

Higashi Matsushima City

Future Cities linked through earthquake and disaster recovery: Circles of people, energy, and communities for the future

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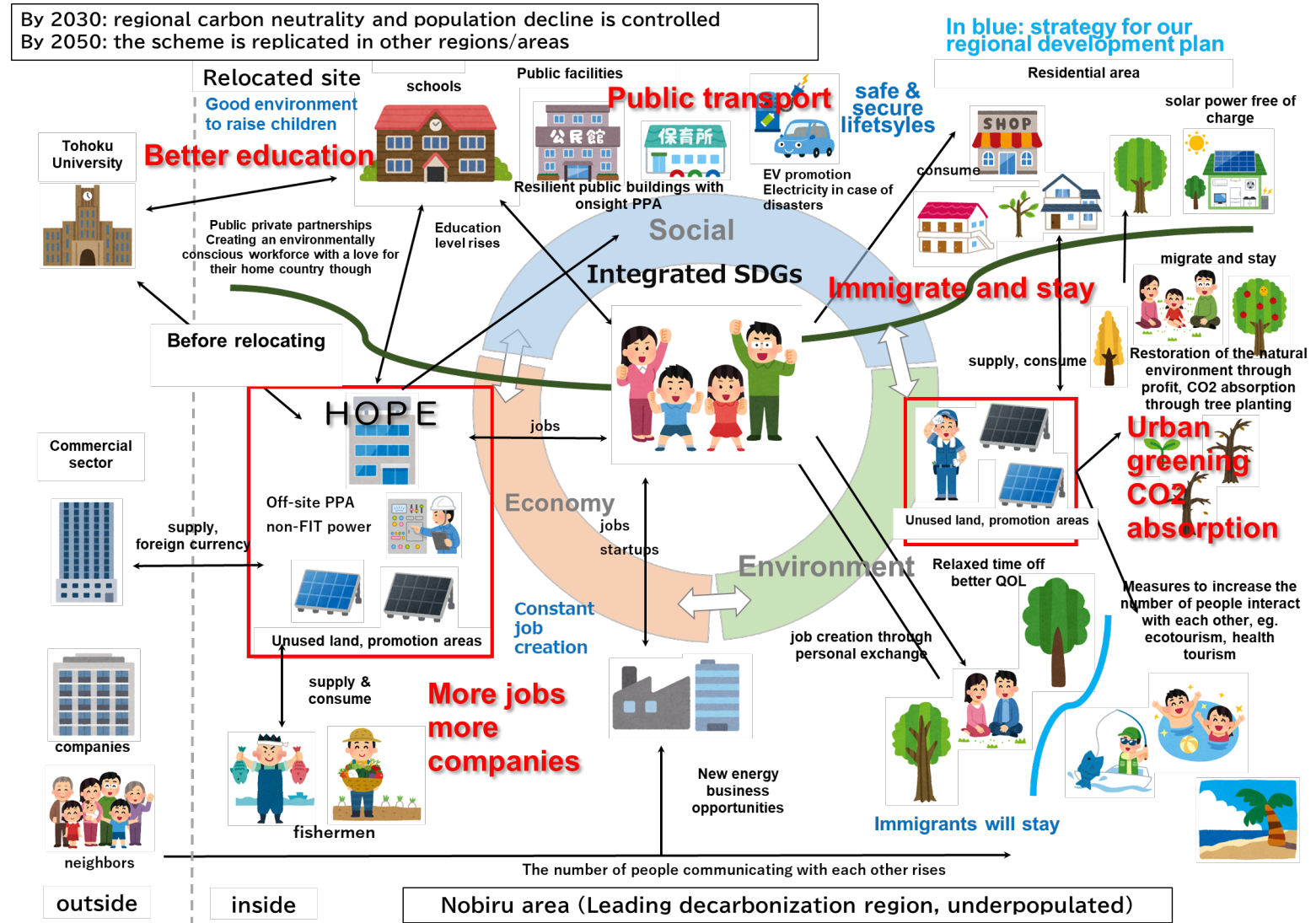
On Jan 25th 2023



