

A large white wind turbine is shown from a low angle against a clear blue sky. The turbine has three blades and a nacelle with the AIST logo on it. The text "Outline of Fukushima Renewable Energy Institute, AIST (FREA)" is overlaid on the right side of the image.

Outline of Fukushima Renewable Energy Institute, AIST (FREA)

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Missions

- to conduct the world's most advanced research on renewable energy.
- to create a new industry in the disaster area

Location, area

Koriyama, Fukushima

Budget

2.5 billion yen/y (FY2017)

Personnel

381 (Mar. 2018)



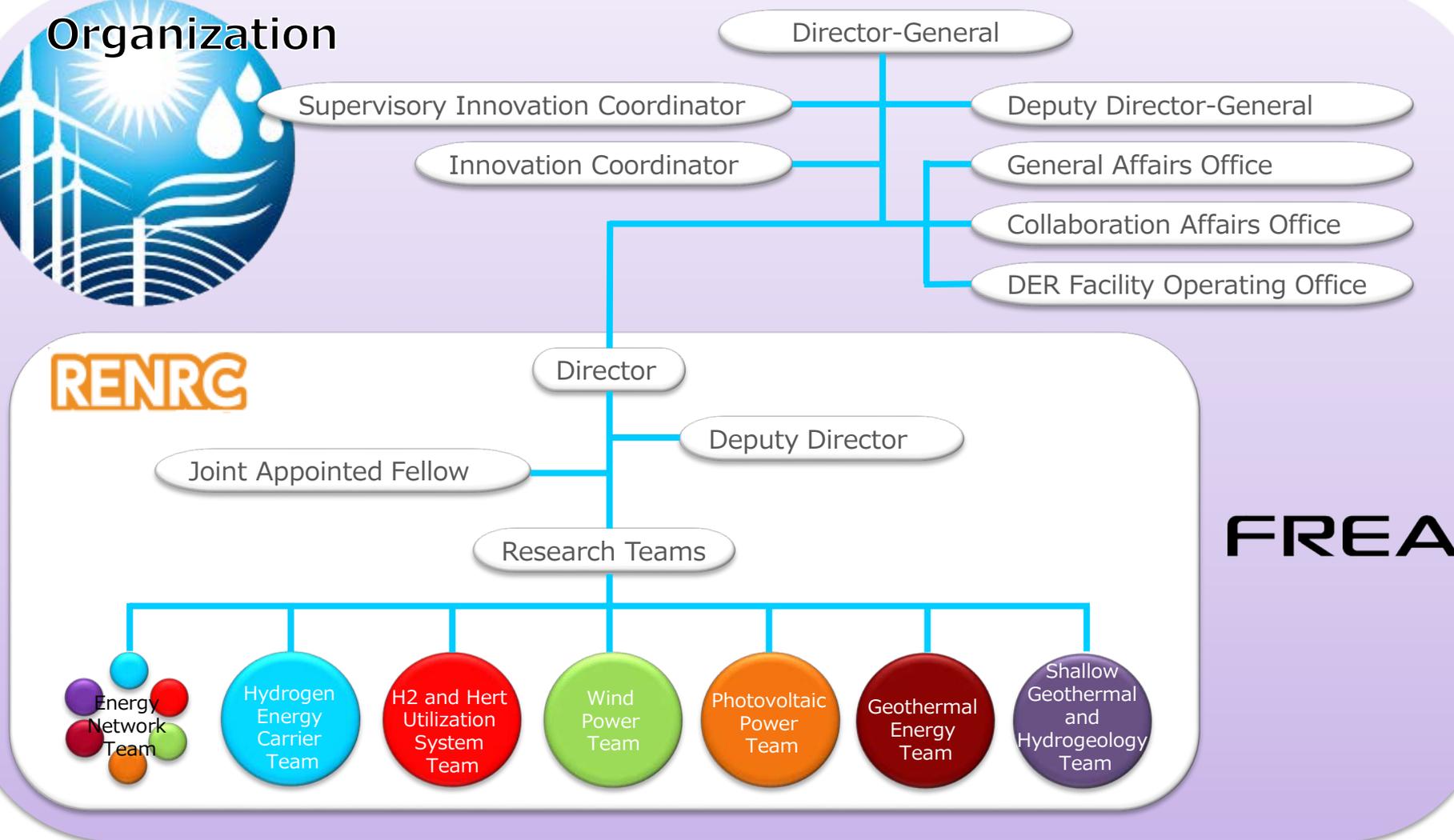
Aerial View of FREA



Organization



Organization



FREA

Research Subjects of FREA

- Renewable energy network
- Hydrogen carrier production / storage / application
- H2 and Heat Utilization System
- Next generation PV module development
- Wind power turbine control / monitoring
- Geothermal resources
- Ground-source heat pump

Technical support for the industrialization of
renewable energy in disaster areas

(**Fukushima, Miyagi, Iwate**)

Support for a total of **107** projects (**44**
companies) (FY2013-FY2017)

9 technologies have been commercialized
(as of Nov. 2017)

