

Update of battery in Japan

WRBRF 2016

**Seoul, Korea
OCTOBER 4TH, 2016**

BATTERY ASSOCIATION OF JAPAN (BAJ)

establishment	May , 1948
Member company	Regular member : 15 Associate member : 84
Board	8 members President : Makoto Yoda(GS Yuasa)
staff	director , 14assigned staffs, 6employees
budget	352million yen (fy 2016)

organization



Organized in 1948

Regular members: 15 companies

ELIY Power Co., Ltd.,
FDK Corporation,
GS Yuasa International Ltd,
Kawasaki Heavy Industries, Ltd.,
NEC Energy Devices, Ltd.,
Seiko Instruments Inc.,
Sony Corporation,
TOSHIBA Corporation

ENAX, INC.
The Furukawa Battery Co., Ltd.,
Hitachi Maxell Energy, Ltd.,
Mitsubishi Electric Life Network Corp.,
Panasonic Corporation,
Hitachi Chemical Company, Ltd.
Toshiba Battery Co., Ltd.,

Associate members: 84 companies

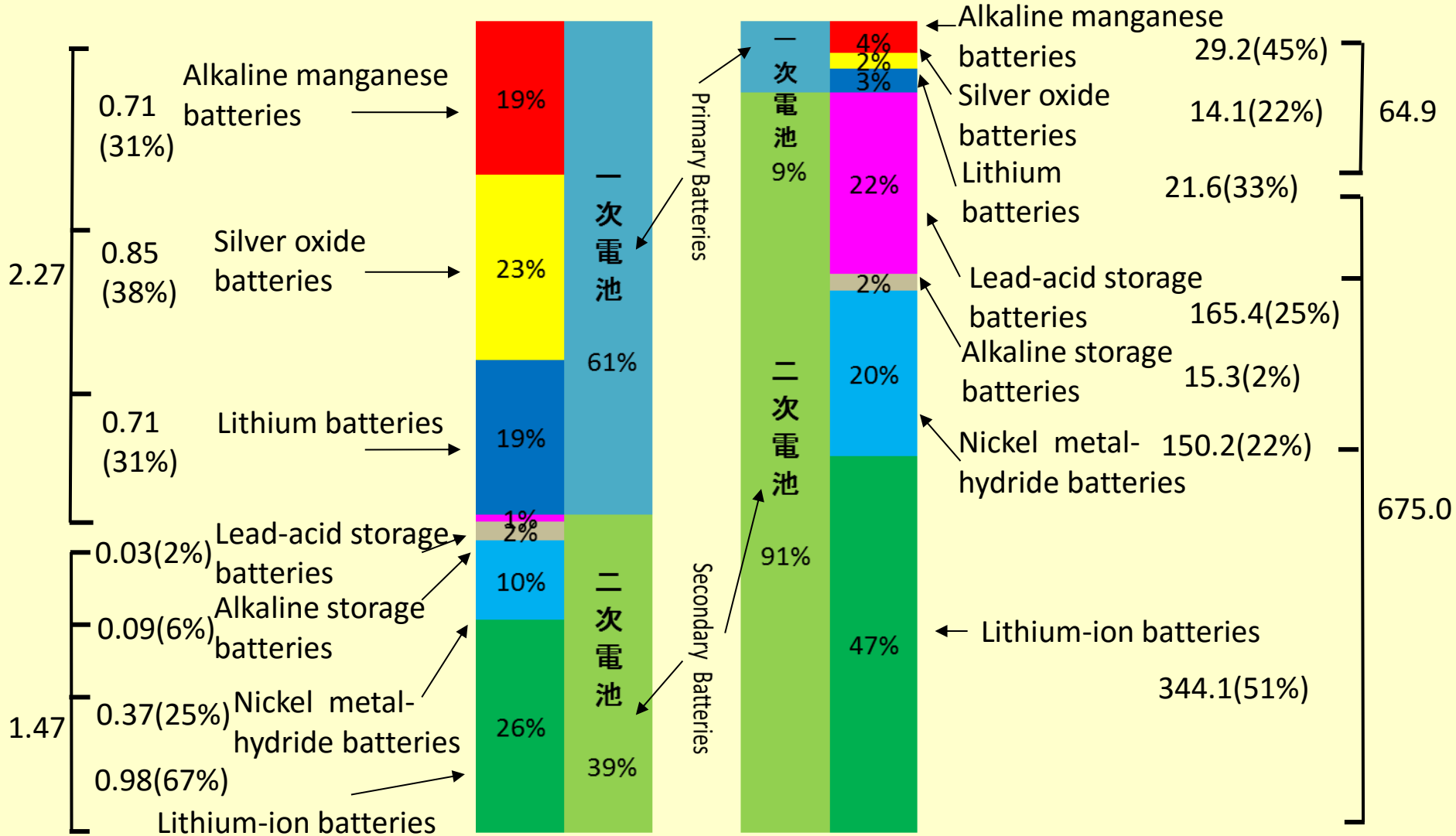
Material manufacturers, Equipment manufacturers, Battery pack assemblers,
Application products manufacturers, Foreign battery manufacturers,
Recycle related companies ...