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1. Overall Concept

<The region in 2030>

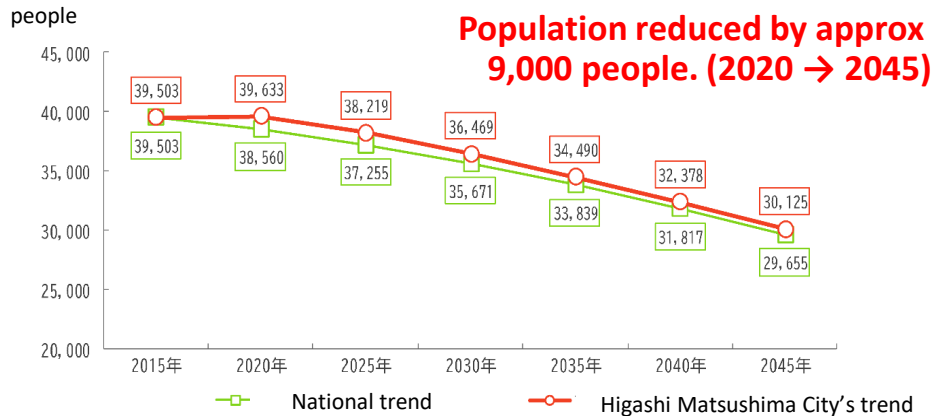


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1. Overall Concept

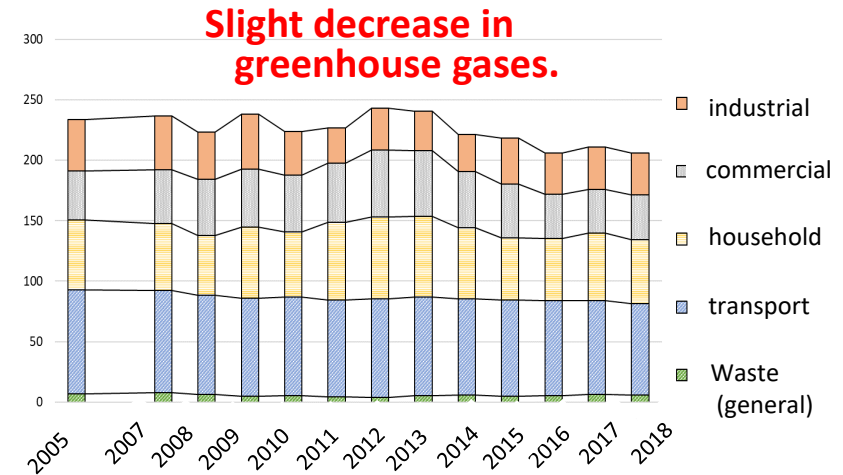
<Population outlook for the city>

Comparison with the national population trend



Source: National census, National Institute of Population and Social Security Research

<Trends in greenhouse gas emissions in the city>



<The challenges we face>

- There are so many sites where citizens have relocated and abandoned (especially in the Nobiru area).
- We suffer from depopulation as can be seen in the former Naruse town (within the Nobiru area).
- We have many senior citizens who have to drive. There is no transportation services to tourist sites.
- Our young generation have to relocate when they go off to college or seek employment.
- Our key industries are negatively impacted from fossil fuel dependence.
- Our surrounding nature still needs to be restored and rehabilitated.

The aim

<Our ideal city>

- Our efforts to reconstruct after the earthquake continue to form a circular economy and a self-sustaining decentralised society.
- The economy of the depopulated areas are revitalised.
- Smooth, multimodal and integrated transport using next-generation vehicles is accessible to all.
- Educate citizens to become environmentally friendly and ensure their return to the hometown.
- Introduction and utilisation of renewable energy in various sectors.
- The profits from new regional electricity companies are reinvested into tree-planting projects, etc., to solve various regional problems.

