

FutureCity “Shimokawa”

-Building a forest resource use model for small municipalities-

February 9, 2016

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Mayor of Shimokawa, Hokkaido

Shimokawa Overview

- ◇ Ski Jump
- ◇ High-sugar-content “fruit” tomatoes, asparagus, wheat
- ◇ Building of a “great stone wall”
- ◇ Forestry culture

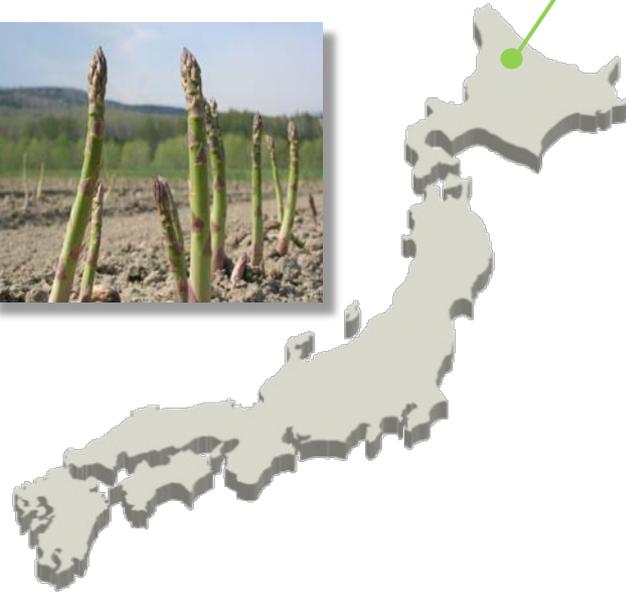


44 degrees north latitude

Future City Shimokawa

Approx. 100-min car ride from Asahikawa

Features
A town that fosters people that are active on the global frontlines



▲ Medalist parade



- ◇ Population: 3,430 people (Nov. 1, 2015)
- ◇ Area: 644.2 km² (equivalent to the 23 Tokyo Wards)
- ◇ Population-aging rate: 39.3%
- ◇ Forest land: 88% of the total town area
- ◇ Agricultural land: 6% of the total town area
- ◇ International students in ski jumping: 41 in total
- ◇ : Shimokawa Greenery



Sustainable Environmental-cycle Conscious Forest Management

-Building inexhaustible resources-

A history of environmental-cycle conscious forest management

Present: National forests occupy approx. 75% of the town area

Features
Secure/Maintain employment
Stable supply of raw materials

1953: Nationally-owned forest sold: 1,221 ha

Approx. 100 million yen town budget
→ Purchased at 88 million yen

Objectives: Permanent property creation, employment measures (securement)

1954: Damage from Typhoon 195415 (Marie/Toyamaru typhoon)

1956: Becomes a fiscal reconstruction organization

1960: Management plan for harvesting, logging 40 to 50 ha

1981: Damage from wet snow

1980-1990: Contract concluded for a profit-sharing forest

1994-2003: Nationally-owned forest sold: 1,902 ha

Town-owned management area: 4,691 ha

(artificial forest: 3,050 ha, natural forest: 1,641 ha)

Accumulated town-owned forest: 772,000 m³

Afforestation

Continued (half century)



