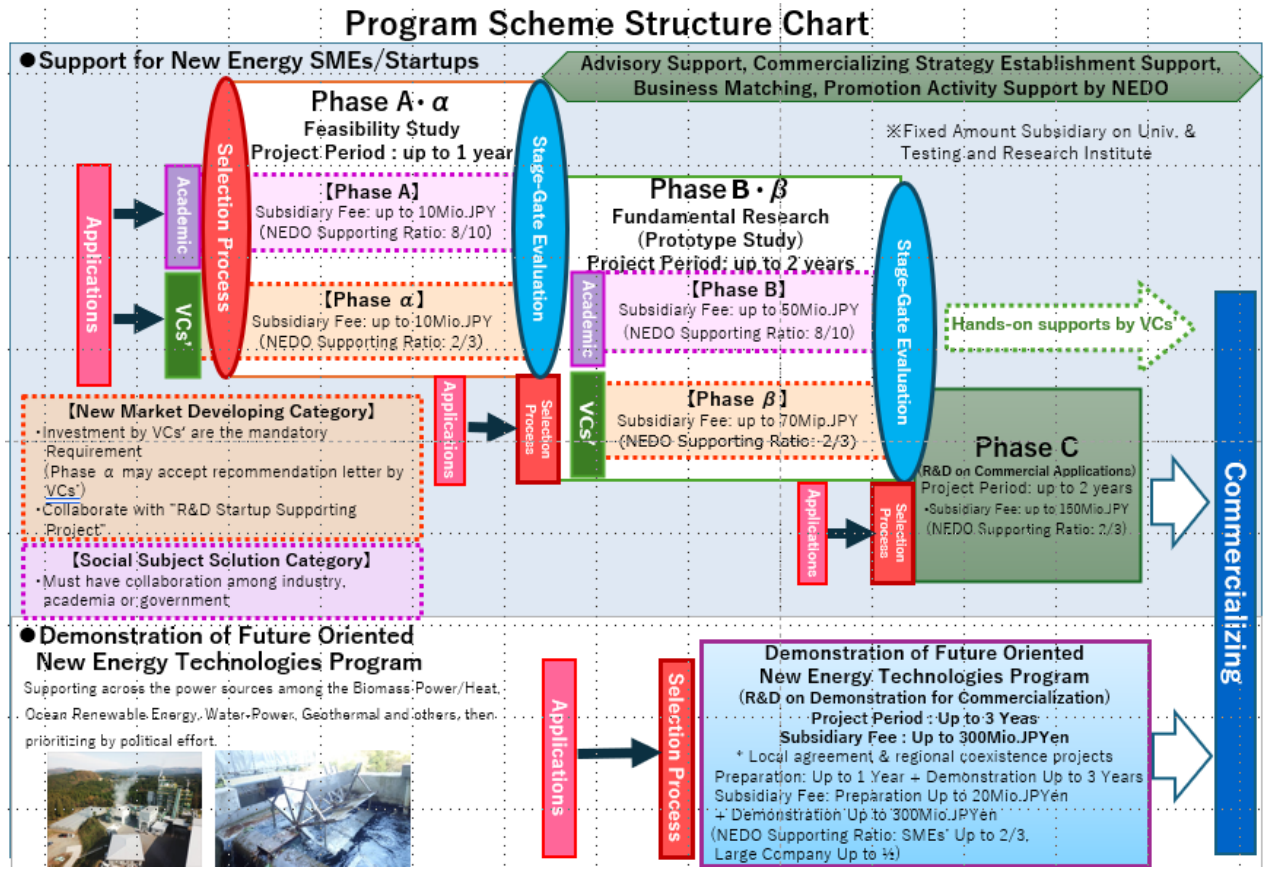
Research and Development on New Energy Technology for Discovering Technology Seeds and Commercializing Developed Technologies

Project Overview

With a focus on promoting the use of renewable energy sources, whose importance is indicated in “The Strategic Energy Plan” and “The New Growth Strategy”, this program provides R&D funding in two areas: 1. Support for new energy small and medium-sized enterprises (SMEs)/startups and 2. Demonstrations of far-sighted new energy technologies. By funding R&D and supporting the development of SMEs/startups under these two areas, NEDO seeks to diversify technology options and promote innovation in the new energy sector.