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2. Initiatives in decarbonisation leading regions

(i) Solar power has the highest energy potential of all our renewable resources

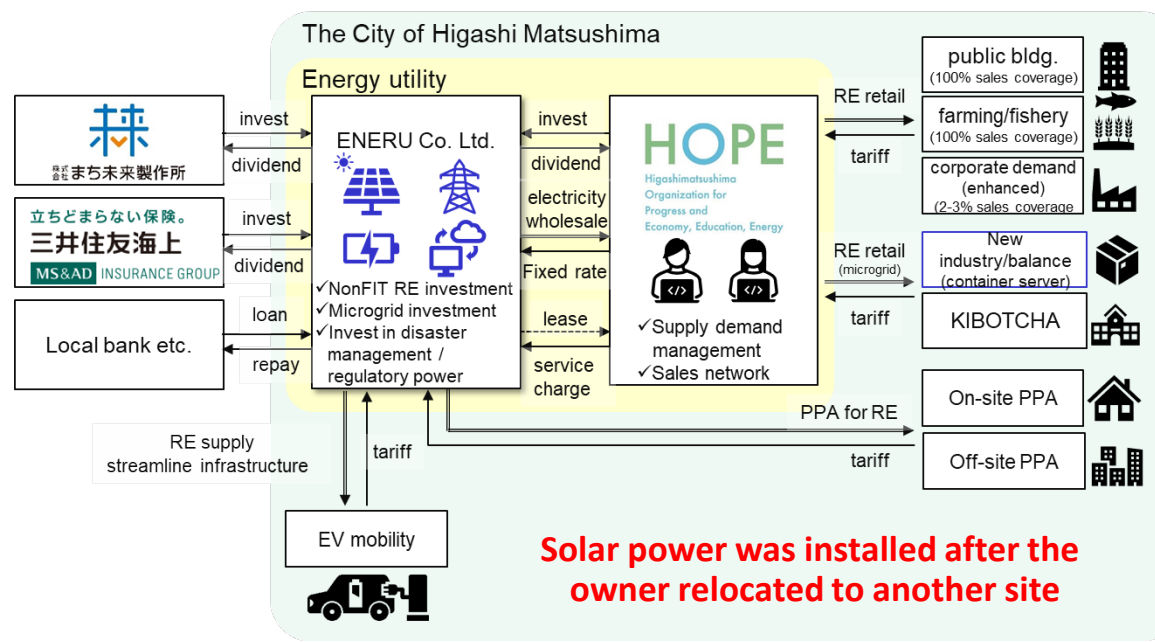
(high level of clear skies and solar radiation in nationwide).

Renewable energy potential of the city.

Classification of power generation methods	Electricity generated (thousand kWh/year)
solar power generation	107,946
onshore wind power	23,934
geothermal low-temperature binary power generation	482
Total	132,362

Heat classification	Heat value (billion MJ/year)
geothermal heat	21.48
solar heat	2.09
Total	23.57

(ii) The Nobiru area as a leading decarbonisation region



Solar power was installed after the owner relocated to another site

(iii) Our calculation shows we can achieve virtually zero emission with renewable energy in the Nobiru area (2030 target).