Work/Employment securement
Stable lumber supply for local lumber producers



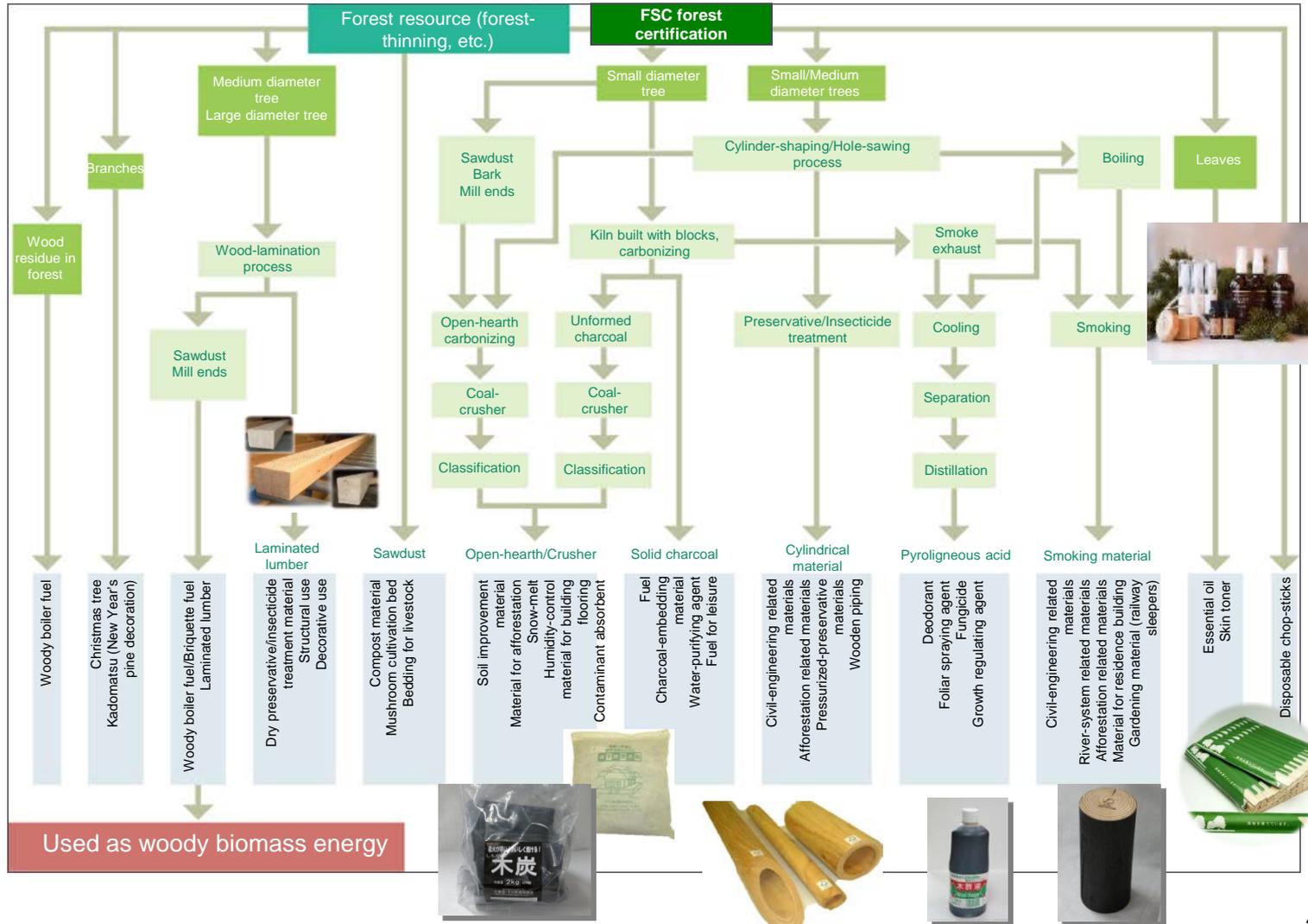
Waste-free Use of the Forest



Environmental-cycle conscious forest management

Regional forestry promotion/employment measures

Features
Cascade use of wood materials



Building Public Structures with Wood Expands the Usage of Locally-harvested Materials

Building model (Eco-house Mikuwa)

FY 2009, Ministry of the Environment
 <Promotion of environmentally-friendly housing in the 21st-century through housing model preparation>



- Use of Shimokawa-harvested materials
- CO₂ reduction
 - Geothermal heat pump
 - Pellet stove
 - Solar power generation
 - High airtightness
 - High thermal insulation



Diffusion/Education



- Diffuse to general residences as well
- Reduce carbon-emission throughout the entire town
- Revitalizing the local community



Private-sector-led housing proposals



Forest and Home From 2011: 4 new homes



- Architect + town contractors
- Proposal for regional housing with high environmental performance

Updating public facilities with wooden materials



2009: Updated the town hall's interior using wooden materials



2009: Updated the community center's interior using wooden materials



2010: Eco-friendly housing "Nukumori"



2012: Ichinohashi Civic Center



2013: Updated the elementary school's interior using wooden materials



2014: Medicinal plant research facility



Photo source: more trees design HP

Space Production Project 1 by more trees design
 Akasaka "T-TIME" opens: Jan. 10, 2014
 (used Shimokawa-grown birch)

Features
 Usage expansion in regions/cities

Woody Biomass Boiler Installation Status

Public hot springs "Gomi Onsen"



Heat supply facility for the area surrounding the town-hall

Childhood Center



March 2006

Seedling-raising facility



December 2008

Features
Approx. 60% of the total heat demand for the heating, etc. of all public facilities is met by thermal woody biomass energy

Senior complex facility



March 2011

Town public housing



March 2011

Heat supply facility for the Ichinohashii area



May 2013

Heat supply system facility for the elementary school/hospital area



March 2014

Heat supply facility for the middle school



January 2015

Wooden Raw Material Manufacturing Facility

Facility overview

- ▼ Established: April 1, 2009
- ▼ Site area: 15,754 m²
- ▼ Raw material storage capacity: approx. 13,750 m³ (8,250 t: water content 100%)
- ▼ Raw material storage facility, etc.: total floor area of 428.44 m² (steel-framed single-story structure) → Product storage room, truck-scale, machinery storage room, administrative office
- ▼ Woody fuel supply amount: approx. 3,000 t (record in FY 2014)



Energy-resource farm products such as wood residue in the forest (willow, etc.)



