Mitsui & Co. Environment Fund FY2018 Research Grants List

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Research on the symbiosis of offshore wind power and aquaculture

Grant applicant: Nagasaki University / Grant period: 3 years
Grant amount: ¥11.995 mn / Main research area: Nagasaki Pref.

Project outline

This research, which is to be conducted in remote islands off Nagasaki Prefecture, involves the study of the viability of an aquaculture and offshore wind energy symbiosis model utilizing the many isolated islands of Japan. By analyzing the cost versus profitability, the social and environmental impact, and the challenges involved, the degree of synergy of this model will be evaluated. If successful, this model is expected to help revitalize the local fishing industry through aquafarming, as well as the full-scale development of the offshore wind energy industry

Issue to be addressed

In Japan the power supply is 80% fossil fuel, the majority of which is imported from overseas. Also, while Japan has the world's sixth largest exclusive economic zone, and despite having excellent wind conditions its offshore areas are largely yet to be utilize, with most offshore wind power projects limited to areas near the coast. Meanwhile, despite an increase in demand for fisheries products as a result of global population growth, Japan's fisheries volume is now ¥1.6 trillion, approximately half the amount recorded in 1982 (approx. ¥3 trillion), and fisheries workers are aging and their numbers are declining. In response to these circumstances, this research will evaluate the viability of an offshore aquafarming and wind power symbiosis model.

Contribution to solving this social issue

- Research results will clarify the synergistic effects of an offshore aquafarming and wind power symbiosis project.
- The research will lead to the practical implementation of offshore wind power and aquaculture in remote islands, through a practical verification test of the symbiosis project, and confirmation of safety and viability
- As above, the symbiosis project will contribute to climate change measures (⇒ SDG7 and 13) through the expansion of renewable energy. It will also lead to the revitalization of Japan's fisheries through the development of offshore aquaculture (⇒SDG14).

Selection of rice varieties and cultivation methods for reducing rice contamination in Bangladesh, and approaches to the spread of such information

Grant applicant: University of Shizuoka / Grant period: 3 years
Grant amount: ¥10 mn / Main research area: Bangladesh

Project outline

In order to reduce the health risks associated with rice contamination in Bangladesh, this research, through field-based testing, will evaluate and select rice varieties which enable a reduction in heavy metals in rice grains without loss of production volumes or nutritional value, as well as considering and selecting the ideal cultivation management method. Additionally, a quantitative evaluation will be carried out on the degree to which the selected rice variety and cultivation management method can reduce health risk to the people of Bangladesh, thereby helping to address social issues currently faced by the country.

Social issue to be addressed

In Bangladesh, the use of water from rivers contaminated with arsenic contaminated ground water and industrial wastewater on agricultural lands is leading to the contamination of rice and causing health issues for the people of Bangladesh. While measures such as the placement of industrial wastewater processing devices and deep wells may be considered, the costs are extremely high, and they are not thought to be effective in small numbers. With this in mind, the research aims for consider rice varieties and cultivation management methods that are suitable to the local environment.

Contribution to solving this social issue

- Based on the results of the research, the rice varieties and cultivation methods found to be suited to each region will be communicated across all regions of Bangladesh.
- The actual implementation of cultivation management methods using rice varieties suited to each region will lead to the improvement of the health of the people of Bangladesh, as well as the safety of the food they eat.
- As above, this research will contribute to securing food safety (⇒SDG2). Also, ensuring food safety will help to ensure the healthy lives of the country's people (⇒SDG3).

Conserving rare species by assessing the risk of infection in an Asian biodiversity hotspot

Grant applicant: Hokkaido University / Grant period: 3 years
Grant amount: ¥7.5 mn / Main research area: Nepal

Project overview

This project will clarify the current situation and evaluate infection and extinction risk in regard to infectious diseases affecting rare species inhabiting Nepal, including tuberculosis, which is having a severe effect on Asian elephants and other species, and tick-borne infections which are expected to spread due to global warming. The results will be used to formulate a vision and action plan with the aim of preventing rare species from going extinct.

Social issue to be solved

Nepal has been designated as a biodiversity hotspot and is the habitat for a variety of wild flora and fauna. However, many of its rare species are in danger of becoming extinct, particularly large mammals. Up to now, evaluation of extinction risk has been based on the assumptions that the contributing factors would be destruction or disruption of habitats and overhunting or poaching. In recent years, it has come to light that populations are being thinned by infectious diseases, yet the risk of infection and extinction due to this has yet to be properly assessed. Therefore, this project will involve carrying out an infection and extinction risk assessment.

Contribution to solving this social issue

- Once the risk of infection and extinction to rare species in Nepal has been sufficiently assessed, a vision and action plan will be formulated with the aim of preventing them from going extinct. By expanding action based on this, the extinction of rare species can be avoided.
- Previously, infection risk was not considered when evaluating extinction risk. Going forward, the addition of this new perspective to risk management will lead to more effective biodiversity conservation.
- As stated above, this project will contribute to the conservation of biodiversity by preventing rare species from going extinct (⇒SDG15).