Electricity demand from commercial sector: **9,932**

Renewable energy supply (including solar power and others): **≤ 14,138**

Energy savings by the commercial sector: **+ 45**

Of which, 8,857 thousand kWh/year is new installment

Unit: thousands of kWh/year

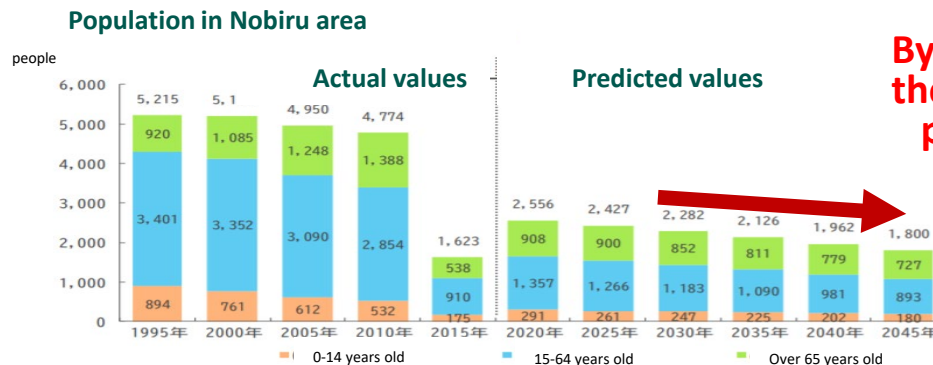
(iv) Installed renewable energy by 2030 Increased by approximately 2.7 times

	2022 (current)	2030
Output from installed renewable energy	3,291 kw	9,026 kw
Renewable energy generation	5,281 thousand kWh	14,138 thousand kWh

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2. Initiatives in decarbonisation leading regions

(v) The ideal state of the Nobiru area is.



By decarbonising the Nobiru area, the vitality of the region is regained, population decline is controlled

Source: National census, National Institute of Population and Social Security Research

(vi) Main initiatives in the consumer and nonconsumer sectors>

* Continue to consider methods of generating electricity other than solar power, based on future technological trends.

measure	sector	Execution details
Development of new power sources and zero-cost solar installations, microgrid construction	Commercial etc.	Enhance resilience by installing photovoltaic panels on unused land in disaster-affected areas (off-site PPAs), roofs and carports of houses and public facilities (on-site PPAs), as well as the construction of microgrids.
Supply of renewable electricity to agricultural and fishing facilities, public facilities, etc.	Industrial, commercial, etc.	The electricity retail businesses will increase their sales to facilities owned by businesses other than the residential and commercial sectors and deeply connected to the community (in particular, the primary industry, the city's main industry). Existing subscribers will gradually switch to the renewable energy menu. The circle of the local circular economy created by local generation and consumption of renewable energy will be expanded in stages.
Education ecosystem	All	The Higashi Matsushima Mirai-Toshi Institute and Tohoku University will implement initiatives to train and create human resources capable of solving various environmental problems, including global warming, by making use of the local community.
Projects to support the installation of storage batteries, EV mobility, purchase of energy-saving appliances, purchase of pellet stoves, etc.	Commercial Transport, Heat, etc.	Implement various support projects for the purchase of storage batteries, EV mobility, energy-saving appliances, pellet stoves, etc., and provide comprehensive support for energy conservation, energy creation and energy savings in each sector.

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3. Implementation schedule.

