Country Report Japan

IEA Bioenergy Task 33 meeting

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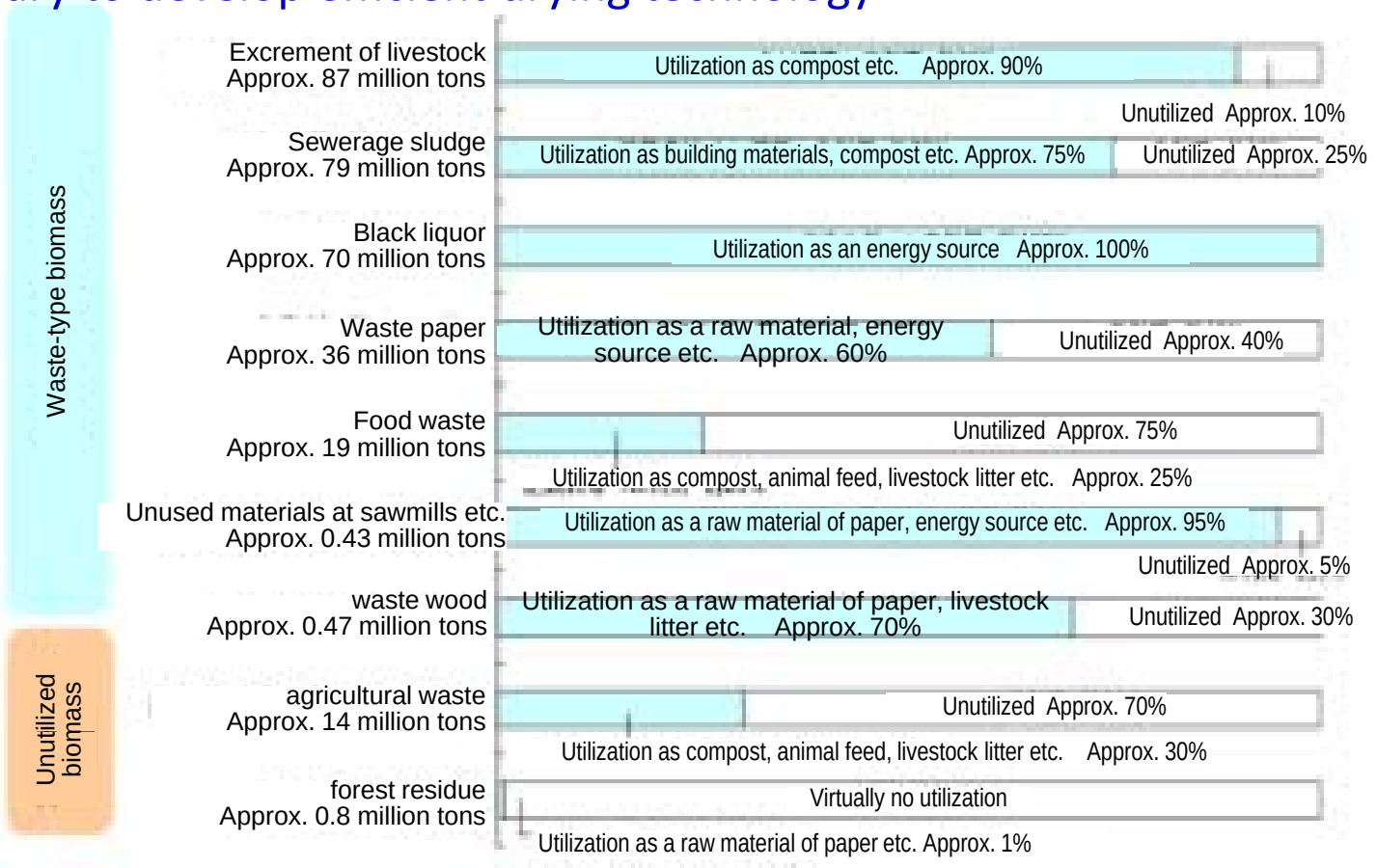
Background

➢Potential

- In Japan, forest residue are considered to have great potential, but have an issue about collection because steep slopes
- food waste and and other agricultral waste also have high potential, but it is necessary to develop efficient drying technology



Policy

- New National Energy Strategy : May, 2006
  - set a goal of reducing dependence on fossil fuels in the transportation sector by 80% by 2030

- Next Generation of Vehicles and Fuel Initiative : May, 2007
  - between the automobile and oil industries, how to combine and develop the several eco-friendly technologies, which include battery, clean diesel, biofuel etc.
  - In order to diversify fuel,

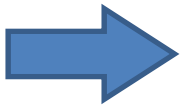
- Bio-fuel Technology Innovation Plan : March, 2008
  - about bioethanol, set the specific goals about two model cases, such as the Biomass Nippon strategy and the Technology Innovation case
  - set the benchmarks for ethanol production in order to make prices competitive with gasoline prices in the medium to long term

