



Carbon Circular Economy base created with natural resources nurtured by the connection between the sea, mountains, and villages.

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Social context: Economic policies in rural areas are important for decarbonization

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**Pledged to reduce greenhouse gas emissions by 46% by 2030
(compared to 2013 levels)**

October 22, 2021 Cabinet Decision

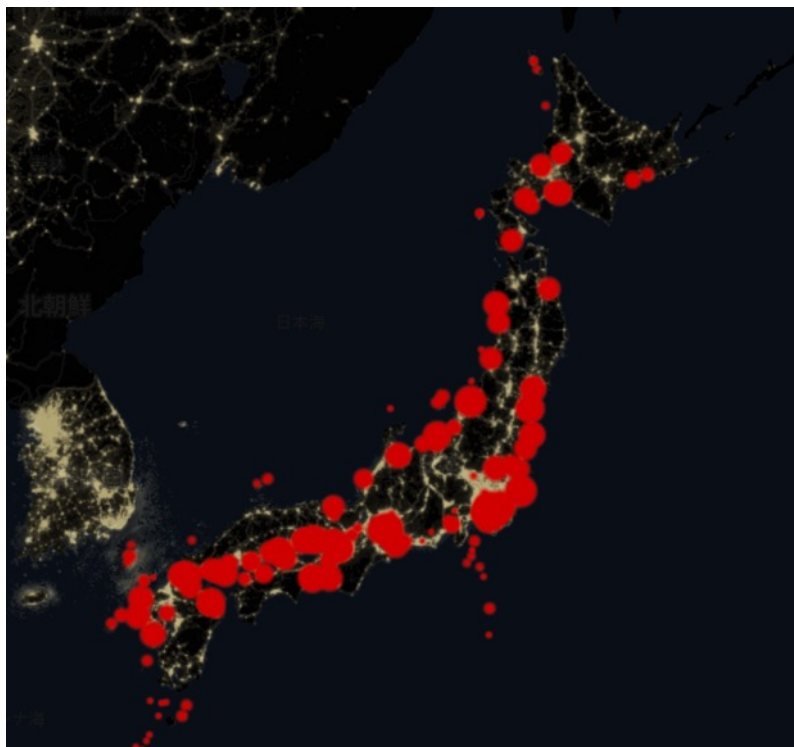
Major Decarbonization Policies

- 1 Shift from fossil fuels to renewable energy
- 2 Energy conservation and reduction of greenhouse gases
- 3 Emissions trading through carbon sequestration and storage (negative emissions)

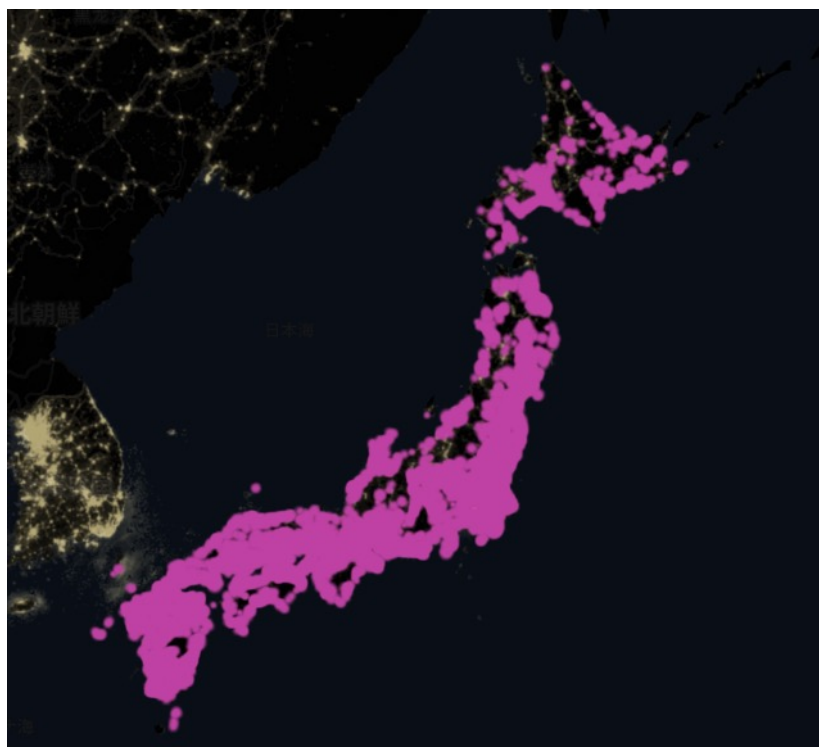
Characteristics of Renewable Energy Siting