FY 2009 to 2010: Town-operated

October 2009: Shimokawa Energy Supply Cooperatives established

FY 2011: Operation commissioned to the Cooperatives

FY 2012: Management specified to the Cooperatives

* Fees in the amount of 2,500,000 yen were paid to the town

FY 2014

A profit of approx. 17,000,000 yen was split between the Cooperatives and town
(Town contributed its share to the machinery upgrade fund)

Features
Changes of industry
Business profitability

Results of Renewable Energy Implementation and Independent Measures

Fuel cost reduction results

Facility name	Pre-implementation (standard) Fossil fuel usage amount	FY 2014 Woody biomass usage amount	<u>Fuel cost reduction results</u>
Gomi Onsen	1,063,200 L	3,007 t	18,951,780 yen
Childhood Center			
Seedling-raising facility			
Heat supply for the area surrounding town-hall			
Senior complex facility			
Heat supply for the Ichinohashi area			
Heat supply for the elementary school/hospital area			
Middle school			

Independent measures

Fuel cost reduction results from renewable energy implementation

Allocates 1/2 of the resulted reduction amount to each of the following measures

(1) Renewable energy boiler upgrade cost

(2) Enhancement of child-rearing support

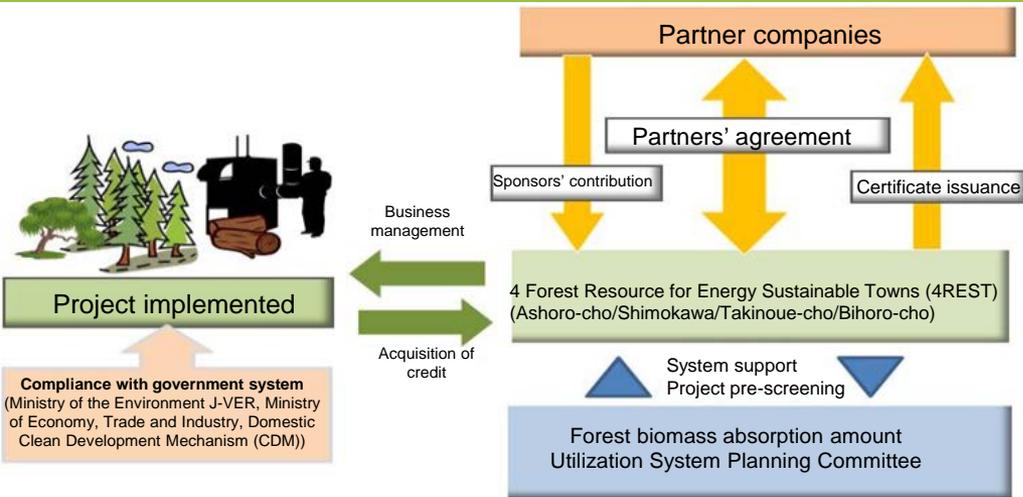
- Reduction of childcare expense (10%) • Supplementation of school lunch cost (20%)
- Medical care aid for young children (free medicare until middle school graduation)
- Fertility treatment reimbursement, 1/2 of the out-of-pocket expenses (150,000-yen limit)
- Assistance for healthy child-rearing (36,000 yen annually → Provided for children under 2 years old)

Features
 Reduced load to lower cost in the future
 Child-rearing support enhancement



- Ordinance on Funding (4.1.2013-)

Forest Biomass Utilization Carbon Offset



Features
Create new values in forest resources



▼ Forest absorption project

Forest absorption system registration No.1

(1) Forest-thinning promotion forest development joint project by 4 Hokkaido towns (4.2007 to 3.2013)

• Type: Forest-thinning promotion; Credits issued: 26,811t-CO₂; Forest-thinning area: 1441.46 ha

▼ Emission-reduction project

(2) Forest biomass energy activity project at Gomi Onsen, etc. (4.2008 to 7.2011)

• Type: Woody biomass; Credits issued: 715t-CO₂



(3) Biomass energy usage project based on heat supply system for the area surrounding the town-hall (11.2010 to 3.2013)

• Type: Woody biomass; Credits issued: 437t-CO₂



Company-Local Collaboration Using Forest Resources

[Collaboration with organizations/companies]



An agreement was concluded with the Aroma Environment Association of Japan (AEAJ) (3.2015)

[Collaboration with research institutions]



Collaboration agreement to solve regional issues (7.2015)
A joint research agreement was concluded with the Hokkaido Research Organization (HRO)

[Platinum corporation forests]



An agreement was concluded with the Taisei/Kumagaya/Iwakura designated construction joint venture (11.2014)

* Creation of Nikkei BP Eco Management Forum Forest, TOYOTA GAZOO Forest, Yokohama Totsuka Forest, etc.