Policy

- Cool-Earth 50 – Innovative Technologies Development Project
  :March, 2008
  - Biofuel roadmap was established up to 2050 for alternative diesel and gasoline fuels. BTL was set forth as a key technology

- Strategic Energy Plan(Revised Basic Energy Plan): June, 2010
  - the plan aimed to have renewable energy account for 10% of the primary energy supply by the year 2020

- Act of Sophisticated Methods of Energy Supply Structures
  :August, 2009
  - this was established to promote the use of non-fossil energy resources and the efficient use of fossil energy resources by energy suppliers



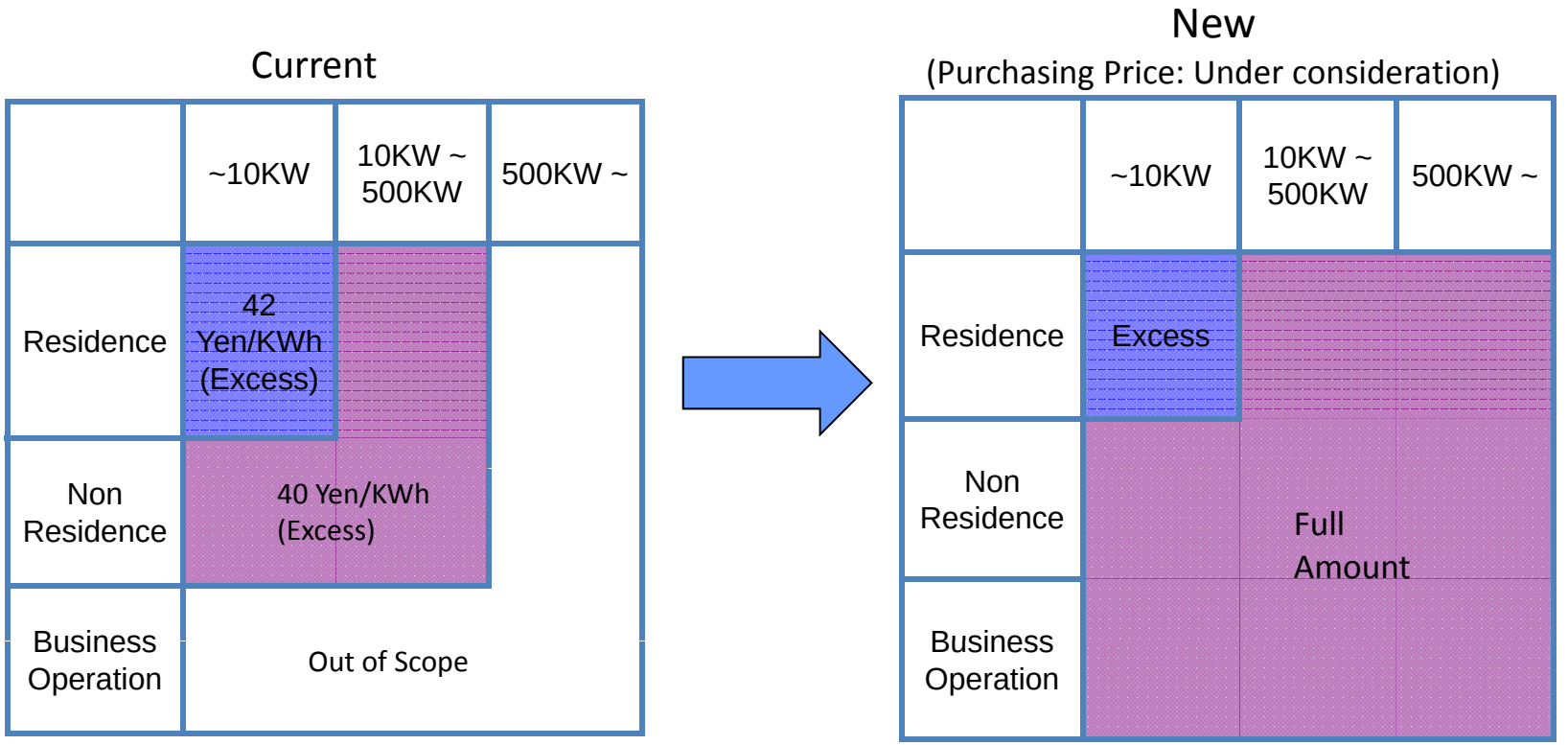
Those policies, especially “Cool-Earth 50” and “Strategic Energy Plan” promote BTL technology, although the goals set in the plan are scheduled to be revised due to Great East Japan Earthquake in March 2011

