

Small-and-medium-scale woody-biomass-boiler technology for thermal usage: Experiences in Japan

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Hotel Meguma (Wakkanai-city)
LCS-RV Type (Moving Bed)
Output: 450 kW Fuel: Chip
Set-up: 2011

Teshiogawa-Spa (Otoineppu-Village)
LCS-RV Type (Moving Bed)
Output: 350 kW Fuel: Chip
Set-up: 2013

COOP Sapporo Store (Sapporo-city)
LCS-RU Type (Underfeed)
Output: 350 kW Fuel: Pellet
Set-up: 2012

Teine Junior High School (Sapporo-city)
LCS-RU Type (Underfeed)
Output: 350 kW Fuel: Pellet
Set-up: 2012

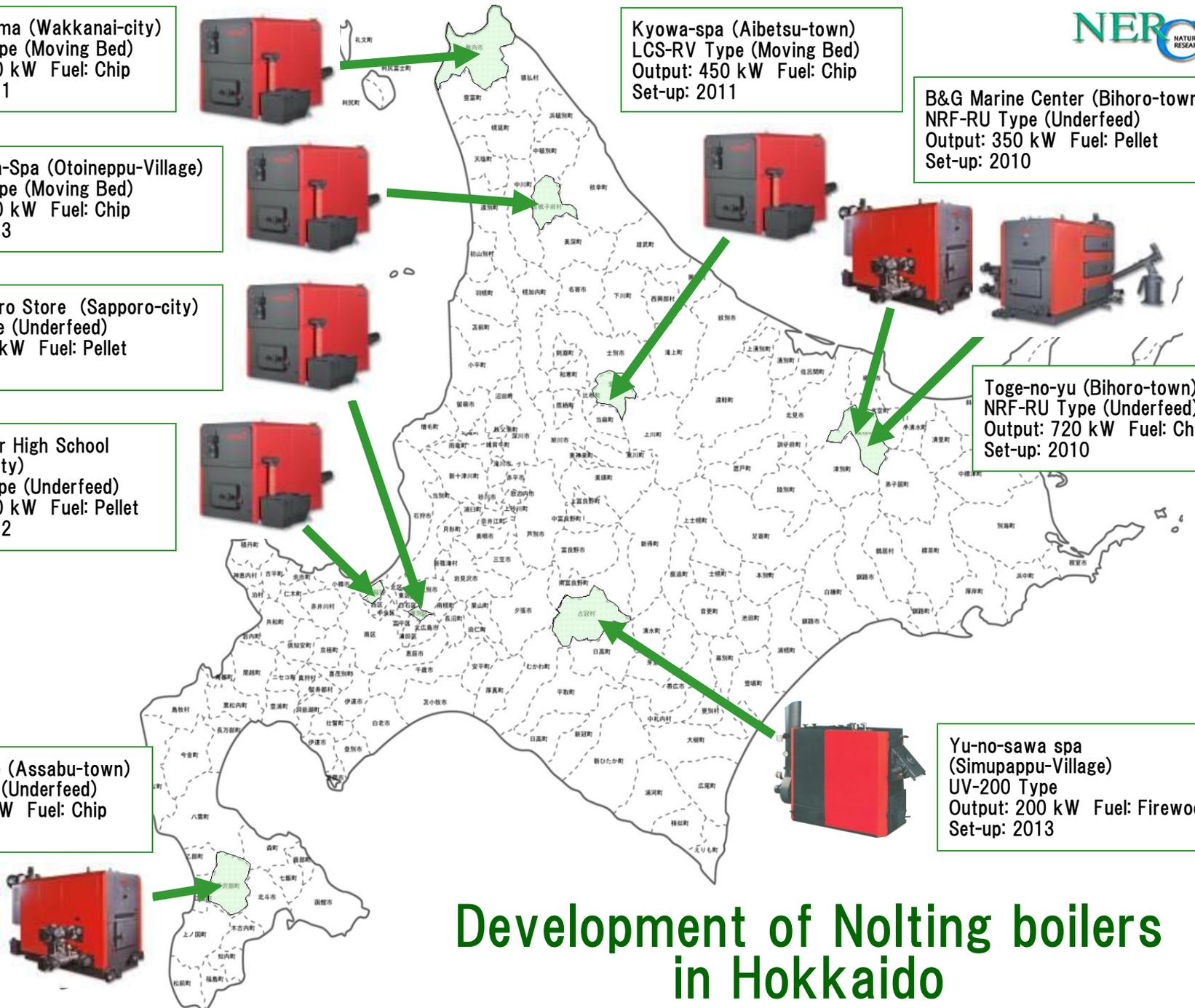
Tate Ikoi-no-le (Assabu-town)
NRF-RU Type (Underfeed)
Output: 150 kW Fuel: Chip
Set-up: 2009

