

# Study to make Iwate a pioneer of the wave power generation

3639 Watanabe Kanako、3531 Fugane Sou、3638 Yoshida Tatuya、3640 Watanabe Souma

## 〈Abstract〉

It is that the global warming is the serious problem in the current earth. Therefore I thought that an eco-friendly generation method was necessary to realize sustainable society. In particular, we focused on wave power generation. Wave power generation is the method to generate electricity mainly using the energy of the sea wave. It was difficult immediately, but, we concluded it has possibility to become the sustainable energy.

### ①The purpose of this study is global warming is progressing.

- The proportion of fossil energy in domestic primary energy supply in Japan is the highest among the major countries in the world.
  - If the concentration of carbon dioxide in the atmosphere continues to increase, by around 2100 the world's average ground temperature will rise by 3.7 degrees.
- So, The use of renewable energy is expected to reduce carbon dioxide emissions and create new industries.

### ②Iwate energy self-sufficiency rate.

It can be said that the amount of Iwate's renewable energy generation is high for the national average one digit.

	Power generation (million kw)	Percentage (%)
Self-sufficiency in Iwate	2573	27.9
(Renewable energy)	1740	18.9
Amount of lending from outside Iwate	6650	72.1
Total	9.223	100

### ③hypothesis

We think it can lead other regions and be a leader in solving energy problems. Therefore, a sustainable society can be realized.

#### ④What is wave power generation?

- The method to generate electricity using the energy of the sea wave

Merit

- Easy prospect of power generation
- There is no worry of exhaustion
- Since it is an island country, it is easy to introduce

Demerit

- There is a possibility of affecting living things and fisheries
- It is necessary to secure the strength of the facility
- I need maintenance
- Demonstration experiment is difficult

• The annual power generation by Japan wave energy is expected to be 19 TWh.

• It can be said that in Japan it is a developing power generation because the electricity is not priced.

• In Japan, based on 2,900 fishing ports and 1000 ports, we aim to balance wave and tidal power generation.

(tidal power=Seawater flow periodically occurring due to the fullness of the tide)

#### ⑤Why use the fishing port

• It is easy to carry when carrying parts and so on, because there are villages nearby.

• It's in the whole country.

• Because there are many factories nearby, there is a possibility that new employment may be born when maintaining and managing within that area.

• When installing small power stations side by side, it is easy to install and the installation environment does not change, so fluctuation of power generation amount is small even when installed in large quantity.

#### ⑥The influence on the environment and the fishery

• The wave moves very slowly, the receiving plate also moves slowly according to it, so you do not have to worry about the impact on the organism.



## ⑦Wave power station in Kuji

The wave power station in Kuji is Japan's only wave power station connected to the power grid.



- It was established in September 2016, about a year passes, it survives the rough seas of Tohoku in winter and it can be said that durability is sufficient.
- Currently it is under the management of the University of Tokyo because of the experimental stage, but if it becomes possible to maintain and manage locally, new employment is also expected.
- Currently installed inside the breakwater, but the next generation Unit 3 is expected to generate more power by installing it on the outside.

## ⑧location requirements

There are two location requirements of the wave power plant.

One is that infrastructure is maintained. The other is the aggressiveness of local people.

## ⑨Problems

However, the wave power generation has some Problems.

First, there is less quantity of generation than generation by the fossil fuel.

Seconds, I start practical use for approximately another ten years.

## ⑩Goal

The wave power generation will serve the supply for 10% in electricity demand in Japan in future. In addition, I contribute to restraint of the global warming.

### ⑪Our plan

We talk with people of the same generation about generation and want to interchange.

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Thank you !!