[Tours for corporations]



Collaboration with the Nikkei BP Eco Management Forum (for CSR personnel in leading companies concerning the environment)

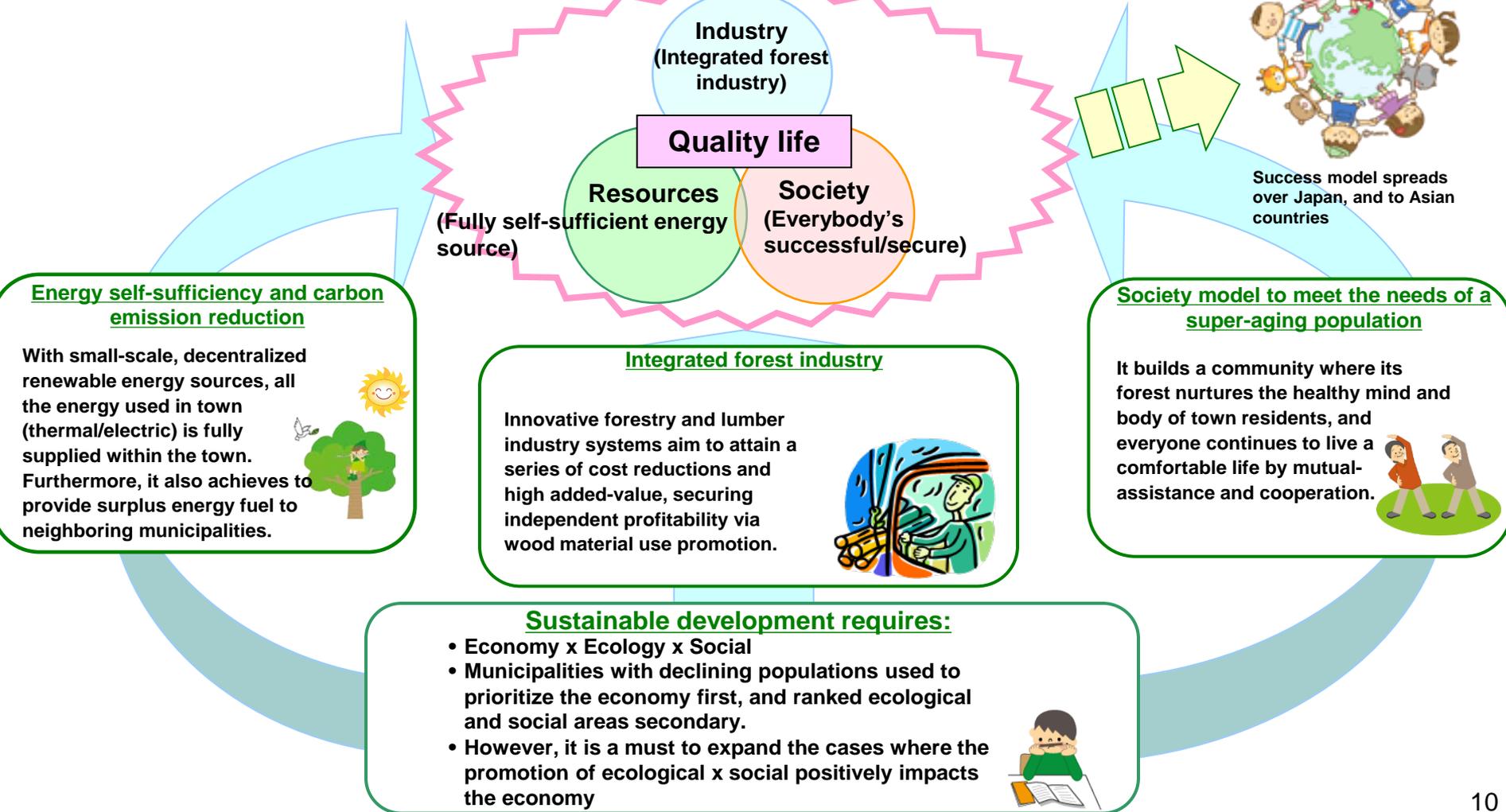
Creation of Sustainable Local Communities

•Realizing "towns in which everyone would like to live" and "towns that are full of vigor," where the creation of values continues in the 3 areas consisting of the environment, society, and the economy.

"FutureCity" Initiative

Relating to common challenges of 21st century human society, such as the environment and countermeasures to a super-aging society, the Initiative focuses on technological/social economy system/service/business model/town development to produce successful cases that are unparalleled elsewhere in the world, with the aim of realizing sustainable social economy advancement throughout the entire country.

Shimokawa, Yokohama, Kitakyushu, Toyama, Kashiwa (5 cities from non-disaster area, selected in Dec. 2011)



Super-aging x Independent Energy Supply x Village Living Revival

(Ichinohashi Bio-Village)

(1) Location

A small village, approx. 12-min car ride (approx. 12 km) from the center of Shimokawa

(2) Significant depopulation

1960: 2,058 residents (15,555 in all of Shimokawa)

2014: 139 residents (3,494 in all of Shimokawa)

(3) Aging population

Population aging rate: 43.9% (39% for all of Shimokawa)

(4) Declining industries

Decline in forestry, consolidated forestry offices, JR train line discontinued, etc. Production activity in the village remained nearly nonexistent.