NEDO Project

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Contact Information

NEDO Renewable Energy Dept. Technology Incubation and Commercialization Section
https://www.nedo.go.jp/activities/CA_00251.html
E-mail: venture-pfg1@ml.nedo.go.jp

Technical Subjects

Technical Subjects

Technical Subjects will be updated on every year. Please confirm the latest subjects.

Development of new energy SMEs/startups

A. Solar Power Generation Category
B. Wind Power Generation Category
C. Small and Medium-sized Hydroelectric Energy Category
D. Biomass Energy Category
E. Renewable Energy Heat Category
F. Unused Energy Category
G. Hydrogen / Fuel Cells Category
H. Storage Battery Category
I. Renewable Energy Category
(Other Energy that do not belong A-H Category)

Demonstrations of Future Oriented new energy technologies

A. Wind Power Energy
B. Ocean Power Energy
C. Hydropower Energy
D. Geothermal Power Energy
E. Biomass Power Energy

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Support Scheme for New Energy SMEs/Startups

Scheme Structure	Development of new energy SMEs/startups					Demonstrations of Future Oriented new energy technologies
Target Companies	Japan Registered SMEs/Startup Companies (Phase A and B must have collaboration among industry, academia or government)					Japan Registered Companies
PHASE	Social Subject Solution Category		New Market Development Category		Phase C R&D on Commercial Applications	Demonstration of Future Oriented New Energy Technologies Program R&D on Demonstration for Commercialization
	Phase A Feasibility Study	Phase B Fundamental Research	Phase α Feasibility Study	Phase β Fundamental Research		
Applications are accepted from each phase	• Conduct the FS for studying the direction of technology development and practicalizing. • Must have collaboration among academia and others.	• Conduct the fundamental Technology R&D for practicalizing. • Must have collaboration among academia and others.	• Conduct the FS for studying the direction of technology development and practicalizing. • Must have acceptance of investment from VCs'	• Conduct the fundamental Technology R&D for practicalizing. • Must have investment from VCs'	• R&D and demonstration of practical application technologies for commercializing. • Practical use is required within 3 Years after the project finished.	• Conduct the demonstration progress for clarifying appointed tasks on mass introduction of renewable energy. • Practical use is required within 1 Year after the project finished.
Subject Thema on R&D	Required	Required	Not Required	Not Required	Not Required	Required
Supporting Ratio	Up to 8/10	Up to 8/10	Up to 2/3	Up to 2/3	Up to 2/3	Large Companies: Up to 1/2 SMEs up to 2/3
Upper Limit of Subsidary Amount/Case	10Mio.JPYen/Case	50Mio.JPYen/Case	10Mio.JPYen/Case	70Mio.JPYen/Case	150Mio.JPYen/Case	Preparation: 20Mio.JPYen + Demonstration: 300Mio.JPYen/Case
Project Period	Up to 1 Year	Up to 2 Years	Up to 1 Year	Up to 2 Years	Up to 2 Years	Preparation: Up to 1 Year Demonstration: Up to 3 Years

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Case Study - VERTEX Co.,Ltd.

