Overview of the NF-DeepStar Joint R&D program

日本財団ーDeepStar連携技術開発助成プログラム概要

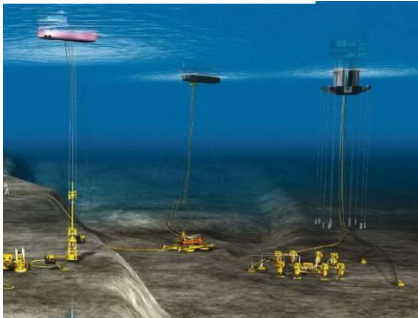**Nagayuki Suzuki**

The Nippon Foundation

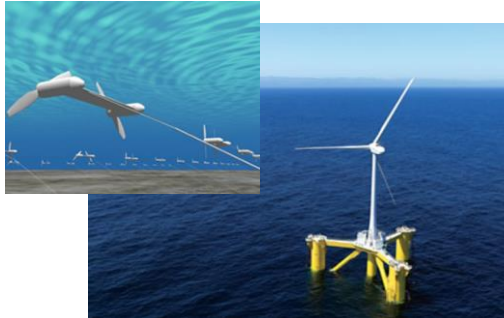日本財団　海洋事業部　鈴木 長之

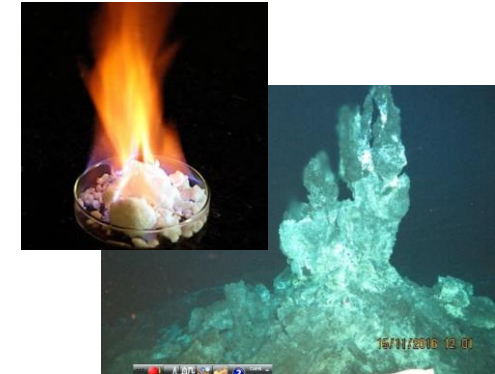# Background of Ocean Innovation Consortium

Offshore Energy Resources

Offshore Oil & Gas

Offshore Renewable Energy

Unconventional Resources

Capacity building of Japanese offshore engineers is indispensable to deal with the future market from mid- and long-term perspective .

The Nippon Foundation

May 2014

Policy recommendation on HR in the offshore sector

- Encourage students to be interested in Offshore sectors
- Establish curriculum based on industries' needs
- Give students chances to learn offshore engineering in actual fields

Japanese Government

July 2015 Speech by Prime Minister Shinzo Abe (Grand Opening Ceremony for Special Events in Commemoration of the 20th Marine Day)

" In order to push forward **with cultivating engineers to develop marine resources** as an "all Japan" effort, we will institute .. **a consortium** made by government, industry, and academia."
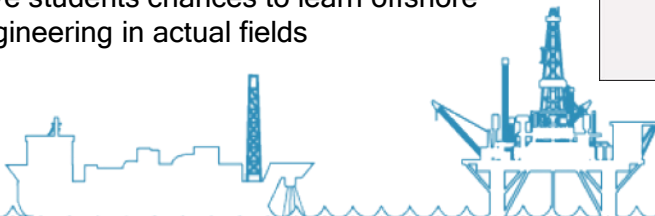
Human Resource (HR) Development

To nurture HR for next generation Ocean development

The Nippon Foundation Ocean Innovation Consortium

Technological Innovation

To develop new technologies that will drive the future offshore Industry

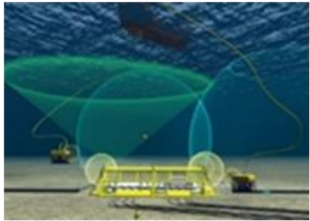**Contribute to the development of Offshore industries around the world**

Overseas Cooperation

UK

- ☐ **Japan – Scotland Joint R&D Program**
  (Signed MOU with Scottish Enterprise)
- ☐ **Summer School** for university students
  (@Robert Gordon Univ.)
- ☐ Recurrent seminar for young engineers
  (Inviting lecturers from SeaRoc, etc)

US

- ☐ **NF - DeepStar Joint R&D Program**
  (Signed MOU with DeepStar)
- ☐ **Summer School** for university students
  (@Texas A&M Univ.)
- ☐ Recurrent seminar for young engineers
  (Inviting lecturers from ABS etc.)