Relatively small scale and distributed in large numbers in all parts of Japan

→ **Close relationship with local communities and residents**



Thermal Power Station (**282**)



Solar Power Station (**14,243**)



Wind Power Station (**420**)

(Electrical Japan)

Issues of renewable energy for decarbonization

● Impact on ecosystems, degrading natural landscapes

- ・ No return of revenues to local communities by operators
- **No benefits of decarbonization for local communities**



There are concerns about the impact on ecosystems such as **birds and the landscape of agricultural and mountainous villages**, and there is a **trade-off** between the environmental burden that affects local communities, residents' lives, and ecosystems.

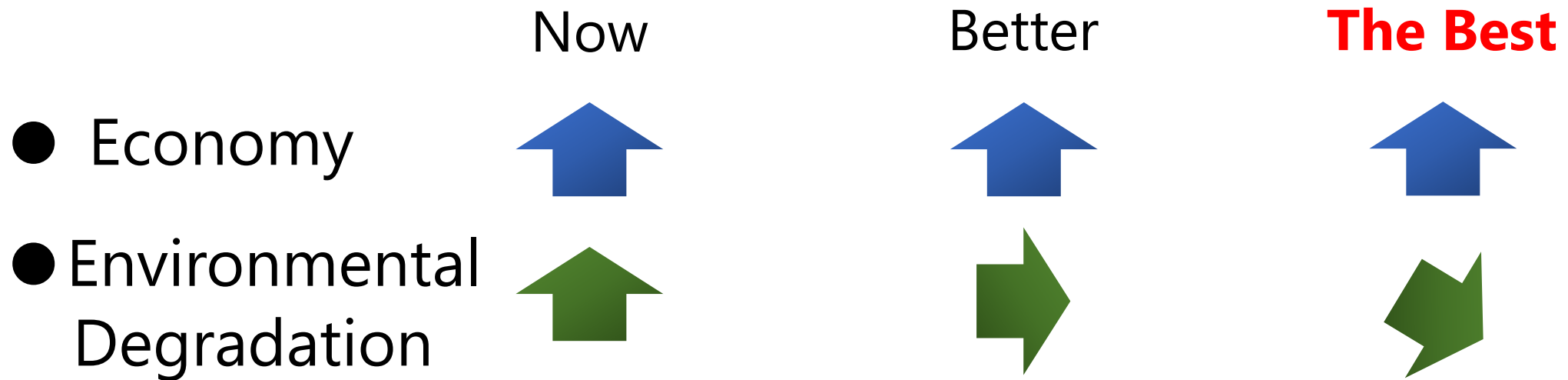


出典：2021年3月1日 資源エネルギー庁 総合エネルギー調査会
省エネルギー・新エネルギー分科会／電力・ガス事業分科会 再生
可能エネルギー大量導入・次世代電力ネットワーク小委員会(第
25回)資料「今後の再生可能エネルギー政策について」

Separation of economy and environment (Decoupling) as a direction of decarbonization

Decoupling

While promoting economic growth Reduce greenhouse gas emissions



In decoupling policies, it is important that **decarbonization creates a virtuous cycle in the economy**

Negative emissions with natural resource

Negative emissions

<Industrial Negative Emissions>

- BECCS, DACCS

Collect and remove greenhouse gases that have accumulated in the atmosphere

<Negative emissions by making use of local natural resources>

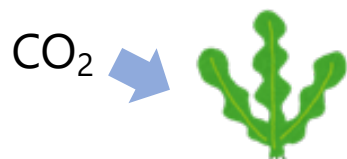
● Blue carbon

Restoration of seaweed beds, promotion of ocean fertility and growth (aquaculture, etc.)