Latest Policy

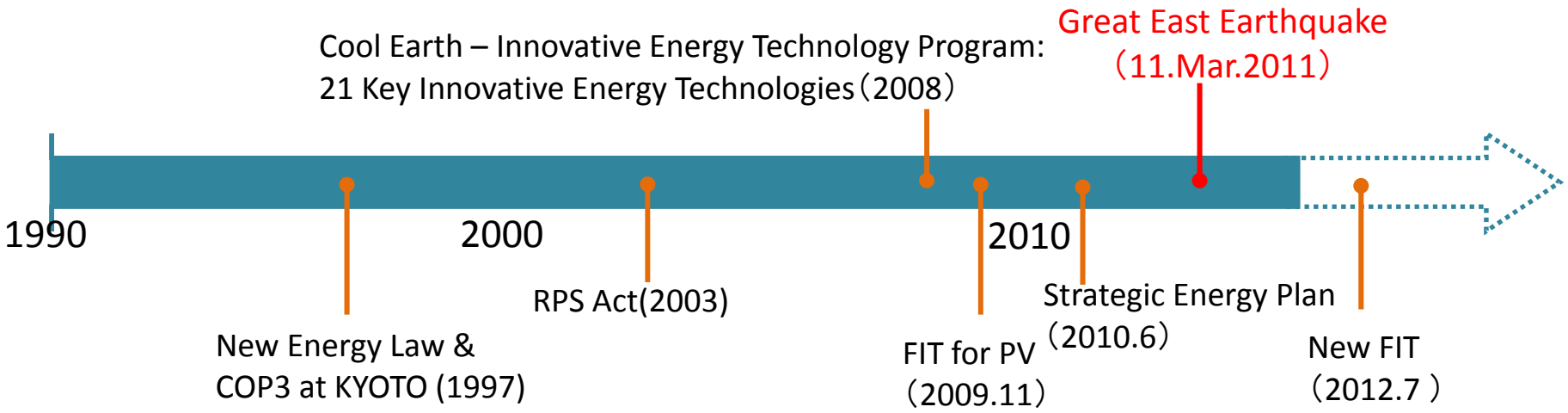
➢ Feed-In-Tariff Scheme for Renewable Energy Act (2012.7)

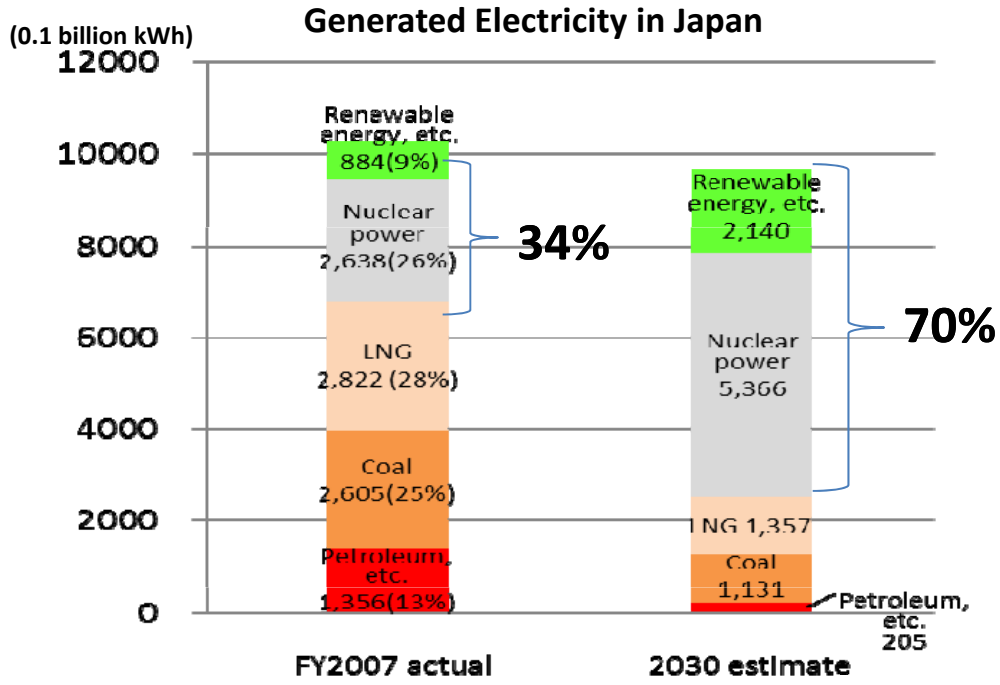
The “Act on Purchase of Renewable Energy Sourced Electricity by Electric Utilities” was approved at the 177th session of the Diet.

This Act obliges electric utilities to purchase electricity generated from renewable energy sources (Solar PV, Wind power, Hydraulic power, Geothermal and Biomass) based on a fixed-period contract with fixed price. It will start on July 1st, 2012.