Netherland

- ☐ **Summer School** for university students
  (Signed MOU with DOB Academy and Delft Delft
  University of Technology)
- ☐ Recurrent seminar for young engineers
  (Inviting lecturers from DOB Academy, etc)

Norway

- ☐ **Japan – Norway Joint R&D Program**
  (Signed MOU with GCE NODE and NORCE)
- ☐ **Summer School** for university students
  (@Norwegian University of Science and
  Technology)
- ☐ Internship for university students (@Equinor、
  SINTEF OCEAN)

NF - DeepStar Joint R&D Program

- Signed MOU for R&D between NF and DeepStar (May 1st, 2018)
- Conduct R&D through collaboration between Japanese companies and major global energy oil companies (supermajors, etc.)
  - Budget : 10 million US$
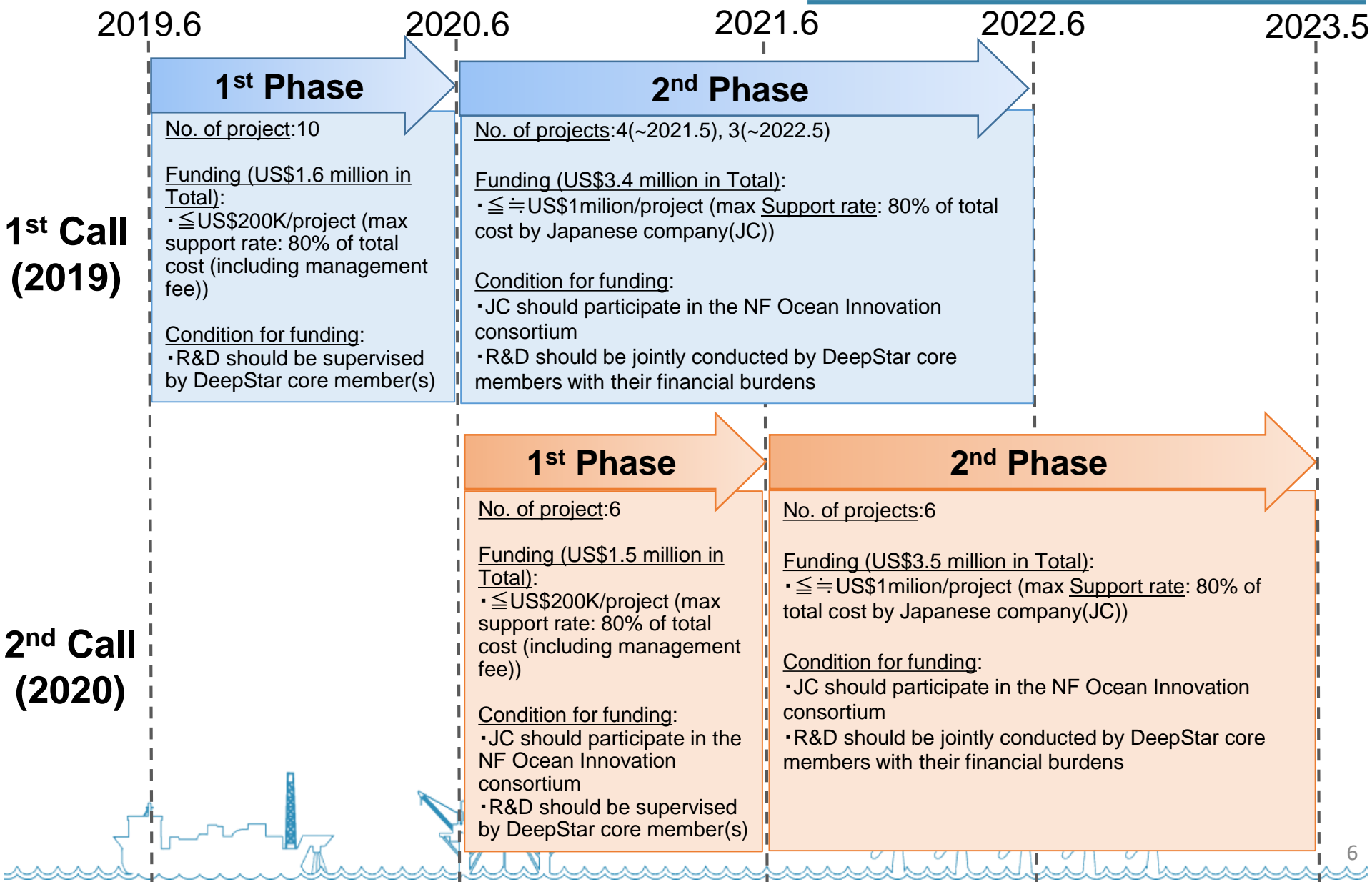 - Term : 2018～2023

R&D Project

Support finance

Joint

Japanese Companies, Univ.,etc.