as of September 2016

Japan battery production in 2015

Total by volume 3.74 billion units

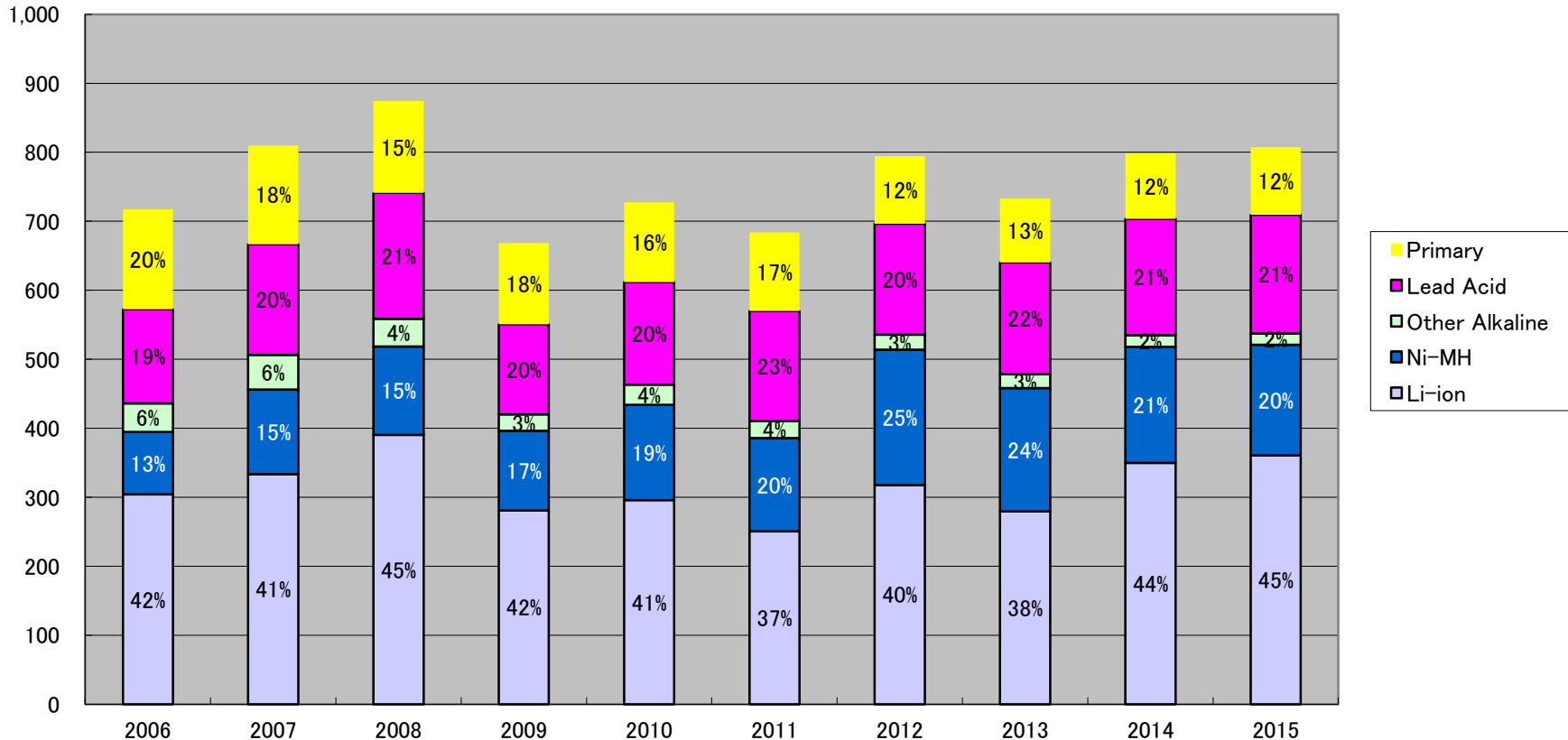
Total by value 739.9 billion yen



Source : Ministry of Economy, Trade and Industry

Battery Sales Amount in Japan (including export)

Billion Yen



Source : Ministry of Economy, Trade and Industry

- Increasing in battery sales from 2012 is primarily due to an increasing in automotive batteries.

Automobile battery has more presence also in Japan

Percentage of automobile battery based on sales amount(domestic & export)

	2012	2013	2014	2015
TTL. rechargeable battery for automobile	57%	59%	64%	63%
Lead acid battery for automobile	60%	62%	63%	63%
Ni-MH battery for automobile	87%	86%	87%	87%
Li ion battery for automobile	41%	44%	57%	56%