Main Policies in Japan before 2011

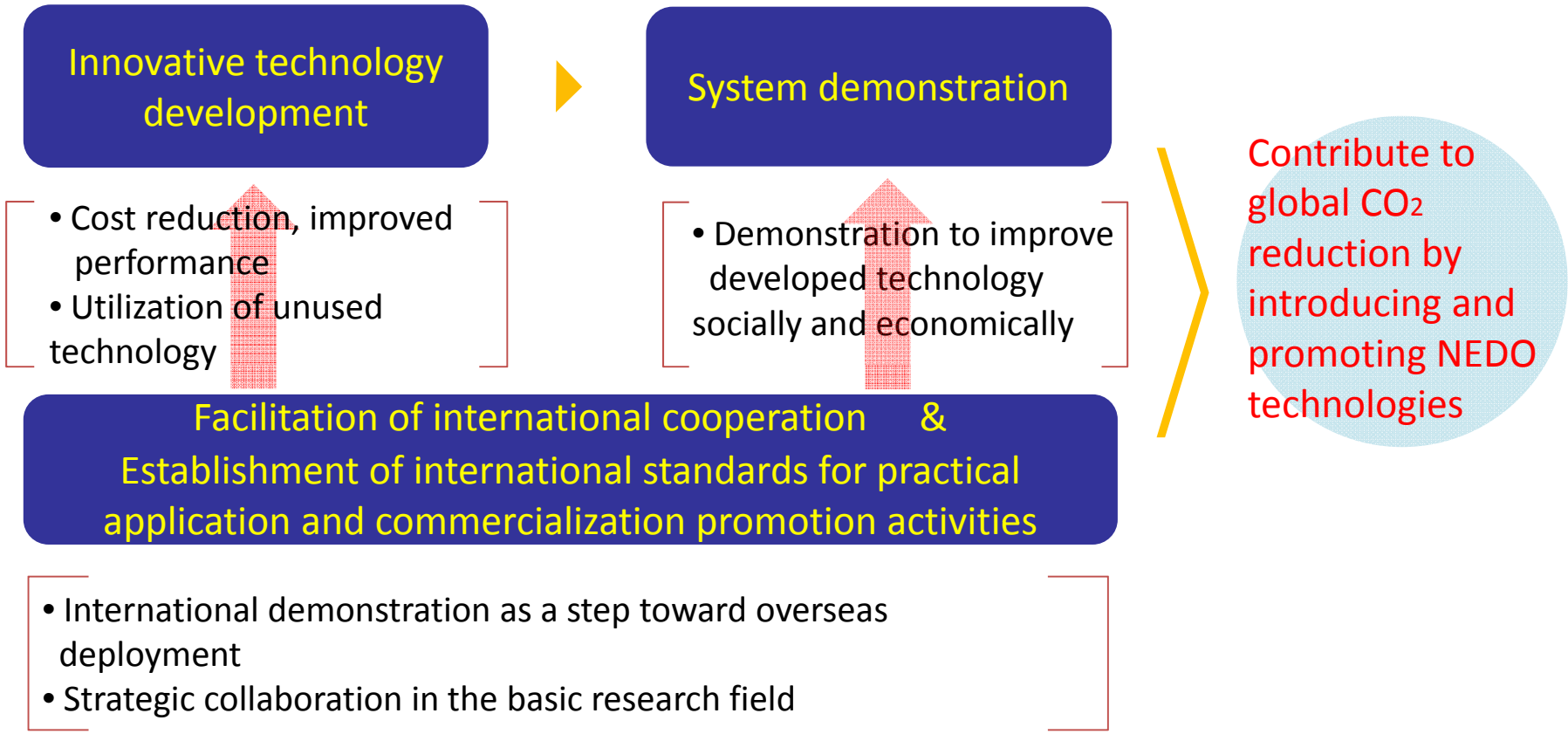




Japanese Gov. has initiated a review process of short-,mit-, long-term energy strategies.

NEDO's Activities

NEDO commercializes advanced technology seeds through R&D as well as system demonstration with the aim of realizing a global 3E (Environment, Energy and Economy) concept.



NEDO's Projects for Biofuel

- Development of an Innovative and Comprehensive Production System for Cellulosic Bioethanol (FY2009-2013):

  2.4 billion yen (23 million EUR, 1EUR= 105 yen)

  - To establish comprehensive production system from cultivating glass and wood biomass to producing bioethanol.

- Development of Technologies for High-efficiency Conversion of Biomass and other Energy (FY2007-2012):

  2.6 billion yen (25 million EUR, 1EUR= 105 yen)

  - Strive to innovate technology for 2nd generation biofuels which derive from cellulosic materials.

