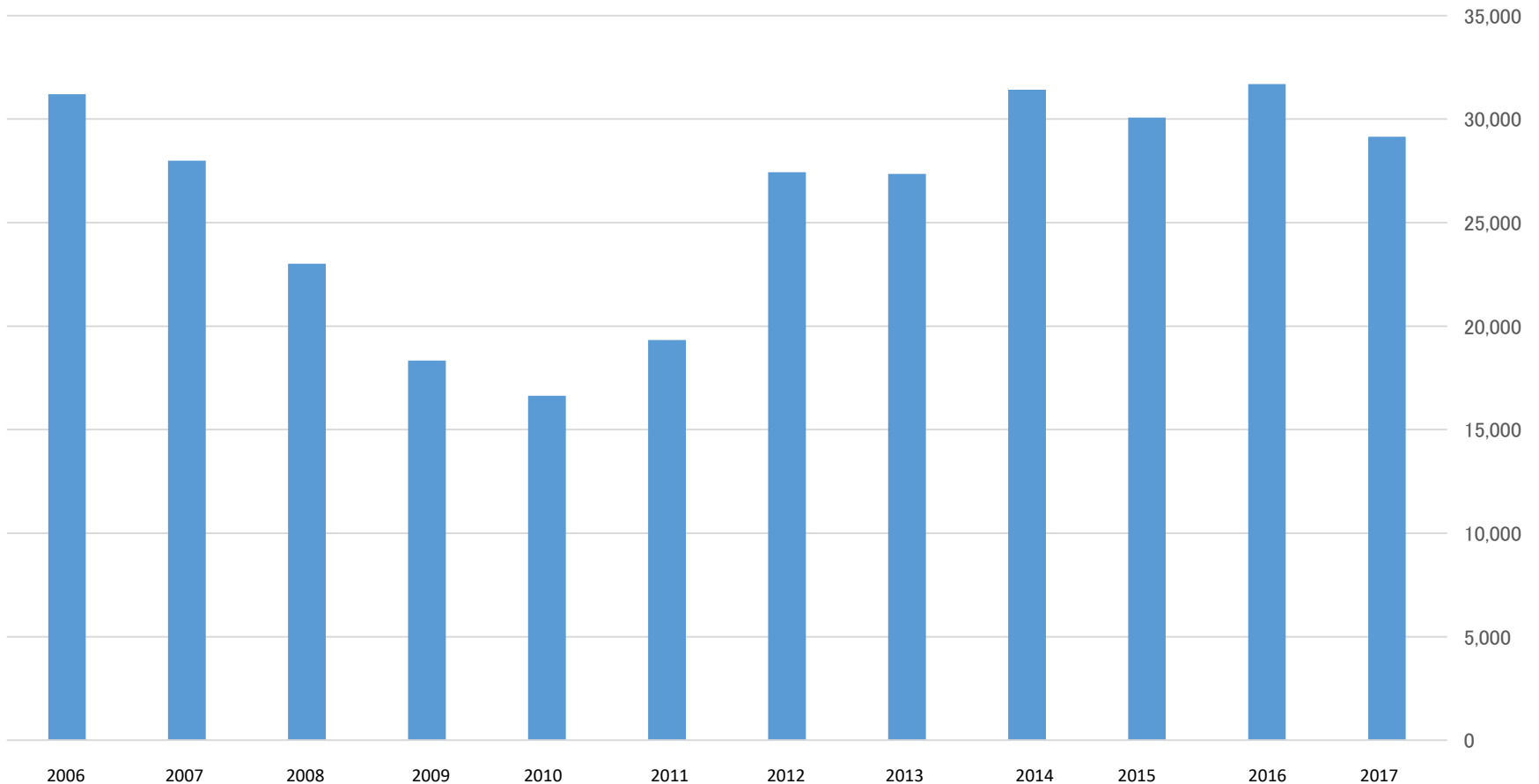


GHP

Current State of Domestic Demand

Use of disaster-use bulk gas, GHP, and emergency-use generators as a disaster-management measure has been promoted.