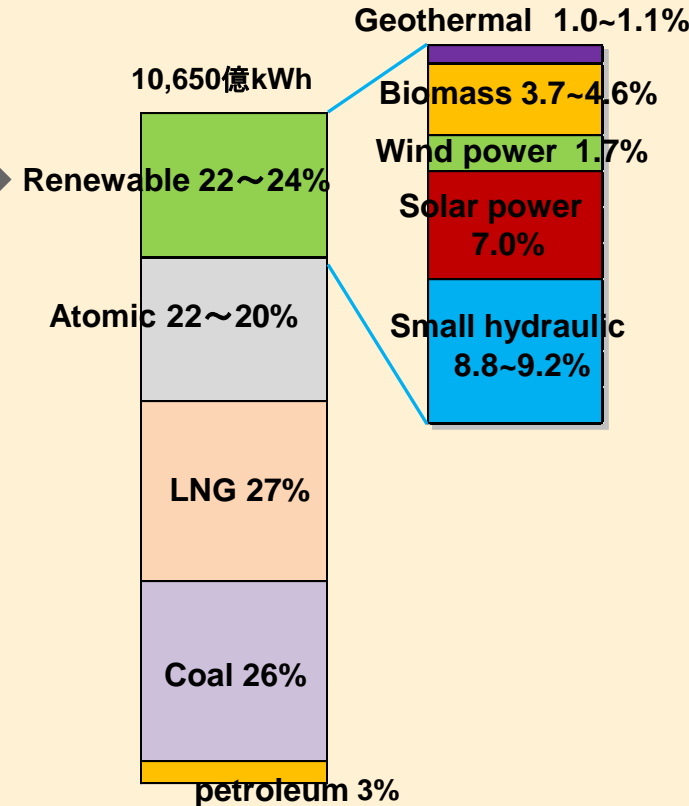
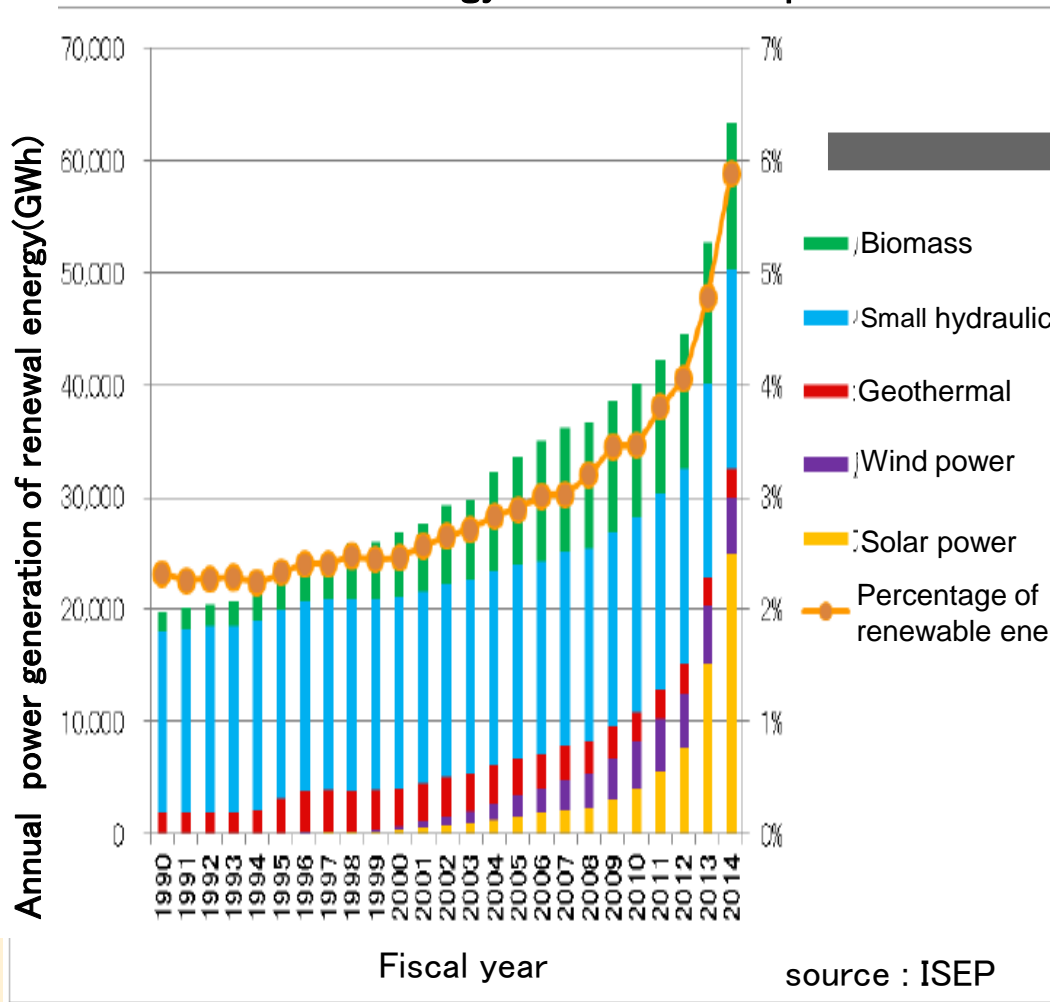
Estimated from the data of METI & BAJ members

Estimation of ESS battery percentage (Li-ion) around 10%???

BAJ is focusing to expand ESS battery to make certain below

- effective practical use for various energy source
- stable supply for various energy

Renewable energy transition in Japan



Year 2030

Key points of the strategy

1. Thorough energy efficiency and conservation

- Expanding the scope of targets of the Energy Efficiency Benchmark Program to all industries
- Enhancing the introduction of energy efficiency and conservation efforts into the fields of SMEs (Small and Medium-sized Enterprises), house and transportation

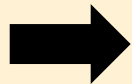
2. Expanding the introduction of renewable energy-Ensuring compatibility between maximum introduction and expansion, and inhabitation of public burden

3. Establishing new energy systems

- Simultaneously encouraging new entrants to the field of electricity and reducing CO₂ emissions
- Starting up an integrated energy system of renewable energy and energy efficiency and conservation are integrated
- Establishing an energy system of local production for local consumption

Crucial role of rechargeable battery

- Expanding ZEH and ZEB
- Integrated energy management of save energy, create energy and storage energy
- Solving the limitation of grid connection
- Introduction promotion of remote controllable batteries
- Regulation of energy resource by IoT technology
- Introduction promotion of vertuial power plant
- Cost reduction of battery