NEDO's Projects for Biofuel

➢ Strategic Development of Next Generation Bioenergy Utilization Technologies (FY2010-2016):

1.6 billion yen (15 million EUR, 1EUR= 105 yen)

- This project carries out R&D in two phases; the next-generation technology development and the practical application development

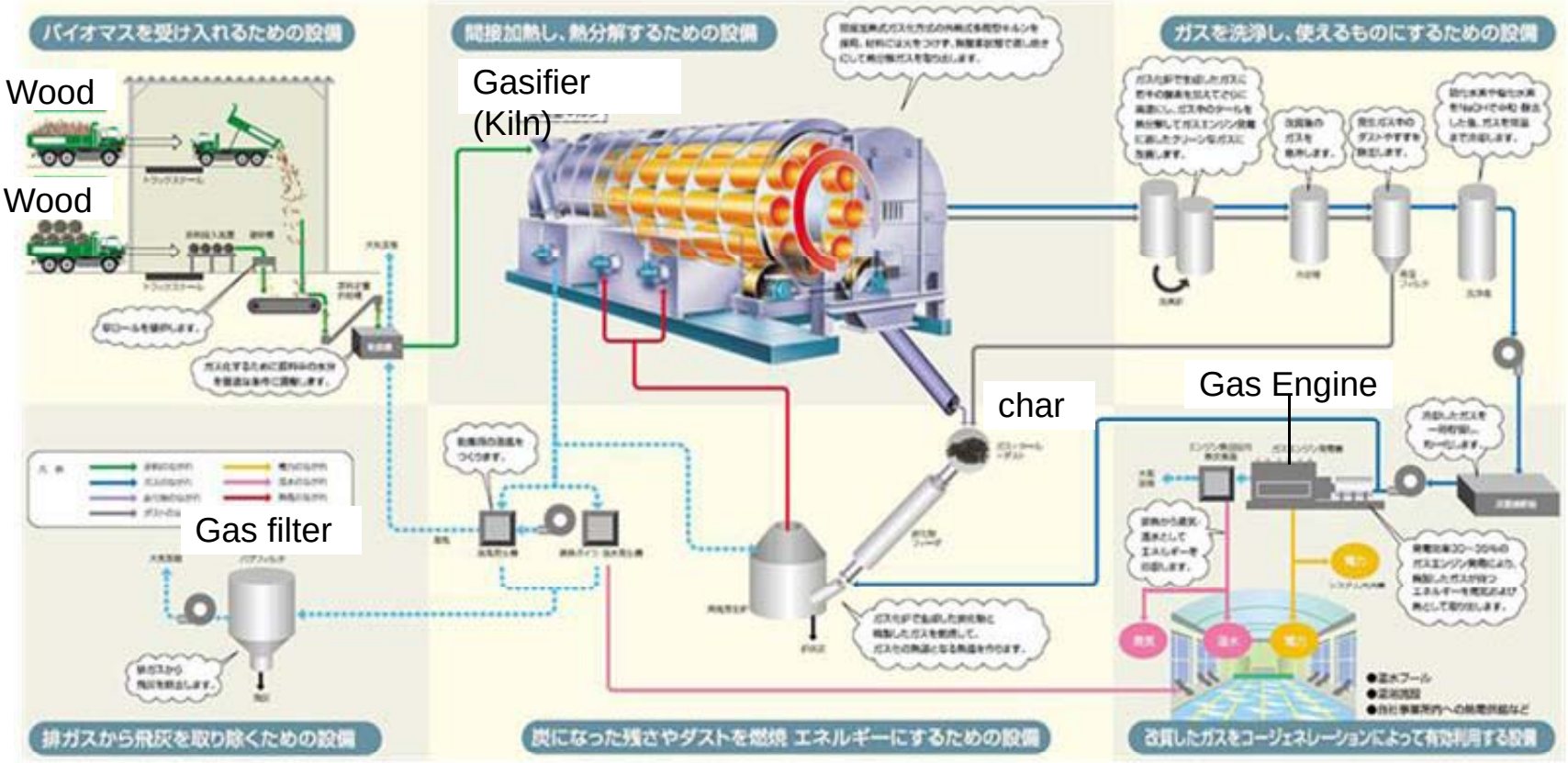
- To develop next generation biofuel production technology such as BTL and microalgae biofuel.

- The development of application technology supports technological developments for practical applications within 5 years after the project
  (ex. fermentation, the development of mills for co-incineration, etc)