Change in the number of GHP shipping



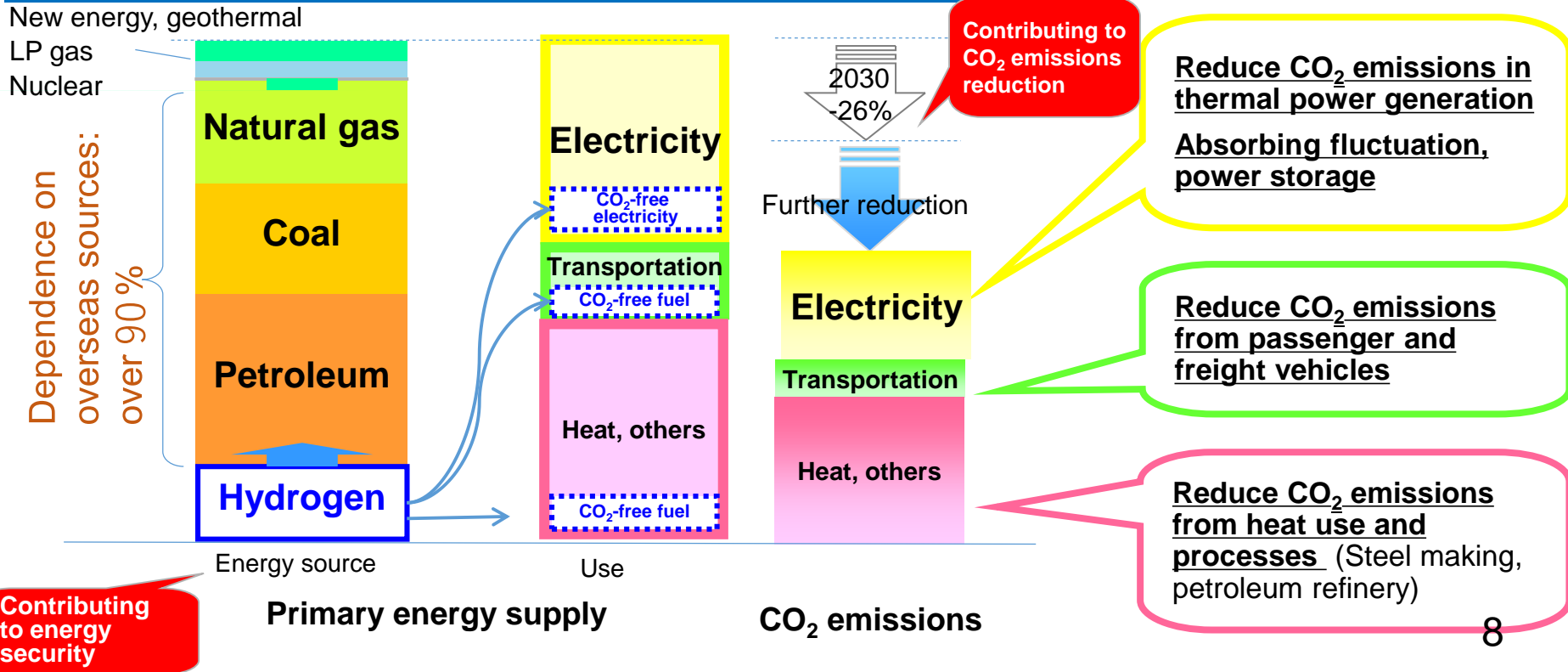
Hydrogen Energy Policies

Hydrogen has a high potential to greatly accelerate the coming of a low-carbon society

1. Improve energy-source diversity and energy security.
2. Pursue a low-carbon society through use of hydrogen in power generation, FCV and industries.

Effects of hydrogen on the change of the primary energy supply structure and reduction of CO₂ emissions.