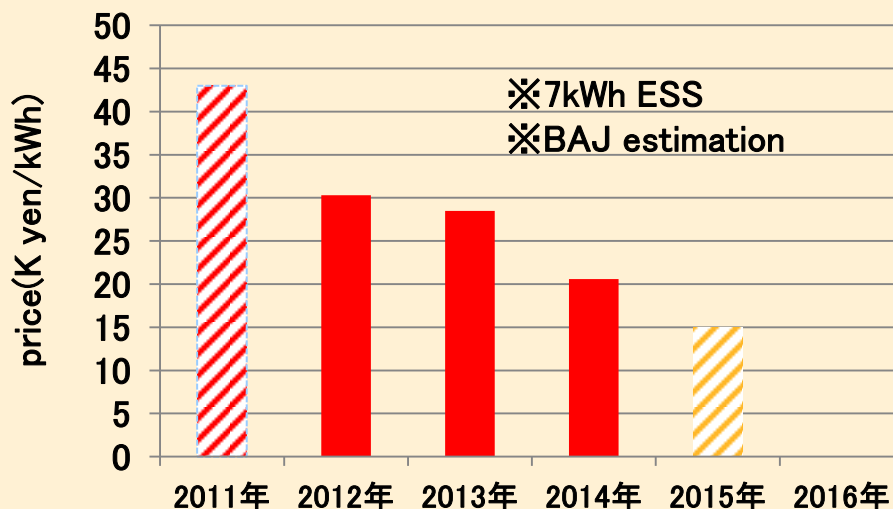


- ◇ total subsidy : 44 billion yen (from FY 2012 to 2016)
- ◇ number of ESS introduced using subsidy : ≒ 50K
- ◇ average capacity per device : ≒ 7kWh
- ◇ reduction of product price : ≒ 50%
(price of 2014 compared with 2012)