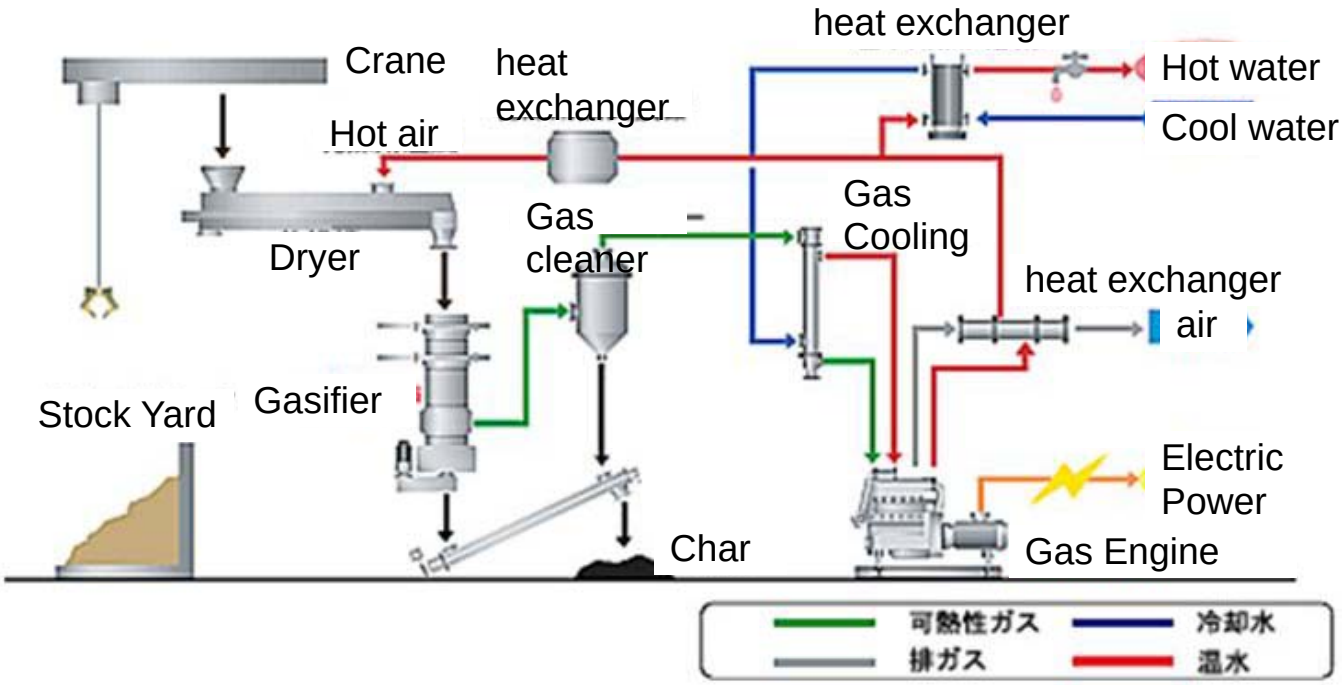
Implementation

Cogeneration

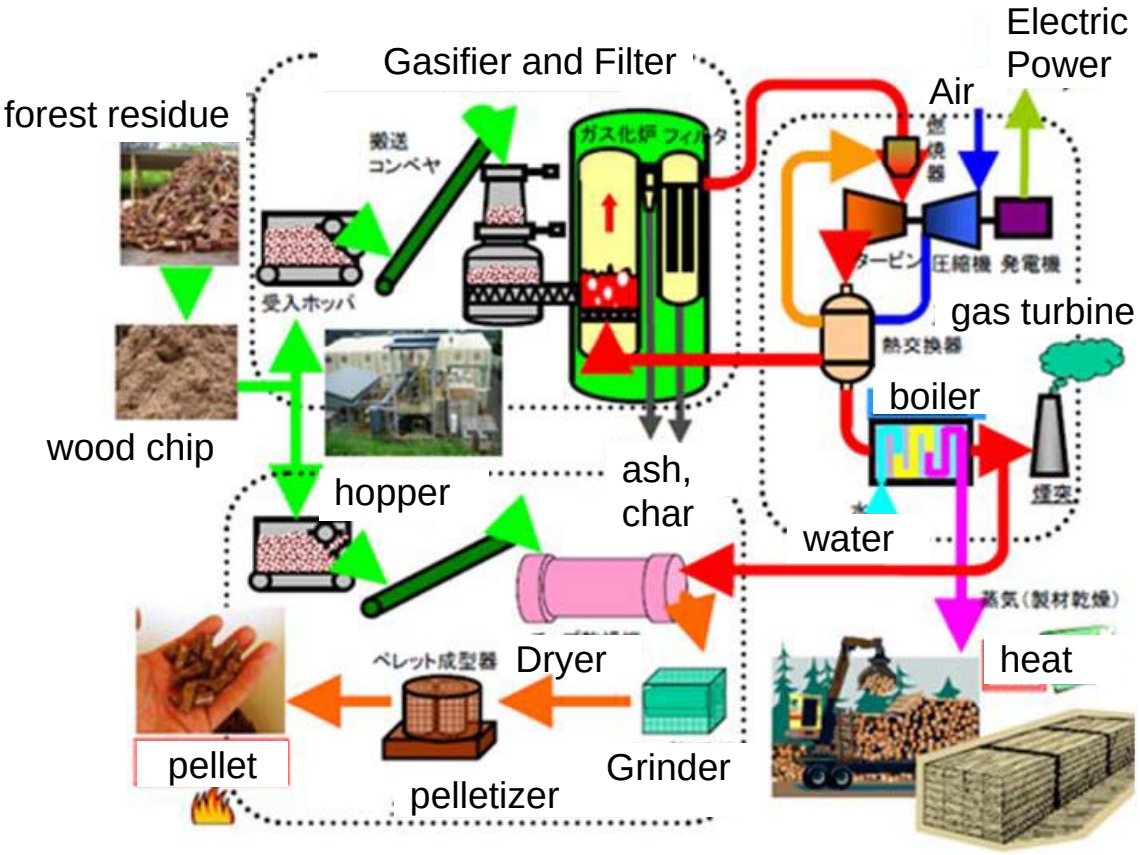
➢ ChugaiRo Co., Ltd.