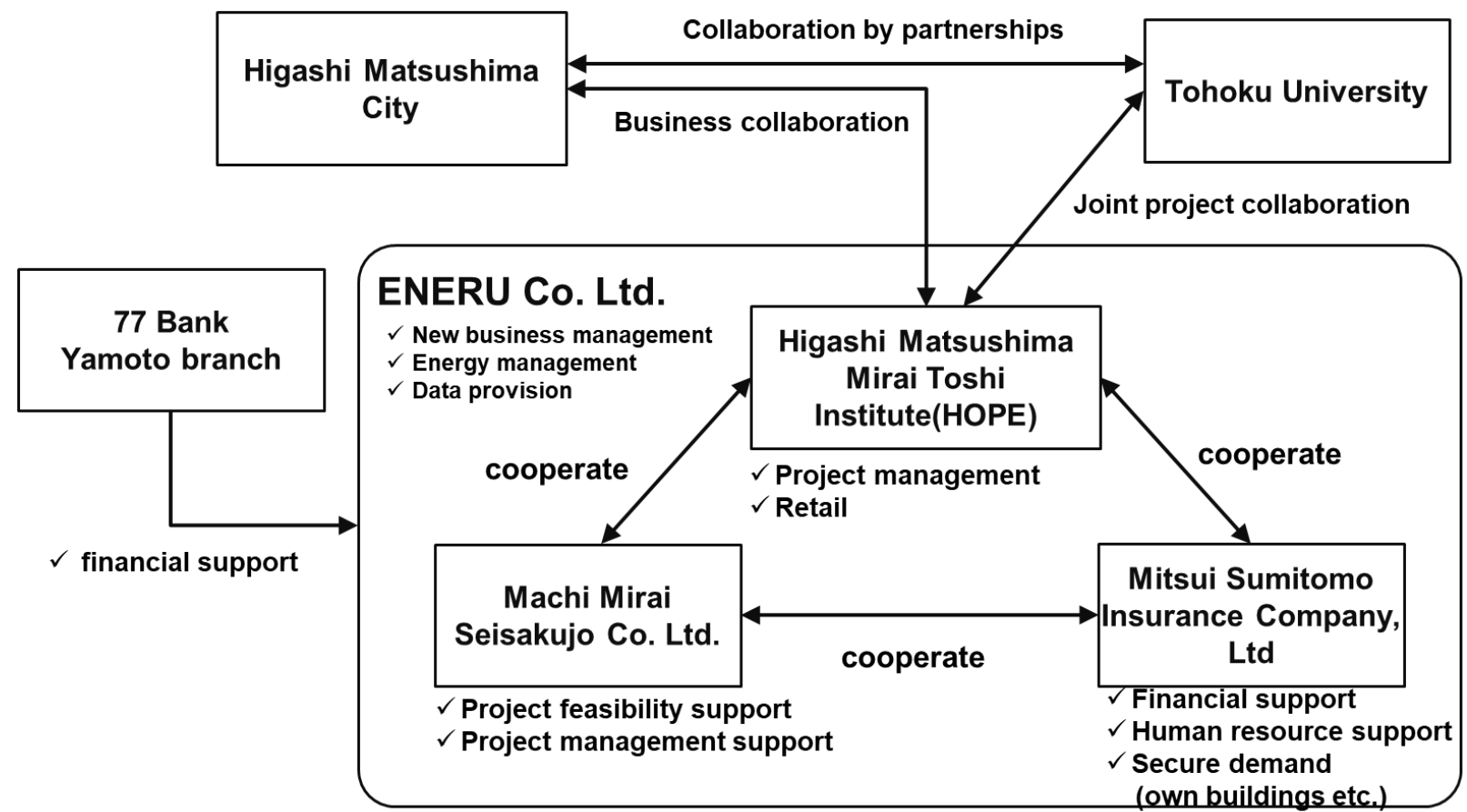
Year	2022	2023	2024	2025	2026	2027	2028	2029	2030	results
#	Schedule									total
①	Installation of power generator				Electricity supply					4,510kW
②	Installation of power generator and electricity supply									1,256kW
①② newly introduced capacity	135kW	450kW	2,075kW	2,100kW	125kW	150kW	175kW	225kW	331kW	5,766kW
③ supply of electricity to farm, fishing, public facilities	Project design	Offer electricity tariff options								-
③ contract(power supply)	1 bldg	5 bldg	5 bldg	10 bldg	-	-	-	-	-	21 bldg
④ EV mobility	Project design	Infrastructure	Begin service							-
④ number of units installed	-	-	16 unit	15units	15 units	16 units	13 units	13 units	12 units	100 unit
⑤ joint purchasing	Project design	Begin installment								-
number of households introduced	-	-	10	10	10	10	10	10	10	100 household
⑥ pellet woodstoves implementation	Project design	Begin installment								-
number of households introduced	-	-	5	5	5	5	5	10	15	50 households
⑦ solar water heater	Project design	Begin installment								-
number of households introduced	-	-	5	5	5	5	5	10	15	50 households
⑧ storage battery	Design, project design		Construction		Operate					-
⑨ microgrid development	Project design			Construction		Begin service				-
⑩ servers	Design, project design		Servers		Begin service					-
⑪ education ecosystem	Project design	Implementation								-

*Make efforts to realise a decarbonisation dominoe effect in line with business progress.

*Continue to consider non-solar decarbonisation measures in light of technology trends.