R&D Theme: Development for water cooling heat pump with heat balance control system and studying of high efficiency and low cost

Adoption Year: FY2018 Supporting project of New Energy Technology Innovation for SMEs/Startups

Project Period: August 16, 2018 – March 20, 2021

Project Overview:

[Contents]

① Developing the newly established idea “water cooling heat pump with heat balance control” system by refining and unitization of the developed heat balance control system technology at Phase C

② Proofing the return of investment within 10 years by implementing the downsized “underground heating and cooling system” to the facility, which is improved the entire heat efficiency on the system by combining with the underground heat exchange system

[Background]

During the overcoming to the obstacles on the spreading of geothermal usage, i.e., “initial cost is expensive”, we have recognized further subject that is “the system efficiency does not sufficient”

[Objectives/Ripple Effects]

Comparing with the air-cooled air conditioning system, when the return of investment period will be within 10 years regardless the region, this system may be implemented at the metropolitan area and we will be able to expect the energy saving, CO2 reducing and improving the daytime energy suppling gap

[Commercialization]

Sales scheme is “B to B”, which consider the general construction company the target customers

Proposer: VERTEX Co.,Ltd.

Other Organization

Eco-Planner Co.,Ltd.

- Responsible to develop the prototype model of unfreeze heat exchange system development, which is the core factor on this application, establish the specification of water cooling heat pump with heat balance control system, and entire system designin

University of Fukui

- Responsible to researching of unfreeze heat exchange system, Data collecting of demonstration system, and merit analysis on thermal conductivity and heat balance control on underground

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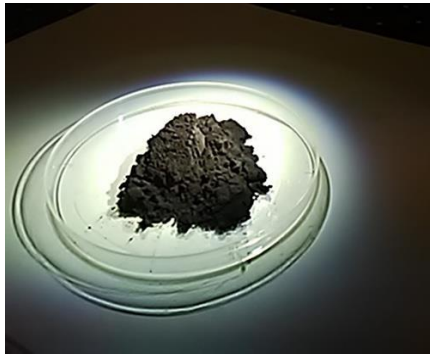
Case Study – TECONE Co.,Ltd.

R&D Theme: Fundamental research and development of silicon-based anode materials via original pre-dope method
Adoption Year: FY2021 Phase B
Project Period: August 20, 2021 – July 31, 2023
Project Overview:
[Contents]
Development of Lithium Ion Battery (LIB) anode material that can achieve both high capacity and high initial efficiency
[Background]
Though the silicon monoxide is high-capacity anode material, due to the low initial efficiency and upper limit of adding amount, it cannot adapt to further capacity increasing.
[Objectives/Ripple Effects]
Contributing to higher LIB capacity by Improving the initial efficiency
[Commercialization]
As a silicon-based anode material manufacturer, selling the anode material to the battery manufacturers


Product Image

Proposer: TECH-ONE Co.,Ltd.
Other Organization
- Shinshu University (Product Design)
- Japan Advanced Institute of Science and Technology (Battery Performance Evaluation Technology)
- Industrial Research Institute of Ishikawa (Powder Analysis Technology for products)

Eco-Planner Co.,Ltd.

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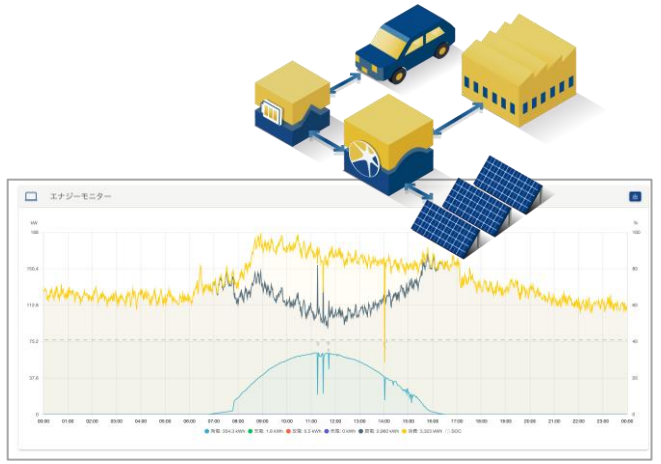
Case Study – GIRASOL ENERGY Inc.