source : SII

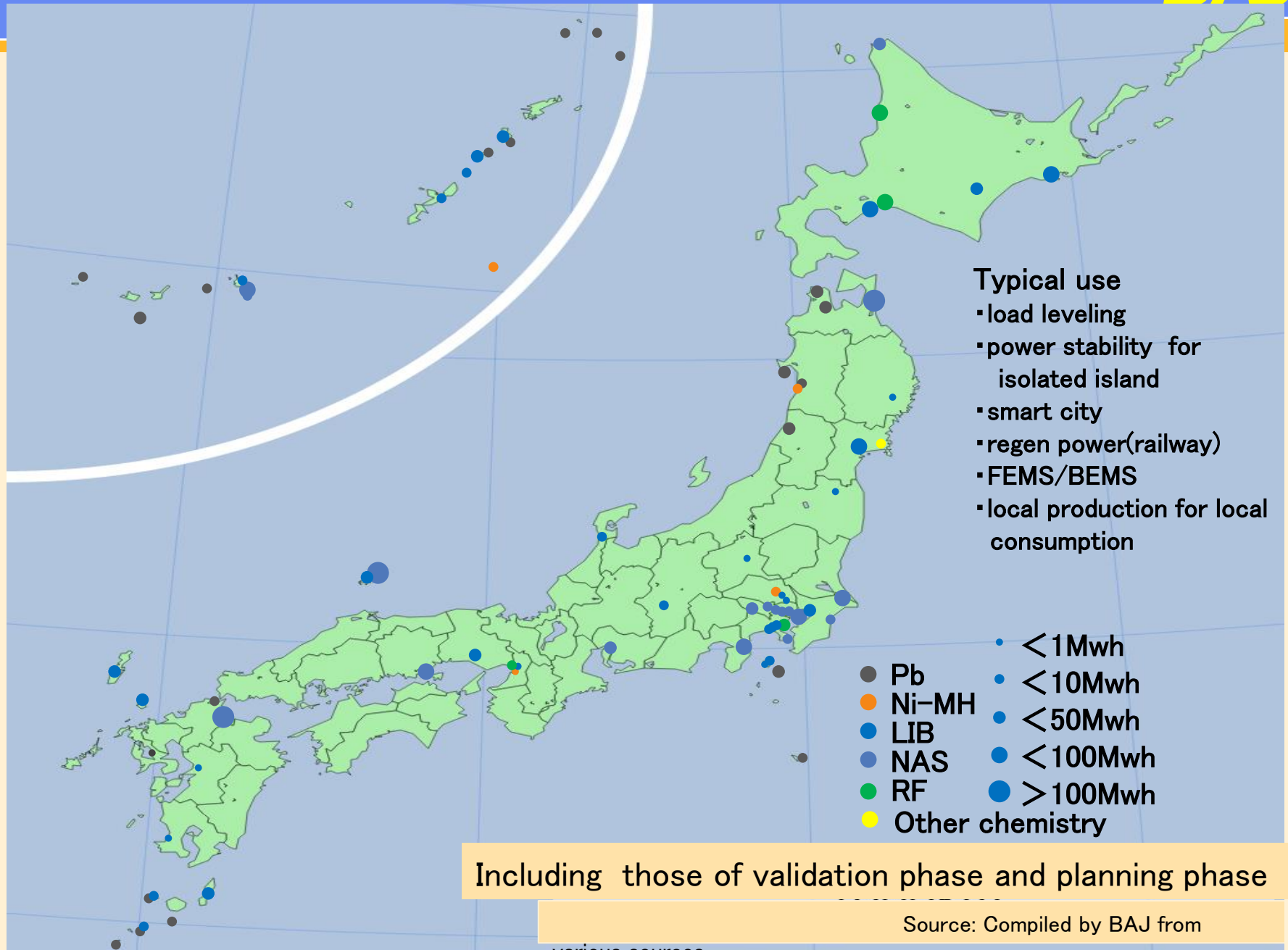


Trend and forecast for kWh price for ESS



- Above subsidy suspended in 2016.
- Subsidy for large ESS for solar power producers to avoid grid connection pending is extended.
- New subsidies started in 2016.