Prospect of hydrogen use

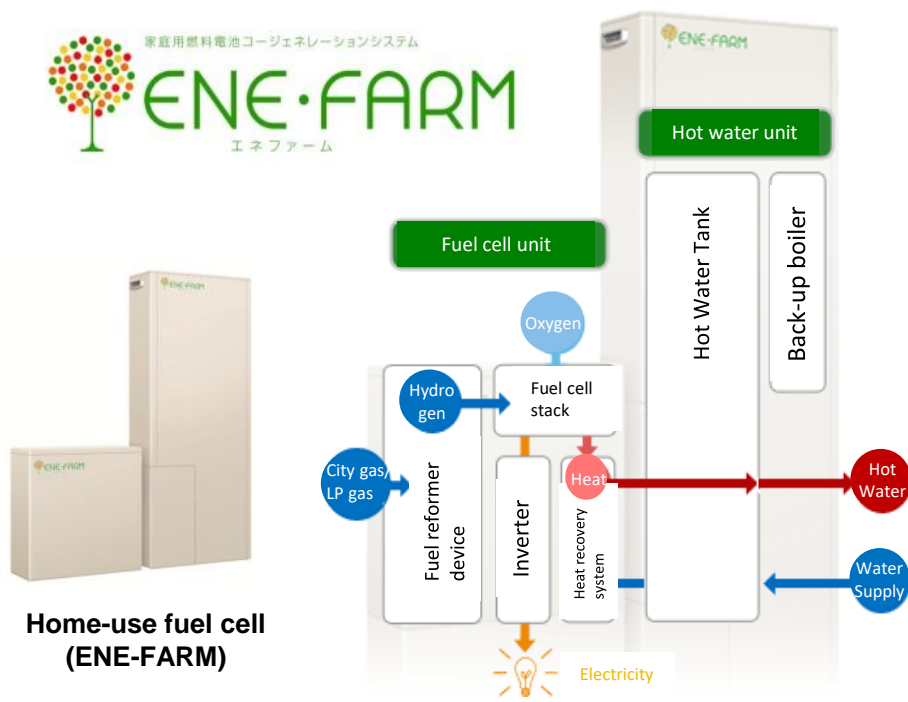


Promotion of Use of Home-use Fuel Cell (ENE-FARM)

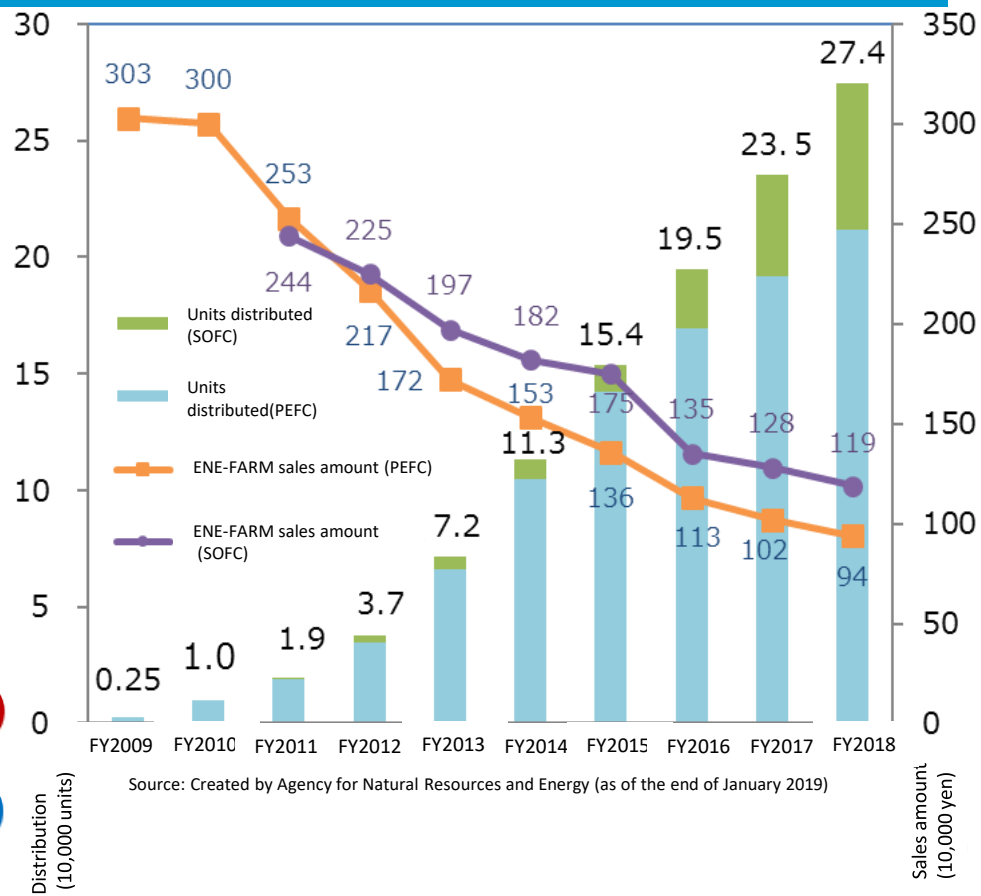
- ENE-FARM was launched in 2009 as the world's first fuel cell for home use.
- More than 270,000 units have been installed. Aiming to 1.4 million by 2020 and 5.3 million by 2030.

Mechanism of home-use fuel cell

- Power is generated with hydrogen taken from LP gas, etc. The heat generated in process is used to supply hot water.
- Electrochemical reaction allows high energy efficiency.



Change in the number of units distributed and sales amounts



Use of Fuel Cell Vehicles (FCVs) and Installation of Hydrogen Stations

- Fuel cell vehicles (FCVs) are fueled with hydrogen.
- As of the end of 2018, about 2,900 units are used in Japan.
- 100 hydrogen stations are in operation, mainly in the 4 largest cities.

Market launch of FCVs

Toyota Motor Corporation



<December 15, 2014>

- Launched the sales of a fuel cell vehicle MIRAI (7.236 million yen, tax included)

<January 6, 2015>

- Announced to open its fuel cell vehicle patents (about 5,680) for free use

Honda Motor Co., Ltd.