Kyowa-spa (Aibetsu-town)
LCS-RV Type (Moving Bed)
Output: 450 kW Fuel: Chip
Set-up: 2011

B&G Marine Center (Bihoro-town)
NRF-RU Type (Underfeed)
Output: 350 kW Fuel: Pellet
Set-up: 2010

Toge-no-yu (Bihoro-town)
NRF-RU Type (Underfeed)
Output: 720 kW Fuel: Chip
Set-up: 2010

Yu-no-sawa spa (Simupappu-Village)
UV-200 Type
Output: 200 kW Fuel: Firewood
Set-up: 2013



Development of Nolting boilers in Hokkaido

Nolting-boiler-type set-up in Hokkaido and characters

Efficiency 90% / fully-automatic / Sixty-five-years time-proven
World market share 20-thousand boilers / All products made-to-order
Licensed assembling, manufacturing and selling

Type	LCS-RU	LCS-RV	NRF	VRF	UV
					
Capacity (kW)	150, 350 One of each type	350, 450 Two of each type	350, 720 One of each type		200 one
Sum	2	4	2	0	1
Character	Underfeed	Moving bed	Underfeed	Moving bed	
Fuel	Pellet, Chip	Chip High water content	Chp	Chip High water content	Firewood

Tasks and overcoming-direction of woody-biomass-boilers

- Creation of local cycling structure based on regional industrialization -

1. Quality and stable supply of fuels

Quality: size < 50mm, water content < 40%

- Construction of woody-chip fuel-factory

* **Creation of local cycling structure** : from upper stream (raw material procurement) to down stream (thermal usage)

* Fuel-factory becomes central to creation of local cycling structure.

2. Offering of high-performance boilers

Efficiency > 90%

- Licensed assembling, manufacturing and selling of Nolting boilers

* Why did we decide to choose “licensed assembling, manufacturing”?

a) “To make regional area energetic” --- to settle in regional area

--- to create jobs in regional area --- to establish regional industries

Cannot do through “import and sell”

b) Acquisition of technological know-how and sophistication of technological level --- cannot accomplish them unless assembling and manufacturing

**Now, we reached a stage of offering high-performance boiler.
“Stable supply of fuels” remains as a big issue to be solved.**