Assessing contributions to sustainable urban formation from the introduction of public allotments as a food source for low-income households

Grant applicant: Tokyo University / Grant period: 3 years
Grant amount: ¥9.5 mn / Main research areas: Tokyo, Yamanashi, Ibaraki

Project overview

This project evaluates trials of systems that provide fresh vegetables from public allotments used by the elderly and the like as a food source to supplement existing foodbanks. Specifically, it is evaluating the effects of foodbanks on reducing food waste and the possibility of turning vacant land into public allotments. It will also investigate ecosystems found in these allotments and survey public preferences. Additionally, by investigating and analyzing the improvements in nutrition in low-income households, increases in motivation among the elderly, health advancements, and the comprehensive effects on the community, this initiative will assess the multiple social and environmental effects and create a recommendation aimed at realizing sustainable urban formation.

Social issue to be solved

The number of low-income households is growing in accordance with increasing economic and social disparity and children within these households are unable to secure sufficient nutrition, while at the same time, no progress is being made on food waste. There is also a need in Japan to provide motivation for the retired elderly and make use of vacant land in urban areas. Therefore, this research aims to evaluate systems for providing food through public allotments in order to contribute to solutions for all the issues above.

Contribution to solving this social issue

- By assessing the multiple possibilities of using public allotments as a food source for foodbanks, this research will visualize the effects these initiatives have on society.
- Also, by trialing the creation of a platform linking allotments to low-income households, it will facilitate the implementation of such initiatives in society in the future
- This research will contribute to reducing food waste (⇒SDG12), and improving nutrition among poorer households (⇒SDG2). It will also contribute to sustainable urban formation by showing that vacant land in urban areas can be used effectively as public allotments (⇒SDG11).

Understanding the state of consensus formation regarding the use of coastal sea areas in Iwate prefecture and dividing sea areas by ecosystem

Grant applicant: Tokyo University / Grant period: 3 years
Grant amount: ¥10 mn / Main research area: Iwate Pref.

Project overview

As a step toward implementing a marine spatial plan, this research aims to understand the status of consensus formation regarding the use of sea areas in Iwate prefecture in light of considerations concerning the installation of offshore wind turbines in coastal areas. It will also compare and analyze the division of sea areas based on methods including scientific surveys of current seas areas in order to contribute to incorporating expert natural science perspectives into the realization of the marine spatial plan.

Social issue to be solved

Marine spatial plans are comprehensive plans for using sea areas that are formulated through discussions between stakeholders that use these areas and are an effective way of conserving seas and making the use of various marine resources sustainable. As of 2017, they had been introduced into 65 countries around the world. However, although they were referenced in Japan's Third Basic Plan on Ocean Policy, they have yet to be introduced into the country. As Japan has high hopes for offshore wind power generation, coordinating the various stakeholders that have interests regarding sea usage is a pressing issue. Therefore, this research will conduct research and analysis to aid the formulation of a marine spatial plan.

Contribution to solving this social issue

- This research will aid consensus formation regarding the sustainable and efficient use of marine resources by providing a reference when considering new uses for sea areas. It will also contribute to the introduction of a marine spatial plan for Japan based on local ecosystems.
- The implementation of this marine spatial plan will involve the introduction of offshore wind power turbines which may clash with fishing activities, marine conservation efforts, and the like. This research will contribute to this introduction while ensuring marine resources are appropriately protected.
- As stated above, the marine spatial plan will contribute to the sustainable use of marine resources (⇒SDG14), as well as raise the value of offshore wind power as a potential energy source (⇒SDG7).

Designing future energy systems by creating narrative scenarios using collective intelligence

Grant applicant: Yokohama National University / Grant period: 3 years
Grant amount: ¥7.5 mn / Main research area: Local governments in Japan

Project overview

This research aims to build an energy system that is desirable to society by developing a methodology for creating long-term energy scenarios using collective intelligence. Specifically, it will aim to leverage the diversity of the population to the utmost and raise understanding of energy issues by comparing a ‘narrative mode,’ which reflects a recognition of the situation and thinking that is in line with the sentiment and vision of people, with a ‘logical mode’ that reflects logic-based recognition and thinking. It will then propose a methodology for creating energy scenarios based on this ‘narrative mode.’ Workshops will be held in which the outcome of creating scenarios using the developed methodology will be made clear.

Social issue to be solved

When considering future energy systems there is a diverse range of aspects that need to be considered and great uncertainty about the future. These issues make it difficult to come up with a single correct answer. However, considering that energy is one of the foundations of society, it is important to clarify an answer that is desirable to society. Based on the idea that using the collective intelligence of a wide range of people will be an effective way to arrive at this answer, this research will trial the creation of energy scenarios based on ‘narrative mode’ in order to utilize this collective intelligence.

Contribution to solving this social issue

- This research will confirm that it is possible to formulate a methodology for creating energy scenarios based on ‘narrative mode’ and use this to reach an answer that is desirable to society.
- Reaching an answer that is desirable to society will reduce conflict between relavant stakeholders and establish an approach for realizing an ideal society more quickly.
- As stated above, this research will contribute to leading society toward desirable future energy systems (⇒SDG7). It will also mitigate climate change through an approach that will realize an ideal society more quickly (⇒SDG13).