(Besides pensioners, most were personnel working at the support facility for persons with disabilities, and people commuting by car to the center of Shimokawa)

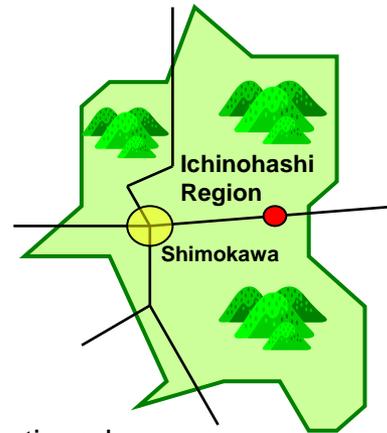
(5) Local challenges

- No core industry in the area
- Living conditions, such as convenient access to shopping, deteriorate (closing of village stores)
- Difficulty regarding snow removal from roofs and walk-paths
- Aging residence, increase in abandoned houses
- Decreased community activity due to an aging population

(6) Ideal model

Solve issues of super-aging, population decline, and extremely-low community activity

- Energy self-sufficiency centered on woody biomass energy
- Industry creation based on local resources
- Sustainable village design for the next generation
- Collective group living residence to revitalize the community



Energy Self-sufficiency to Revitalize Marginal Villages

Create an independent energy supply
 Group-living (energy-saving)
 Introduction of creative human resources
 Industry creation
 Incentives to attract businesses

(2) Support facility for persons with disabilities (existing)



(11) Testing and research facility for invited businesses



(11) Research institute for special forest product cultivation

Heating/Hot-water supply

Heating

Heating

(9) Nursery for seedling box containers/medical-use plants



Heating

(1) Heat supply facility for the Ichinohashi area

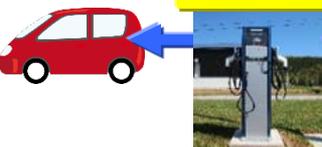


• Solar panel (15 kW)

• Woody (wood-chip) boiler 550 kW x 2 units

Heating/Hot-water supply

(3) EV charger



QB

Electricity
 Heating/Hot-water supply

(4) Group-living residence (22 units)



Heating/Hot-water supply

(8) Group-living residence (4 units)
 Lodging facility (2 units)



Heating/Hot-water supply

(5) Civic Center

Smart meter



Post office, police patrol point, residents-shared space



Heating/Hot-water supply



(6) Station Cafe Ichinohashi (community diner)

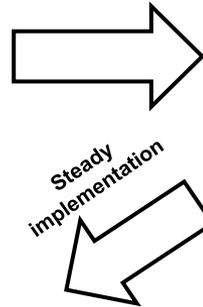


(7) Community Center (existing)

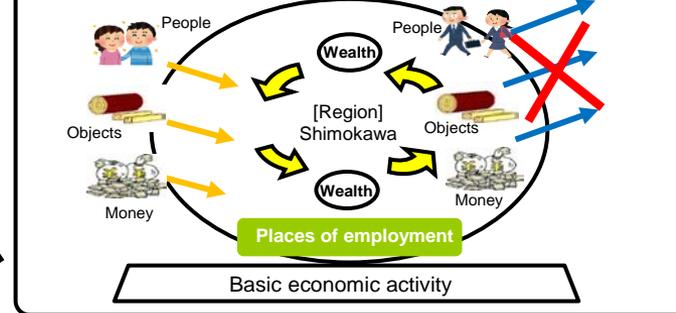
“FutureCity Shimokawa” Initiative Evaluation

Government recognitions and designations given to Shimokawa

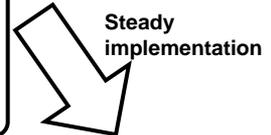
- 2008: Eco-Model City
Biomass Town published
- 2011: FutureCity
Special zone for regional rejuvenation
- 2013: Biomass industrial city
- 2014: Regional rejuvenation case model
- 2015: Regional rejuvenation plan



Regional revitalization concept for Shimokawa

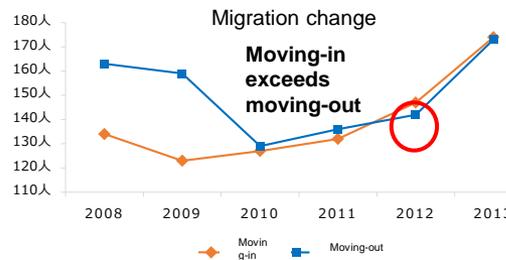
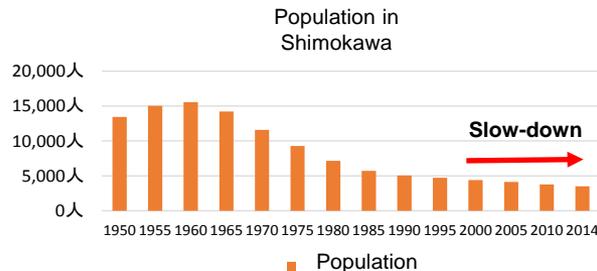