 - *ESS to realize zero energy house and building
 - *construction business for virtual power plant
 - *some other subsidies for batteries and battery systems etc.

Distribution of large scale ESS in Japan



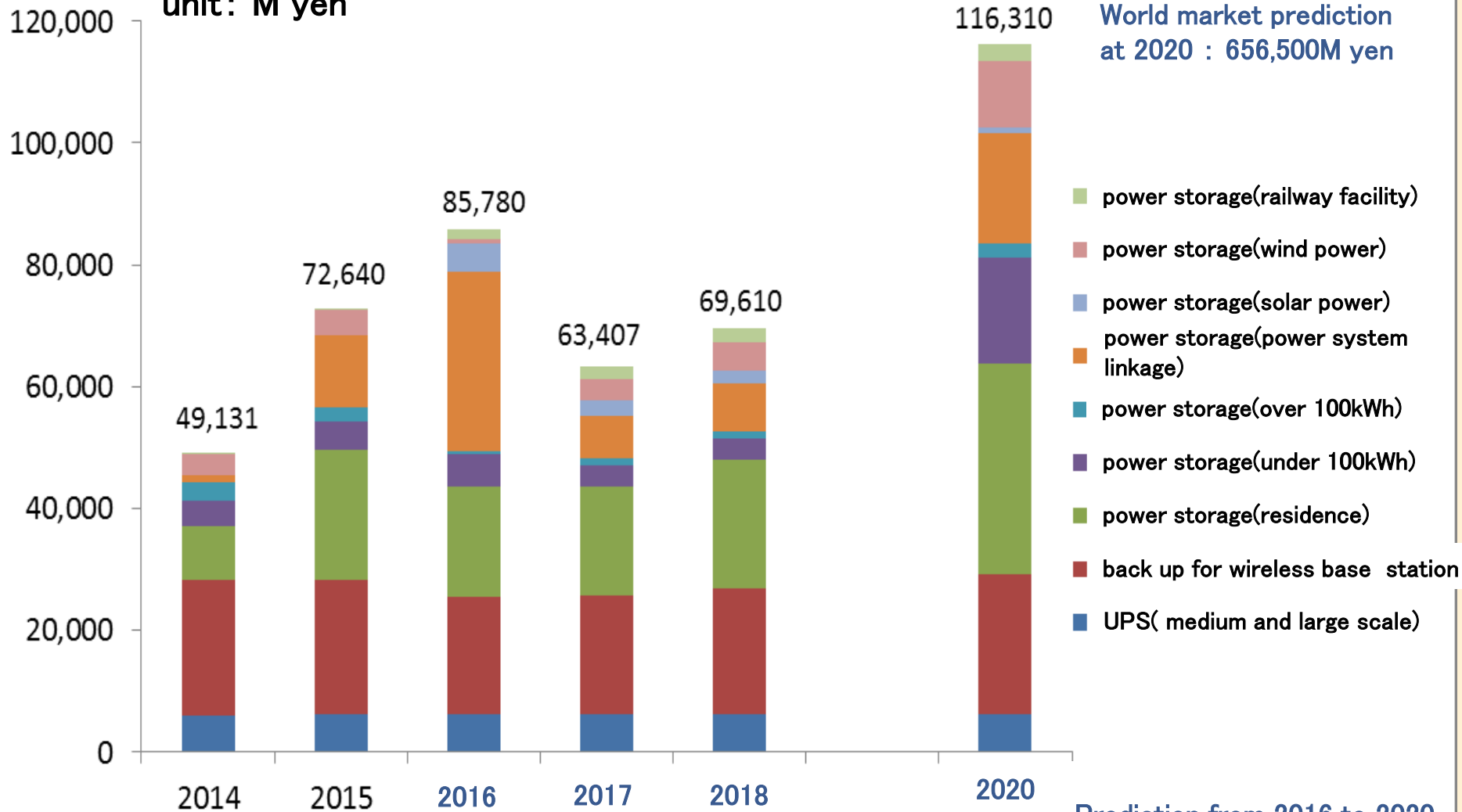
Including those of validation phase and planning phase