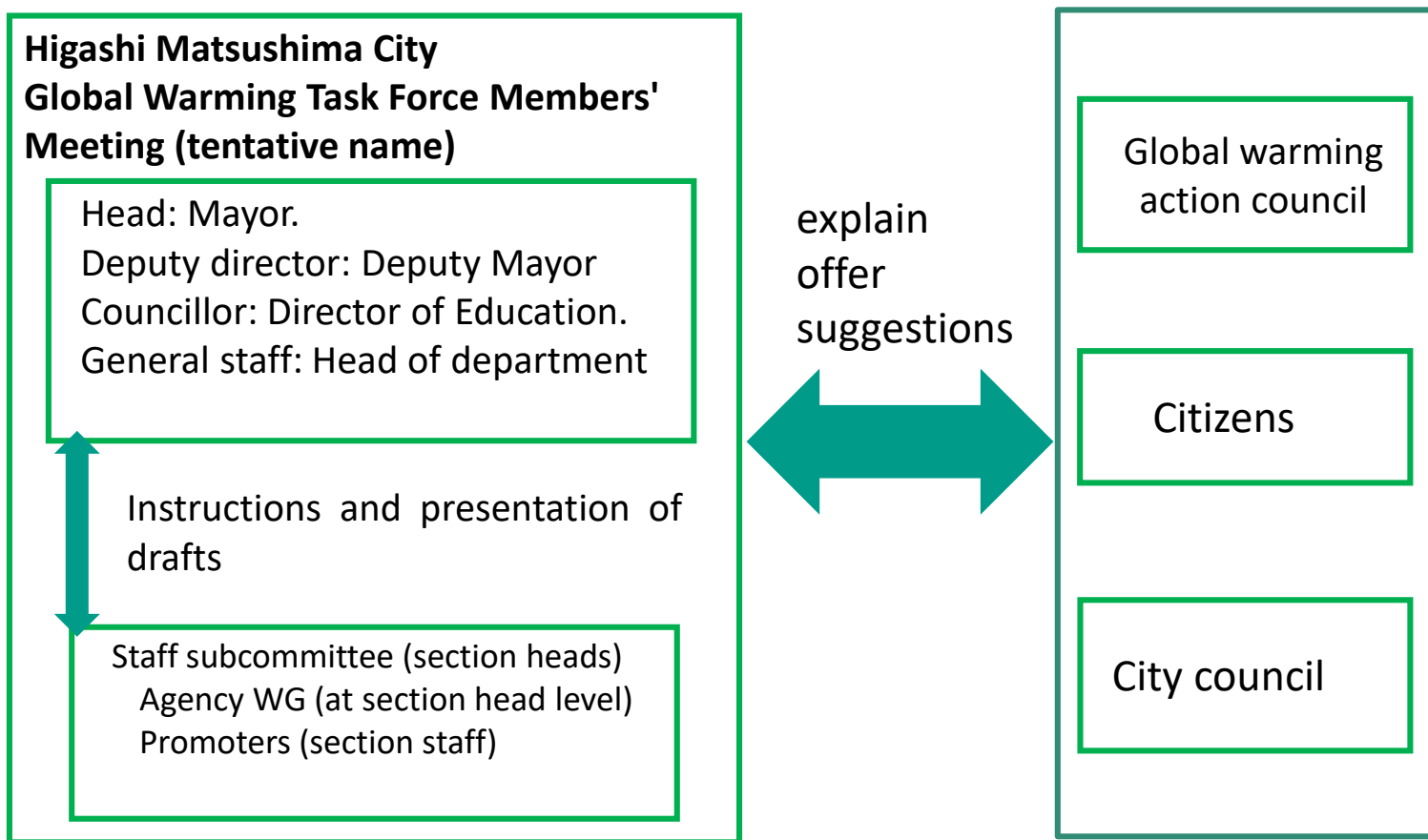
4. Promotion system

<Promotion structure diagram>



4. Promotion system

<Local government structure chart>



Thank You