R&D Theme: DX System Practical Development and Demonstration for Solar Power Generation Performance Recovering
Adoption Year: FY2021 Phase C
Project Period: September 10, 2021 – October 31, 2023
Project Overview:
[Contents]
Starting from IoT technologies for evaluating and analyzing the power generation performance of solar power plants, this project advanced the accumulated IoT and AI technologies to develop and practically implement an Energy Management System (EMS). The system enables integrated operation and control of power generation facilities and energy resources as a whole.
[Background]
As renewable energy is increasingly positioned as a main power source, the introduction of DX solutions such as EMS, which enhance overall operations based on data, has become indispensable for the sustainable creation of value from solar power generation.
[Objectives/Ripple Effects]
This technology is utilized for the control of electric power resources, including battery storage systems, as well as for aggregation-based operation that combines multiple facilities. As an EMS named “J-EMS,” which supports flexible energy operations in anticipation of electricity markets, it is currently being adopted primarily at solar power plants, battery energy storage facilities, and EV operation sites.



Proposer: GIRASOL ENERGY Inc.
Joint Research Organization
- The University of Tokyo
Demonstration Field Partner
- Yamanashi Pref. Corporate Bureau (Nesrad)
- Fukushima Electric Power
Advisor/Cooperation
- Photovoltaic Power Generation Technology Research Association
- PVSQ Management

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Case Study – BIO-ENERGY CORPORATION

R&D Theme: R&D for Integrated Liquid Biofuel Manufacturing System via Enzymatic Method
Adoption Year: FY2021 Phase C
Project Period: October 1, 2021 – March 20, 2023
Project Overview:
[Contents]

- Regarding the catalyst for converting oils and fats into renewable fuel, we have established the system for producing high-purity biofuel in one step with innovating into inexpensive biocatalysts (disposable) that do not require complicated separation and purification process.
  The catalyst used in this system is an enzyme that exhibits superior enzymatic activity, such as heat resistance and organic solvent resistance, and is also compatible with crude palm oils including acid oil and palm oil mill effluent (POME).
- Enzyme reactions take a long time in chemical reactions, but for biofuels, which aim to reduce the environmental impact, avoiding excessive energy load is essential. Therefore, we developed the "WW Mixer®," which combines high mixing performance with low power consumption.

[Developed Product/Technical Details]

- The centrifugal force of the rotating pipe lifts the liquid with a high specific gravity from the bottom of the tank. The liquid discharged by centrifugal force collides with the fixed plate in the tank and its own weight promotes dispersion (0.1～0.25kW/㎥).
  There are no unnecessary baffle structure, and it means very little by-product adhesion.

[Advantages to the Existing Technologies]

- While maintaining mixing performance, the required agitation power per unit volume can be significantly reduced.

Proposer: BIO-ENERGY CORPORATION
Other R&D Facility
- Kansai Chemical Engineering Co., Ltd.

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Case Study - LEBO ROBOTICS Co.,Ltd.

R&D Theme: Demonstration and completion of a robot that remotely repairs the large-scale wind power generator turbines
Adoption Year: FY2021 Phase C
Project Period: October 7, 2021 – March 31, 2024
Project Overview:
[Contents]
The experimental research into a robot that can remotely repair the blades of large-scale wind power generation turbines, with the aim of completing a commercial model.
[Background]
Through free thinking and ingenuity, we aim to create something that has not been seen before, and contributing to the popularizing of renewable energy. Under this circumstance, large-scale wind power generator turbine blades are difficulty on maintenance because they are located in high-up location.
[Objectives/Ripple Effects]
Developing a robot that can be remotely controlled from the ground, and through demonstration research, we are aiming to complete a commercial model.
[Commercialization]
A commercial model of the blade repairing robot will be completed by 2023 July.
Our business model with this service aims to Japan domestic, US and European markets.

Proposer: LEBO ROBOTICS Co.,Ltd.
Other Organization
Hirosaki University
Seikei University
- Responsible to develop the Automatic Control, especially optimizing the repair tool motion control and mechanical functions.
Tokyo Metropolitan Industrial Technology Research Institute
- Responsible to develop automatic control function. Especially, image processing, blade curve measurement, machine learning, linking to the repairing process and reducing work time.