<March 10, 2016 >

- Launched a fuel cell vehicle "CLARITY FUEL CELL" (7.66 million yen, tax included)

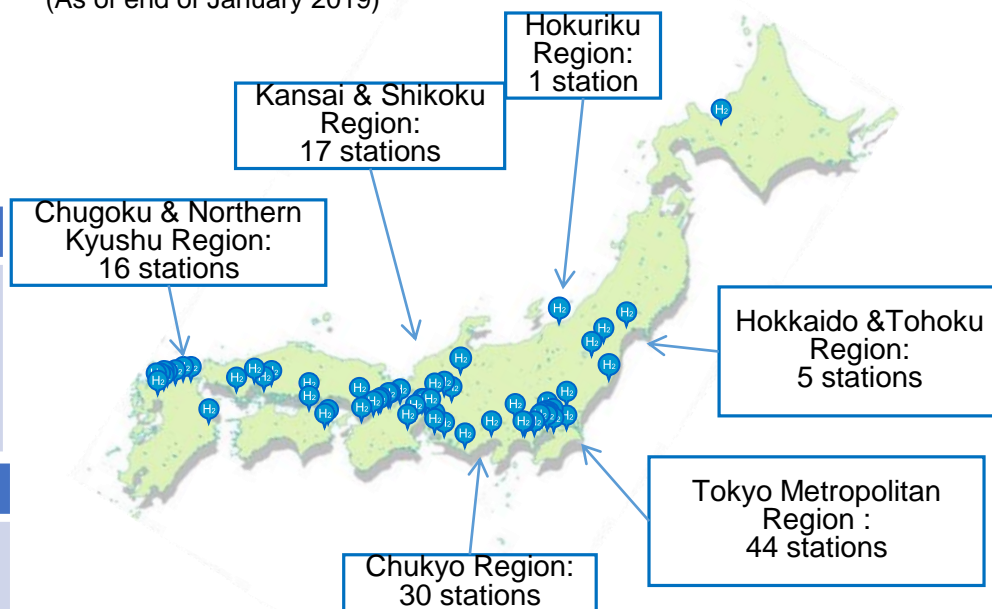
Other automakers

- Nissan, Daimler and Ford reached agreement on joint development.
- BMW reached agreement with Toyota on joint development aiming for 2020.
- GM reached agreement with Honda on joint development aiming for 2020.
- Hyundai launched a FCV "NEXO" in March 2018.
- Mercedes-Benz launched a plug-in FCV "GLC F-CELL" in November 2018.

Installation of hydrogen stations

Nationwide: 113 stations (100 in operation)

(As of end of January 2019)



Fuel Cell Vehicles

- Launched into the market in 2014. Over 3,000 units have already been registered and sold.
- Fuel cell buses and forklifts have already been launched into the market as well.

Fuel cell vehicles (FCVs)

Distribution:

- Launched into the market in December 2014
- About 2,900 units have been distributed (as of end of December 2018)

Goal:

- By FY2020: aprx. 40,000 units
- By FY2025: aprx. 200,000 units
- By FY2030: aprx. 800,000 units



Source: Toyota Motor Corp.

Fuel cell buses

Distribution:

- Launched into the market in March 2017
- Five units have been introduced for regular bus services. Introduction of 100+ units are planned before 2020 Tokyo Olympics & Paralympics

Goal:

- By FY2020: aprx. 100 units
- By FY2030: aprx. 1,200 units



Source: Toyota Motor Corp.

Fuel cell forklifts

Distribution:

- Launched into the market in November 2016
- About 140 units have been introduced at Kansai International Airport, wholesale markets, etc. (as of end of January 2019)

Goal:

- By FY2020: aprx. 500 units
- By FY 2030: aprx. 10,000 units



Source: Toyota Industries Corp.

International Cooperation

1. Technical cooperation with Myanmar focused on safety and security.
2. Plan to expand our cooperation with other Asian countries, where demand growth is expected

Cooperation between Japan and Myanmar

Jun. 2017	LPG Seminar	@ Myanmar
Jul. 2017	MOU signed for LPG cooperation	
Nov. 2017	Training 8 participants from Myanmar Petrochemical Enterprise (MPE)	@Japan
Feb. 2018	Experts dispatched for lectures	@ Myanmar
July. 2018	Workshop	@ Myanmar
Sept. 2018	Experts dispatched for lectures	@ Myanmar
Jan. 2019	Workshop 8 participants from MPE	@Japan
2020	Discussion with Ministry of Electricity and Energy of Myanmar	