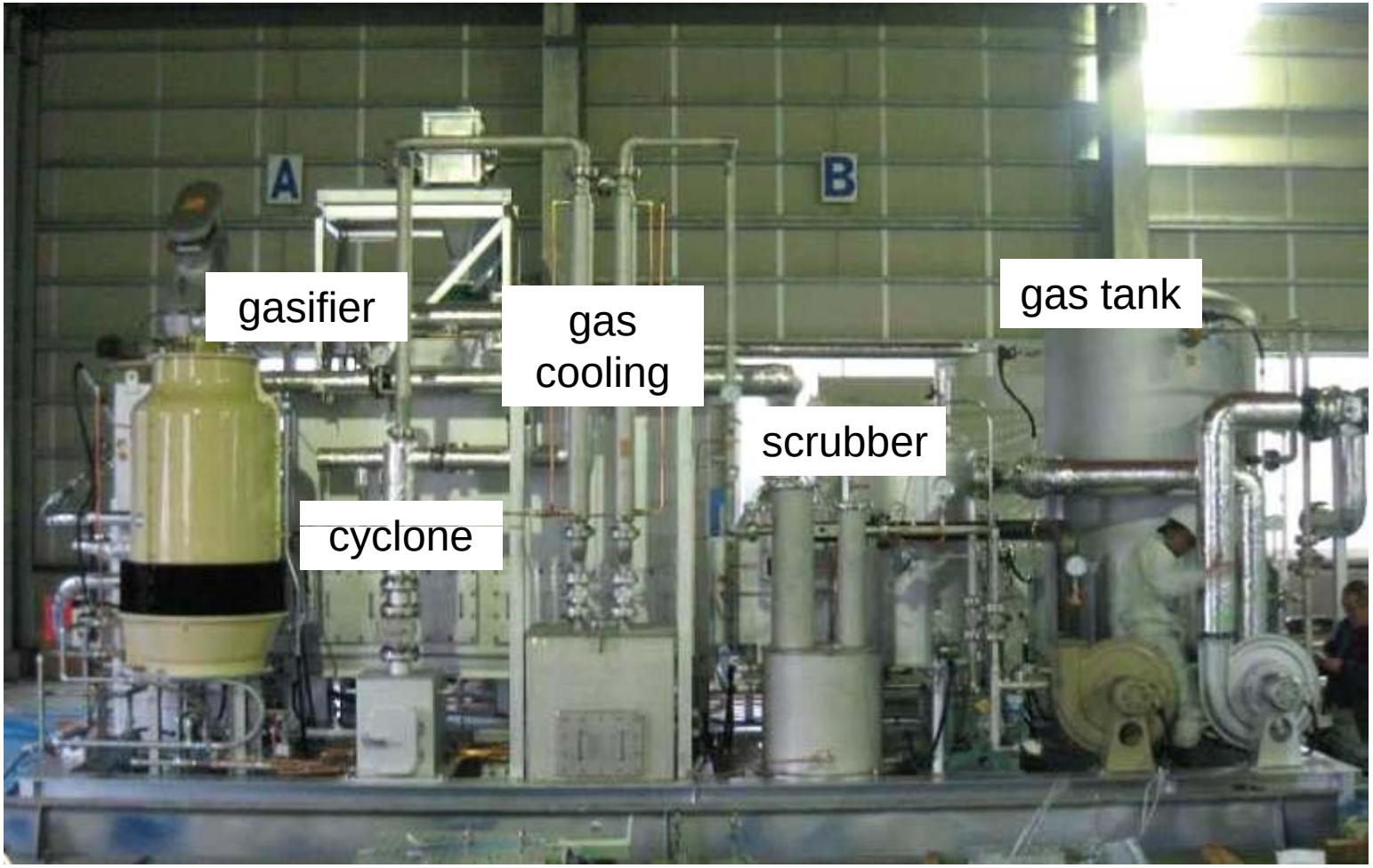
➢ Tsukishima Kikai Co., Ltd.



➢ Kawasaki Heavy Industries, Ltd.