● Material fixation of carbon resources (shells, etc.)

● Decarbonization in soil

Reduction of greenhouse gas emissions from agricultural land



Circular Economy

<The Concept of Circular Economy>

- Curbing the generation of waste
- Create added value through services and other means while making effective use of resources.

<Circular Economy utilizing local natural resources>

● Recycling and upgrading of waste resources

Fermented seasonings, functional foods
Biofuels, plastic substitutes

● Biogas power generation

Domestic waste, forest residues, unutilized marine resources



Great East Japan Earthquake (March 11, 2011)



“Minamisanriku town”

Population 17,429 people (2010)

Deceased **620** people

Person who does not know the right path **211** people

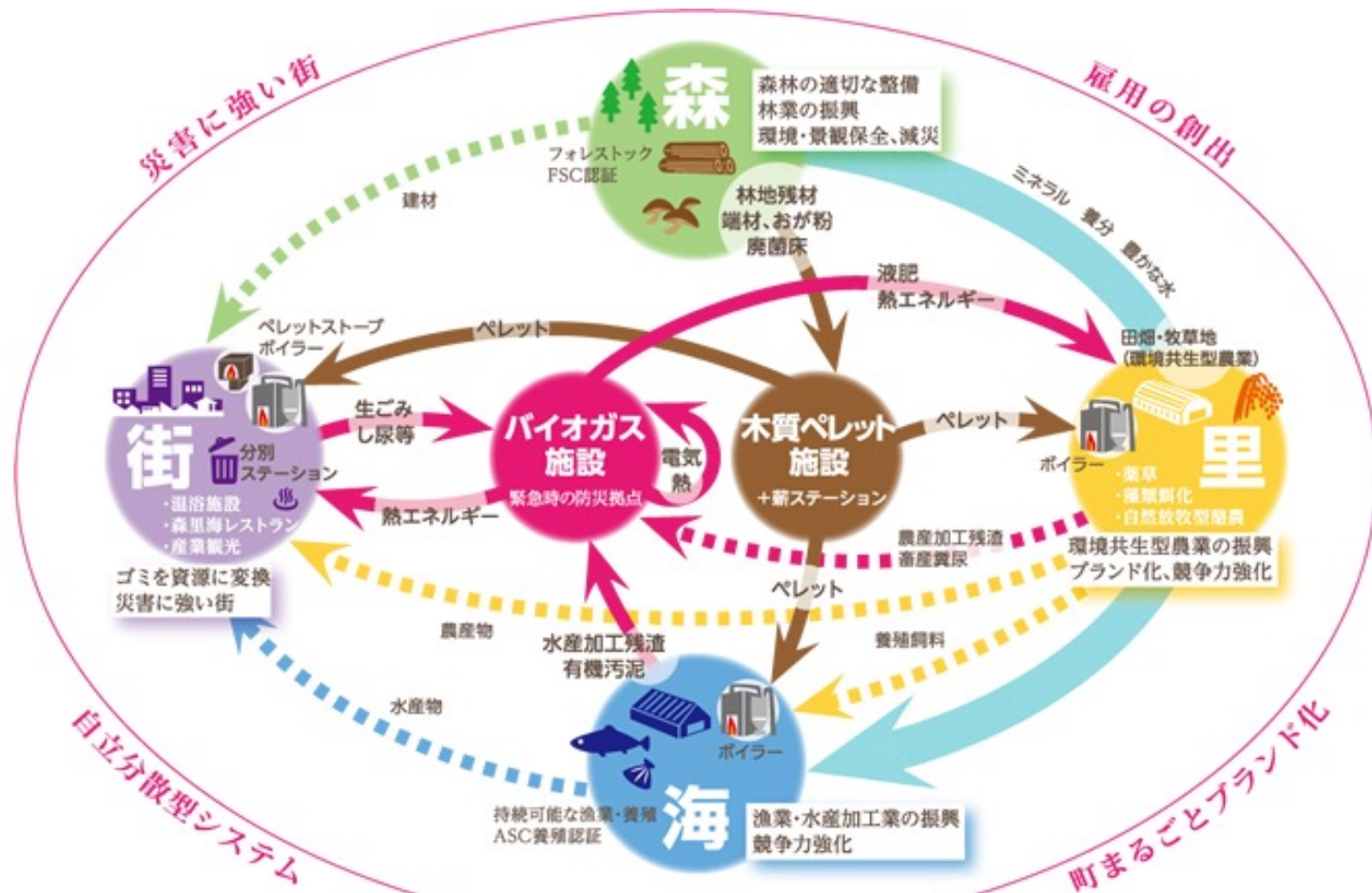
Population 12,370 people (2015)