Source: Compiled by BAJ from

various sources

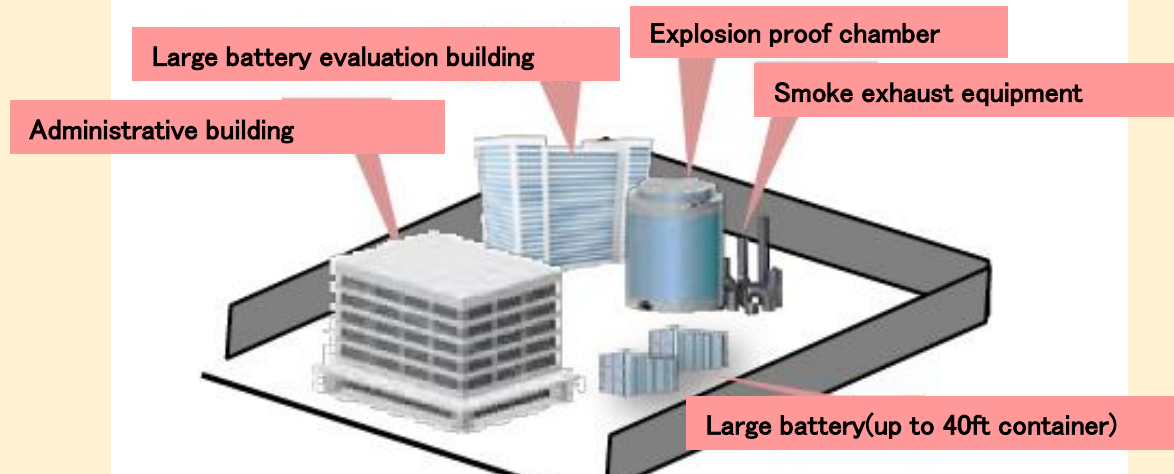
Demand forecast for ESS in Japan

unit: M yen



- This facility will complete and run in May 2016 in Osaka, Japan.
- This facility is the important step for Japan to establish the world-class certification institution for battery.
- NITE manages this facility. NITE : National institute of technology and evaluation
- Testing facility of large scale power conditioner system is running by AIST in Fukushima. AIST : National institute of advanced industrial science and technology

Main buildings for testing on large battery system.



- Battery pack size is up to 90kWh (considering it as max. size test unit for safety standard of ESS)
- acceptable 40ft container battery system (except for possible test following fire by 40ft container)



TOKYO ● 2020



Thank you for your kind attention