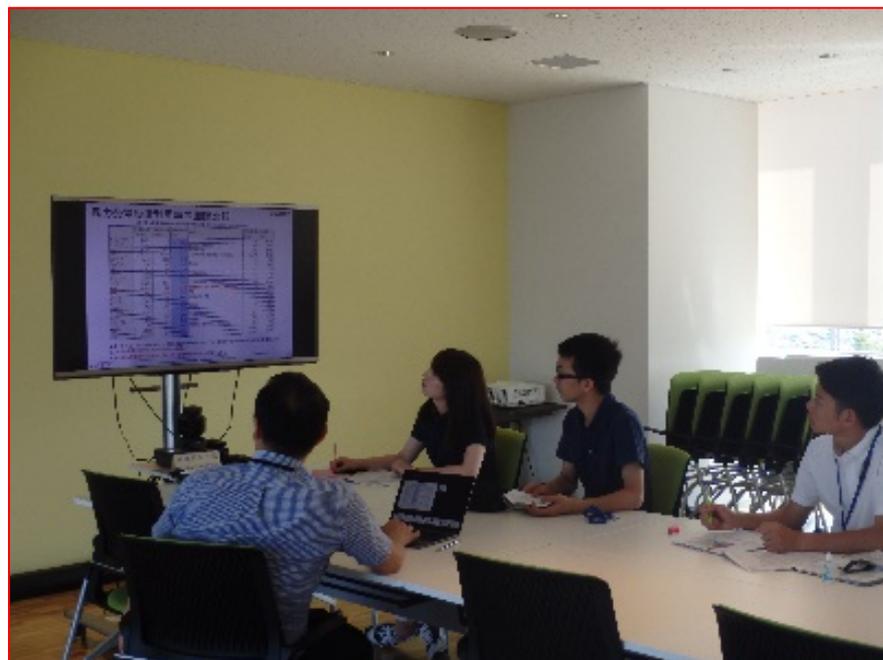


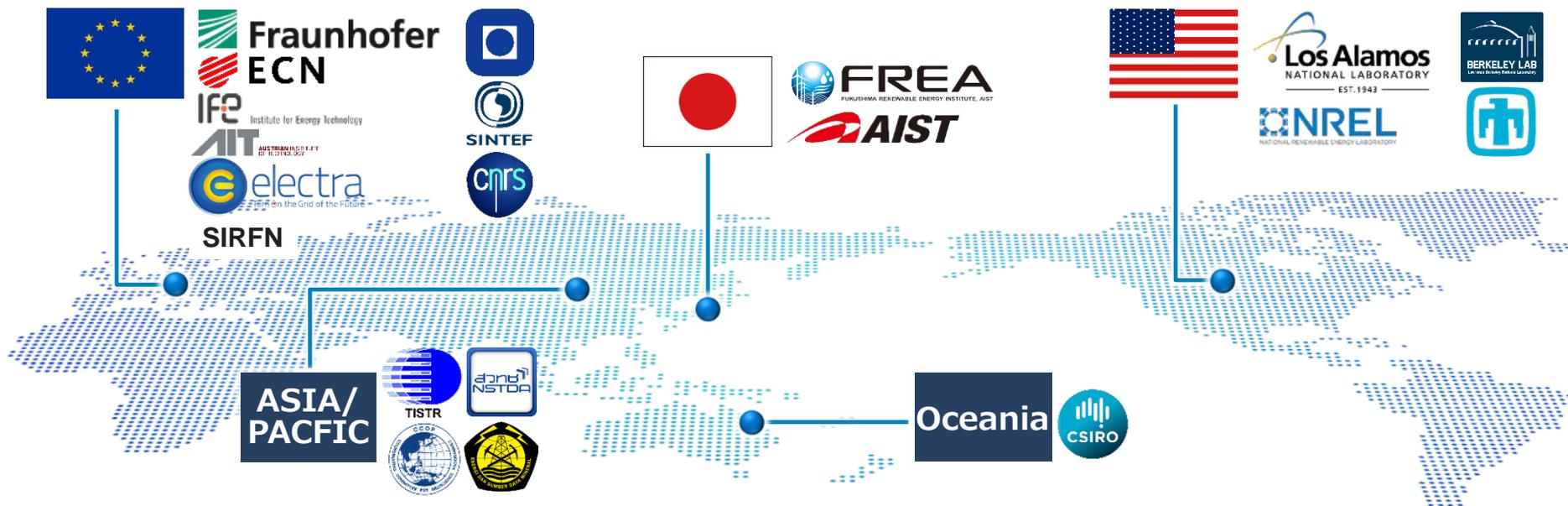
Human resource development in the field of renewable energy in FREA

Postdoctoral researcher
Graduate students
Technical trainee



On-the-job training (OJT) in FREA





Promoting the New Energy Society Concept: From Fukushima to the World

Expanded use of wind, solar and other forms of renewable energy. Leading-edge empirical research using one of the world's largest renewable energy-based hydrogen production facilities. The development of communities based on renewable energy and hydrogen... We are actively moving forward with these projects - with the government and private sectors united - to realize the Fukushima Plan for a New Energy Society.