→ Population reduction rate **29.0%**

Post-Earthquake Reconstruction in Minamisanriku Town

“Forest, Village, Sea, People, Life, Minamisanriku”
「森里海ひといのちめぐるまち 南三陸」

“Minamisanriku Biomass Industrial City Plan”
「南三陸町バイオマス産業都市構想」



Our mission : Blue Carbon in Minamisanriku town

Minamisanriku town is surrounded by watersheds, with mountains, villages, and the sea connected by rivers and the rias coast of Shizugawa Bay.

Shizugawa Bay was registered as the first Ramsar Convention wetland in Japan on October 18, 2008.

It is one of the world's three largest fisheries, with rich fishery resources due to the mixture of the Kuroshio Current, the Oyashio Current, and the cold and warm currents such as the Tsugaru Warm Current.

In recent years, the rising seawater temperature has caused seaweed damage caused by sea urchin breeding, resulting in "**isoyake**" or the loss of seaweed, which is a problem.

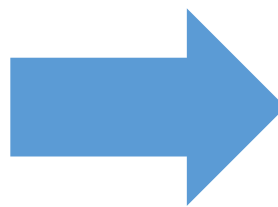


Our mission : Blue Carbon in Minamisanriku town

When "**isobake**" is resolved and the seaweed beds regenerate, they will become **a blue carbon resource**, a carbon sequestration and storage (negative emission). Blue carbon offsets represent an opportunity not only for environmental conservation, but also for the creation of **new local resources that can be traded for credits**.



"isobake" with Sea Urchins



The seaweed beds without Sea Urchins

Our Projects : Clover sea urchin that brings happiness

Sea urchins, the cause of "isoyake", are thinned out and stocking them on land. The land plant clover is fed as feed to produce high quality sea urchins.



Value

Negative emissions

- Restoration of seaweed beds
- Export of high quality sea urchins
- Recovery of fishery resources

add

Circular Economy

Circular Economy in Carbon Neutral

Economy

Environment

Resources (funds, people, technology)

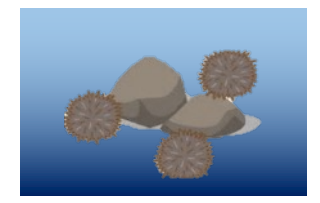
Visualization of energy and material flows

【NARIWAI】
Aquaculture
Smart Agriculture
Biomass Utilization

【 Negative emission 】
Blue Carbon
J-Credits

【Human Resource Development】
Start-up
Successor

Storage of sea urchins on land



Reduction of greenhouse gas emissions

Restoration of seaweed beds

Recycling of marine shells



Increase in the number of young people

Recycling

Biogas power generation

【Biogas power generation】
【 Renewable Energy 】

Efficient energy use

Functional food



Unused resources



Expansion of aquaculture

【Natural Environment】
Observation and protection

【Nigiwai】
Sightseeing
Migration
Interaction Population
Related Population

Outcomes (sustainable region, carbon neutral)

Our Goal in 2050

“Attractive community where natural environment and economy coexist”

「自然環境と経済が共存する魅力的な地域社会」

“Construction of a new industrial base for the next generation”

「次世代につなぐ新たな産業基盤の構築」

“Strengthen resilience through local production for local consumption of energy”