Oil companies based in Houston

Chevron
equinor
Shell
BR PETROBRAS
JX石油開発
OXY
ExxonMobil
TotalEnergies

MOU Signing (May 1st, 2018) in Houston

Terms & Conditions of NF - DeepStar Joint R&D Program

2019.6   **2020.6**   **2021.6**   **2022.6**   **2023.5**

1st Call (2019)

1st Phase

No. of project:10

Funding (US$1.6 million in Total):
・≦US$200K/project (max support rate: 80% of total cost (including management fee))

Condition for funding:
・R&D should be supervised by DeepStar core member(s)

2nd Phase

No. of projects:4(~2021.5), 3(~2022.5)

Funding (US$3.4 million in Total):
・≦≒US$1milion/project (max Support rate: 80% of total cost by Japanese company(JC))

Condition for funding:
・JC should participate in the NF Ocean Innovation consortium
・R&D should be jointly conducted by DeepStar core members with their financial burdens

2nd Call (2020)

1st Phase

No. of project:6

Funding (US$1.5 million in Total):
・≦US$200K/project (max support rate: 80% of total cost (including management fee))

Condition for funding:
・JC should participate in the NF Ocean Innovation consortium
・R&D should be supervised by DeepStar core member(s)

2nd Phase

No. of projects:6

Funding (US$3.5 million in Total):
・≦≒US$1milion/project (max Support rate: 80% of total cost by Japanese company(JC))

Condition for funding:
・JC should participate in the NF Ocean Innovation consortium
・R&D should be jointly conducted by DeepStar core members with their financial burdens

NF – DeepStar Joint R&D Program
ongoing projects

1st Call (2019～)

Projects	Japanese companies	DeepStar members
Subsea Omni Directional Optical Wi-Fi System	SHIMADZU CORPORATION	TotalEnergies Chevron ExxonMobil Shell
Acid Gas Removal (AGR) and Re-injection Project	JGC CORPORATION	Petrobras Shell Chevron JX
nanoActive Enhanced Flowback Technology (EFT) for Offshore Application	Nissan Chemical Corporation	Chevron

2nd Call (2020～)

Projects	Japanese companies	DeepStar members
Smart Dissolvable Plugged Nozzle Assemblies (DPNAs) to be Installed on Limited Entry Liners with Tracer Release Capability for Extended Reach Deviated Wells	Daido Steel Co., Ltd.	Shell Chevron
Establishment of cost effective monitoring method for HPHT reservoir and downhole by using P-T sensor equipped flowable ball	NAGANO KEIKI CO., LTD.	Chevron Shell
Flow-Induced Vibration Predicting Method Study for Subsea Flowlines/Risers	Mitsubishi Heavy Industries, Ltd.	Chevron TotalEnergies
Standardization of Inspection to Enable Digital Twin	Mitsubishi Heavy Industries, Ltd.	Shell OXY Chevron ExxonMobil
Reducing operational and capital risks through unified FPSO process & turbomachinery automation solution development	Yokogawa Electric Corporation	ExxonMobil Chevron
Prevention and Remediation of Asphaltene Deposition and Hydrate Formation at Field Conditions - Assessment and Modeling	Yokogawa Electric Corporation	Chevron Petrobras ExxonMobil JX

Next Program

Background

Japan

- **The government declared to realize carbon neutrality by 2050 (Oct 26th, 2020)**

https://www.kantei.go.jp/

The United States of America

- **President Biden decided to rejoin the Paris agreement (Jan 20th, 2021)**

- **To seek for a "net-zero emissions economy" by no later than 2050 (Nov 1st, 2021)**

https://www.cnn.co.jp/usa/35162464.html

World

- **Each country confirmed that the temperature rise due to greenhouse gases will aim by the rise of 1.5 degrees Celsius compared to the temperature level of the pre-industrial era as the outcome of the COP 26 (Nov 13th, 2021)**
- **This is lower than the temperature rise of 2 degrees Celsius of the Paris Agreement**

UN CLIMATE CHANGE CONFERENCE UK 2021

IN PARTNERSHIP WITH ITALY

https://ukcop26.org/

9

NF - DeepStar new pillar

Japanese companies

- **Technology**

DeepStar

- **Abundant experience**
- **Knowledge**   · **Testing fields**

The current pillar of the DeepStar scope
- Subsea Systems Engineering
- Flow Assurance
- Floating Systems & METOcean
- Drilling, Completions & Interventions

Global Trend

The new pillar of NF - DeepStar joint R&D

· **Green technology**

i.e. de-carbonization, renewable energy, green house gas reduction, marine pollution prevention, and etc.

（＋ · Safety improvement）

Innovating new green technology and support the dynamic change of the deepwater E&P through The Nippon Foundation – DeepStar Framework

Next NF - DeepStar Joint R&D Program

- **Newly sign MoU** for R&D between NF and DeepStar today (December 6th, 2021)
- Conduct R&D through collaboration between Japanese companies and DeepStar operators
  - Budget : 10 million US$
  - Term : Dec 2021 ～ Apr 2026

Themes for next Program

1. Geothermal generation by using high temperature in preserver (renewable energy)

2. Wind power/Ocean current power generation to supply offshore oil & gas production facilities (renewable energy)

3. Cost reduction technology for flammable gas removal and re injection at production facilities (global warming)

4. Establishment of oil spill drift forecast simulation method by using local ocean current monitoring by aerial drone (marine environment)

5. Hydrogen related technologies (global warming)

6. Safety related techs including NUF (normally unattended facilities) and robotics (the safety of the working environment)

7. Water treatment related technologies (marine environment)