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Case Study – MITSUMINE Industry Co.,Ltd.

R&D Theme: Development of a Rapid Pyrolysis Device that Efficiently Produces Oil from Biomass such as Waste Mushroom Beds and Agricultural Residues

Adoption Year: FY2024 Phase A

Project Period: October 7, 2024 – August 31, 2025

Project Overview:

[Contents]

Verifying the necessary elemental technologies, such as a small reactor, to efficiently produce low-water content oil through rapid pyrolysis, and clarify the optimal operating values, leading to the development of a highly efficient, small-scale rapid pyrolysis device.

[Background]

Agricultural residues such as waste mushroom beds and waste-based biomass have high disposal costs, and although they are used for composting, much of the compost ends up being surplus. Furthermore, due to the characteristics of this biomass, such as small distribution, seasonality, and high moisture content, its use as a fuel has not progressed, and its effective utilization is an issue for the regions where it is emitted.

[Objectives/Ripple Effects]

Low-moisture oil can be produced from biomass other than wood, and expanding the use of biomass as fuel by developing a small device that can be used on-site.

In addition to waste mushroom beds, it can also be used to efficiently co-process waste plastics with a wide range of biomass, such as livestock waste, to produce low-moisture oil.

[Commercialization]

Though main target is emissions up to about 30t/day, based on market research results and taking into account the profitability of the companies that will be introducing the equipment, the price range and lineup will be considered comprehensively.

Proposer: MITSUMINE Industry Co.,Ltd.
Other Organization
Gunma Industrial Technology Center
- Responsible measuring, analyzing and evaluating for the products and the energy balance studying during flash pyrolysis.
- Confirming the produced char and gas can be used as a heat source for pyrolysis and examine the possibility of GX.

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Case Study – PXP CORPORATION

R&D Theme: Development of High Durability Lightweight Solar Panel for enable the low-cost Solar Power Generation at Facility-Based Farming

Adoption Year: FY2024 Phase C

Project Period: March 3, 2025 – March 31, 2027

Project Overview:

[Overviews]

- Developing the new design lightweight Solar Panel, which enable the low-cost solar power generation at facility-based farming.
- As the detail, developing the device that has high durability for temperature and humidity and developing the easy installing/removing and daylight rate adjustable vertical type lightweight solar panel.

[Backgrounds]

- Lack of the suitable locations for installing solar panels.
- Although there are high potential solar power generation on facility-based farming, it has not been spread enough due to the concerns on costs, legal restrictions and impacts to the harvest.
- There are economical rationality on facility-based farming solar power generation, such as, implementation costs, semi-shade agricultural products and power generation covers facility air-conditioning.

[Objectives / Ripple Effects]

- The installation cost can be reduced significantly.
- High economic effort by self consumption of generated power.
- Leading to the spread of agricultural solar power generation.
- 5 years after the NEDO project ends, the cumulative installed capacity is expected to be 191MW, with 476kt CO2 emission reduction.

Proposer: PXP Corporation

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Declaration Form for Interest on This Project

Submission of the Declaration Form for Interest on this project

Through the year, the “Declaration Form for Interest on this project” can be submitted to NEDO from the companies who has interest to this project. NEDO will utilize the submitted form as a reference document on establishing technology subjects on public call. For the companies who has been considering to send application to this project, please download this format and fill in to the necessary subjects, then send to NEDO via e-mail. Transmitting via post mail or Fax are not accepted.

The submitted form and contained information is managed appropriately and utilized only for the studying of public call subjects.

Please note, the submission of this form is not a mandatory requirement on application to the public call. However, if the company has not submitted this form, it may result that the preparing technical subject may not be established as concerned subject.

Link to the format : https://www.nedo.go.jp/content/100895333.pptx

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