「エネルギーの地産地消によるレジリエンス強化」



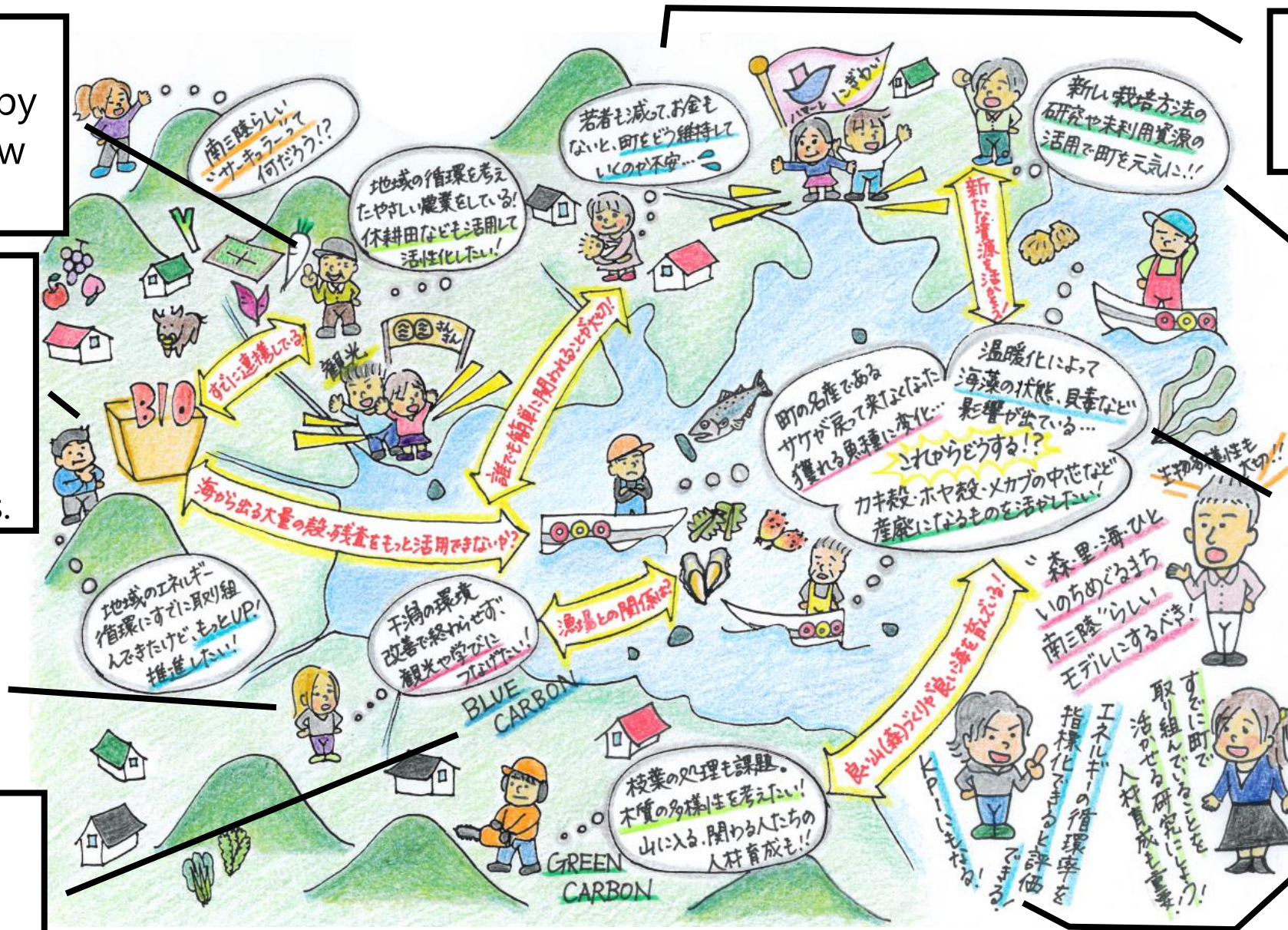
Desired image of the region

Revitalizing Communities by Utilizing Fallow Rice Fields

We want to increase energy production through the circulation of marine resources.

We want to foster tourism and learning at sea.

We want to achieve Blue Carbon.



We want a town where young people can live.

We want to make the most of our fishery resources.

We want to build new technologies to adapt to global warming.

We want to visualize decarbonization and resource recycling.