Positive results observed



Population changes in Shimokawa

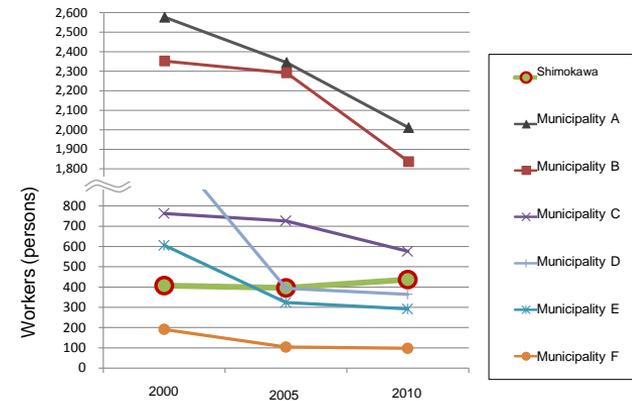
Fiscal Year	Total population	Natural change			Migration change			Changes from previous fiscal year
		Birth	Death	Changes	Move-in	Move-out	Changes	
2008	3,836	28	63	-35	134	163	-29	-83
2009	3,772	15	50	-35	124	154	-30	-64
2010	3,707	16	67	-51	127	142	-15	-65
2011	3,641	13	58	-45	132	136	-4	-66
2012	3,592	24	62	-38	147	142	+5	-49
2013	3,559	18	71	-53	174	173	+1	-3



While the population decline continues at a slower pace, changes have been observed in migration trends

Those employed in agriculture and forestry in Shimokawa

Changes in those employed in agriculture and forestry in Shimokawa and its neighboring cities and towns.



The number of those in the core industry, agriculture and forestry, is showing an increase in recent years (decrease in neighboring cities, towns, and villages)

Official land price (as of 1.1.2015)

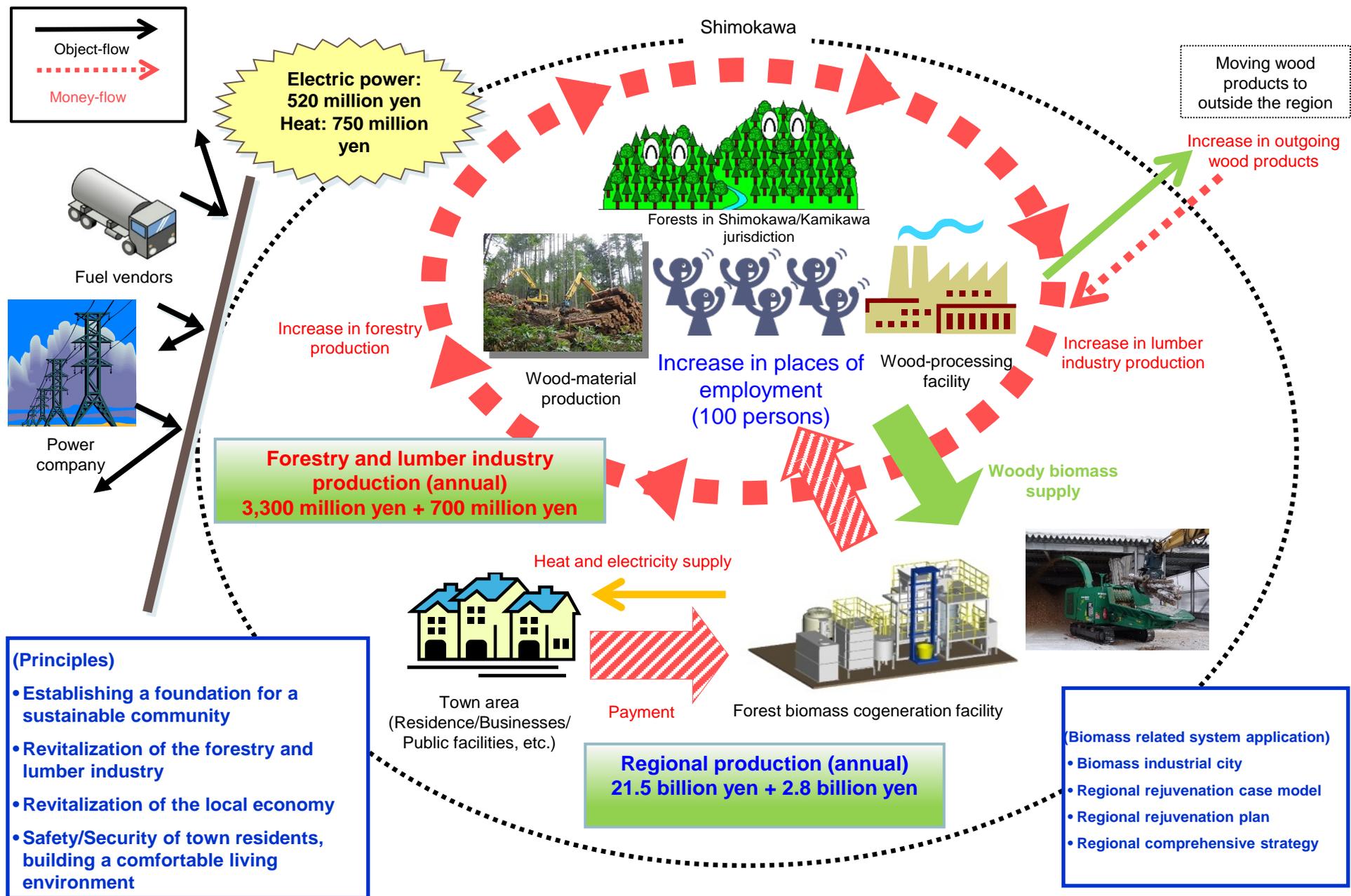
For the first time since 2008 (7 years), land prices stopped declining. This makes Shimokawa an extremely rare municipality as all others have experienced a drop over the Hokkaido region.