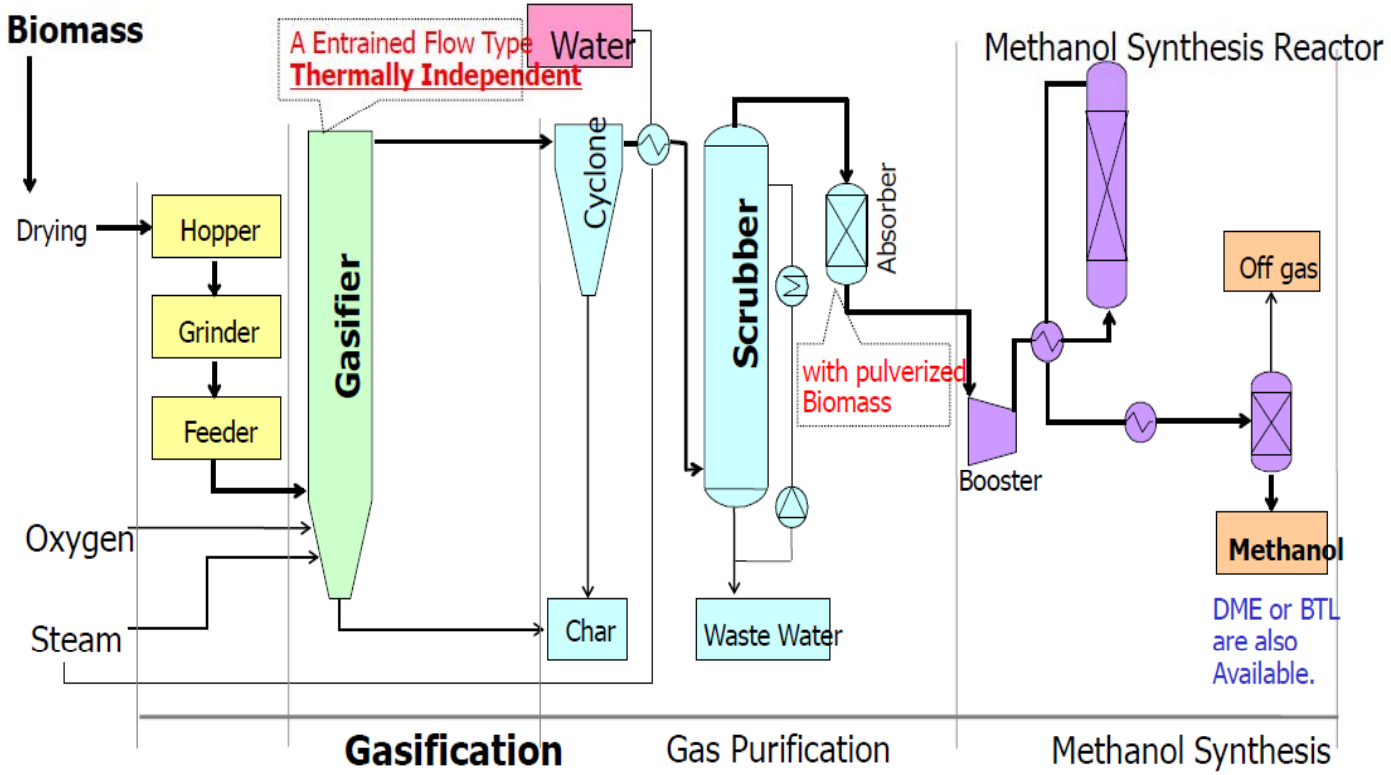


➢ Shimizu Corporation



Gasification for Liquid fuel

➢ Mitsubishi Heavy Industries, Ltd.



Company/ Organization	Type of Gasifier	Capacity	Feedstock	Introduction* (plant)
Chugai Ro Co., Ltd.	Rotary kiln	100～hundreds of kW	Woody/ Herbaceous	3
Tsukishima Kikai Co., Ltd.	Down draft	100～200kW	Woody	3
JFE Engineering Corporation	Up draft	2MW	Woody	2
CRIEPI** & Okadora Co., Ltd	Carbonization-gasification	—	Woody/ Wastes	1
Kawasaki Heavy Industries, Ltd.	Down draft	100～200kW	Woody	3
	Fluidized bed	150kW	Woody	1
SATAKE Corporation	Down draft	tens～2MW	Woody/Herba-ceous/ Agricultural residue	37
TORISUMI Co., Ltd	Down draft	300kW	Woody	1
Shinko Plantech Co., Ltd, & OTOMO Co., & Toyo System Co., Ltd	Up draft	55kW	Manure	1
Yagi Kensetsu Co., & Ube Techno Eng. Co., Ltd	Two steps-steam reforming	30kW	Wasted wood chip	1
Tokyo Gas Co., Ltd & TAKUMA Co., Ltd	Circulated fluidized bed	157kW	Sludge	1
Meidensha Corporation	Up draft	36kW	Woody	1
Shimizu Corporation	Suspension/External Heat Type Gasification	30kW	Woody Waste paper	1

*Including only test/demonstration stage plant

**Central Research Institute of Electric Power Industry