Expanded introduction of renewable energy

Establish a new power transmission company to develop the power grid necessary for building a wind farm in the Abukuma mountain and coastal regions.



Model construction for realizing a hydrogen-based society

Hydrogen is a focus of attention as a next-generation source of clean energy. An ambitious project is now in progress in Fukushima: verification of leading-edge technologies required to produce hydrogen from renewable energy on a large scale, and to transport, store and use it. We plan to use the Fukushima-generated hydrogen during the 2020 Tokyo Olympics and Paralympics.

Producing hydrogen from renewable energy → Fuel cell vehicle (FCV) → 2020: Use of hydrogen at the Olympics and Paralympics

Green Energy Aizu

Green Energy Aizu supplies electricity generated by renewable energy and hydrogen to the local supply of electricity. The company is also promoting the development of hydrogen-based power generation facilities, thereby contributing to the realization of a society based on renewable energy.

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Hydroelectric Power Plants around Lake Inawashiro

Generating operation has been resumed at the Fukushima District Hydroelectric Power Plant, located in the Inawashiro area. In addition, the Fukushima District Hydroelectric Power Plant has been able to generate power again since the resumption of generating operation at the Fukushima District Hydroelectric Power Plant.

Tsuchiyu Onsen Binary Power Plant

A binary power generator with a maximum output of 100kW is being operated at the Tsuchiyu Onsen Binary Power Plant, located in the Tsuchiyu Onsen area. The Fukushima District Hydroelectric Power Plant has been able to generate power again since the resumption of generating operation at the Fukushima District Hydroelectric Power Plant.

Renewable Energy-based Small Hydrogen Station (within Koriyama City Office)

The Fukushima Renewable Energy Institute (FREA) is promoting the construction of a small hydrogen station in the Koriyama City Office. The station will be used for the production and use of hydrogen.

Shinchi Town

Smart community project in Shinchi Town, Fukushima. The project aims to realize a smart community powered by renewable energy and hydrogen.

Soma City

Smart community project in Soma City, Fukushima. The project aims to realize a smart community powered by renewable energy and hydrogen.

Namie Town

Smart community project in Namie Town, Fukushima. The project aims to realize a smart community powered by renewable energy and hydrogen.

Shin-Fukushima Substation

The Fukushima Renewable Energy Institute (FREA) is promoting the construction of a substation in the Shin-Fukushima area. The substation will be used for the transmission of electricity.

Naraha Town

Smart community project in Naraha Town, Fukushima. The project aims to realize a smart community powered by renewable energy and hydrogen.

Okutadami Hydroelectric Power Plant

The Fukushima Renewable Energy Institute (FREA) is promoting the construction of a hydroelectric power plant in the Okutadami area. The plant will be used for the generation of electricity.

Yanaizu Nishiyama Geothermal Power Plant

The Fukushima Renewable Energy Institute (FREA) is promoting the construction of a geothermal power plant in the Yanaizu Nishiyama area. The plant will be used for the generation of electricity.

Koriyama-Nunobiki-Hogen Wind Farm

The Fukushima Renewable Energy Institute (FREA) is promoting the construction of a wind farm in the Koriyama-Nunobiki-Hogen area. The farm will be used for the generation of electricity.

Fukushima Airport Mega Solar Power Plant

The Fukushima Renewable Energy Institute (FREA) is promoting the construction of a mega solar power plant at the Fukushima Airport. The plant will be used for the generation of electricity.

Solar-Sharing Power Plant "Tomato Land Iwaki"

The Fukushima Renewable Energy Institute (FREA) is promoting the construction of a solar-sharing power plant in the Iwaki area. The plant will be used for the generation of electricity.

Fukushima Floating Offshore Wind Farm

The Fukushima Renewable Energy Institute (FREA) is promoting the construction of a floating offshore wind farm in the Fukushima area. The farm will be used for the generation of electricity.

Fukushima Renewable Energy Institute (FREA), National Institute of Advanced Industrial Science & Technology (AIST)

The primary missions of the Fukushima Renewable Energy Institute (FREA) are: to promote research and development into renewable energy, which is seen to be the world's next energy source; to contribute to reconstruction of the region through developing clusters of new industries; and to be the only laboratory in Japan dedicated to renewable energy research. FREA focuses on research into new technologies that support the anticipated massive introduction of renewable energy, while developing related technologies in collaboration with local businesses. FREA opened one of the world's largest power electronics test facilities in 2016, which allows it to develop power conditioners and other power control devices with local electrical machinery manufacturers. In addition, it undertakes joint research with universities and so forth to foster capable personnel for the future.

Building "Smart Communities"

We are tackling the construction of "Smart Communities" designed to effectively use renewable energy and hydrogen locally. In FY2015, Abukuma-machi City completed the construction of a smart community powered by solar energy. Smart community projects are currently in progress in Soma City and the towns of Shinchi, Namie and Naraha - all in the coastal Hamadori region. The projects also aim to facilitate recovery of these municipalities.

- Municipalities implementing smart community projects

http://www.enecho.meti.go.jp/category/saving_and_new/fukushima_vision/pdf/fukushima_plan_en.pdf