Factors→ evaluation included “Local community revitalization due to the biomass initiative and ski jump “

Town residency tax

	FY 2011	FY 2013	2013/2011 comparison
Individual town residency tax	108,392,000 yen	111,402,000 yen	2.7% increase
Corporate town residency tax	10,468,000 yen	12,400,000 yen	18.4% increase

Energy Self-sufficiency for “Regional Community Creation” (Future Model)



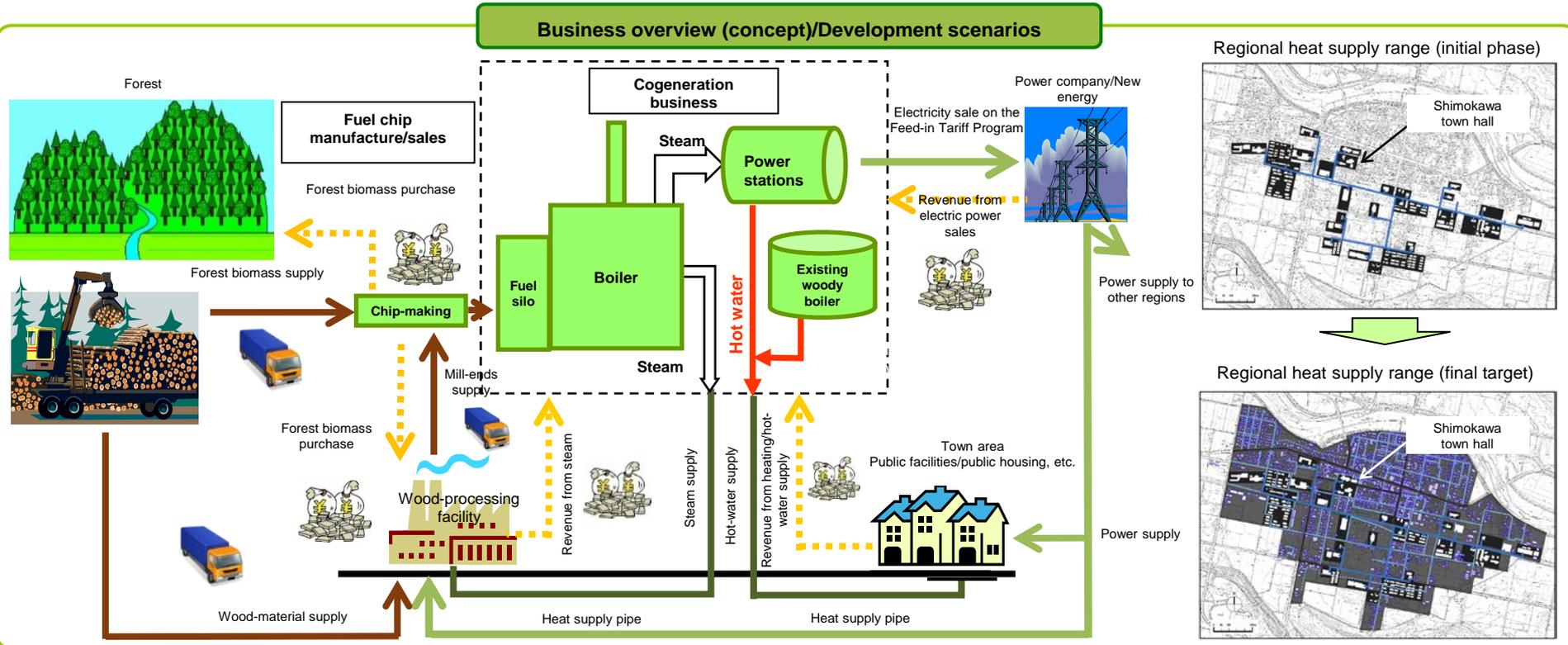
To Attain Energy Independence -Creation of forest biomass cogeneration-

Business concept

Positioning energy use that maximizes the use of a local resource, forest biomass, as the pillar of our regional community creation strategy, we will establish a forest biomass cogeneration system within the town limits, a 1km-radius where approximately 80% of the households reside.

Expansion of forest biomass energy use will aim to “revitalize the forestry and lumber industry through a virtuous circle of funds, etc.” and to “ensure security/safety, and a comfortable life for town residents” through the realization of a stable energy supply that can respond even to disasters.