Vision of construction of woody-biomass fuel-factory in Hokkaido

- ◎ existing 6 sites
- planning 8 sites
- ★ pellet factory 17 sites

Ashibetsu-city

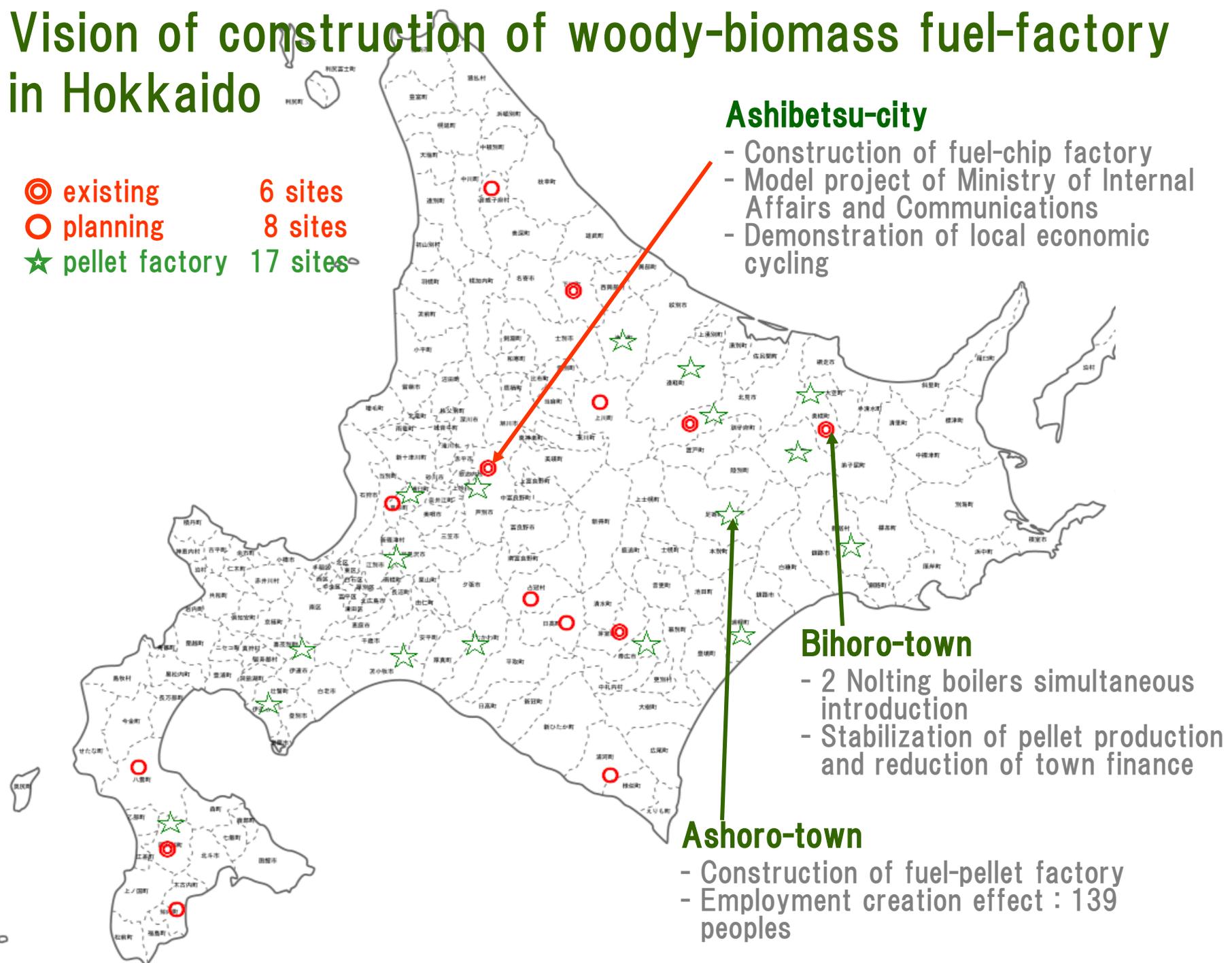
- Construction of fuel-chip factory
- Model project of Ministry of Internal Affairs and Communications
- Demonstration of local economic cycling

Bihoro-town

- 2 Nolting boilers simultaneous introduction
- Stabilization of pellet production and reduction of town finance

Ashoro-town

- Construction of fuel-pellet factory
- Employment creation effect : 139 people



Woody-biomass fuel-factory realizes local economic cycling

- * Amount of woody-biomass fuel is huge quantities for alternating heating oil demands!
- * Employment creation effect : 100 thousand peoples in Hokkaido and 2 million peoples over the country based on the case of Ashoro-town (Hokkaido).

Expected factory	Possible factories in Hokkaido	Possible factories over the country
Biomass-fuel (wooden chip) production factory	More than one in each local community - 180 factories in Hokkaido	- 750 factories
Biomass-fuel (wooden pellet) production factory	More than one in each local community - 180 factories in Hokkaido	- 750 factories
Maintenance and repair workshop	More than one in each local community - 180 factories in Hokkaido	- 1,700 factories
Components and parts factory	Reconstruction of existing small factory in local community	
Technical training school	Establishment of Natural energy school in each local community	

Join in assembling, manufacturing and selling of Nolting boilers.
Join in construction of fuel factory in every community.