Business overview (concept)/Development scenarios

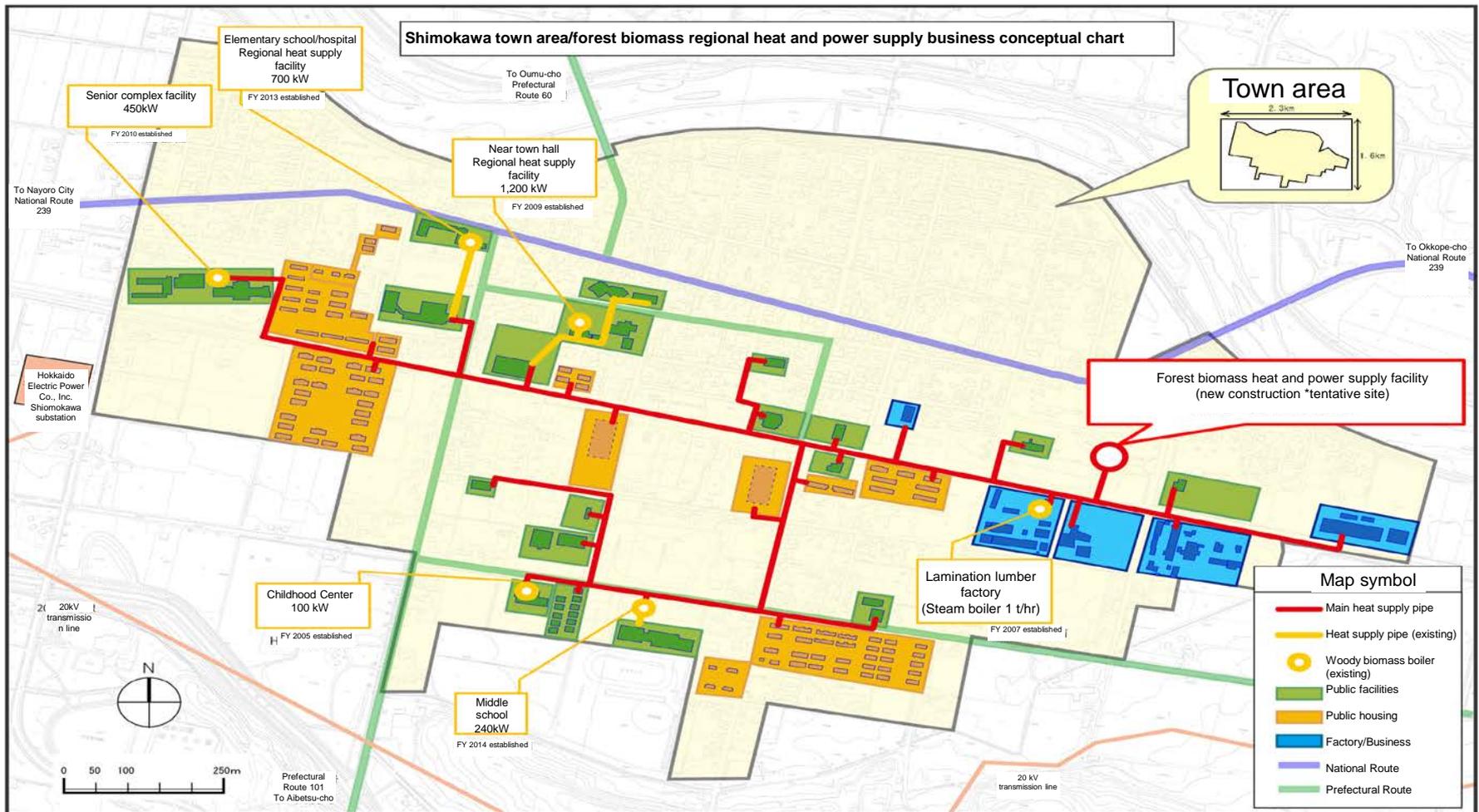


Business schedule

FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	-	FY 2030	
Detailed survey conducted Master plan developed	Business system built Overseas technology research	Project engineering Plant construction Test operation (demonstration/verification)		Power-generation business begins Heat-supply business starts partial supply provision	Initial phase area full-supply					Town area Full supply

Forest Biomass Cogeneration Business (economic ripple effect in the initial phase)

Forest biomass cogeneration business (initial phase conceptual image)



■ Estimated economic impact to the local community resulting from the cogeneration plant construction and 20-year business operation:
4.1 billion yen (plant construction: 900 million yen, 20-year operation: 3.2 billion yen)

■ Employment creation effect

32 persons (direct-employment in the cogeneration business: 11 persons; in-direct employment in the forestry and lumber industry: 21 persons)

すくすく育つ木漏れ日の下

「森と暮らす日々」

下川町

Hokkaido



体験・観光 生活 教育 産業 歴史

Shimokawa 環境未来都市しもかわ

春夏 秋冬

Thank you very much for your attention.