Introduction of NEDO New Delhi Activities

September 18th 2023

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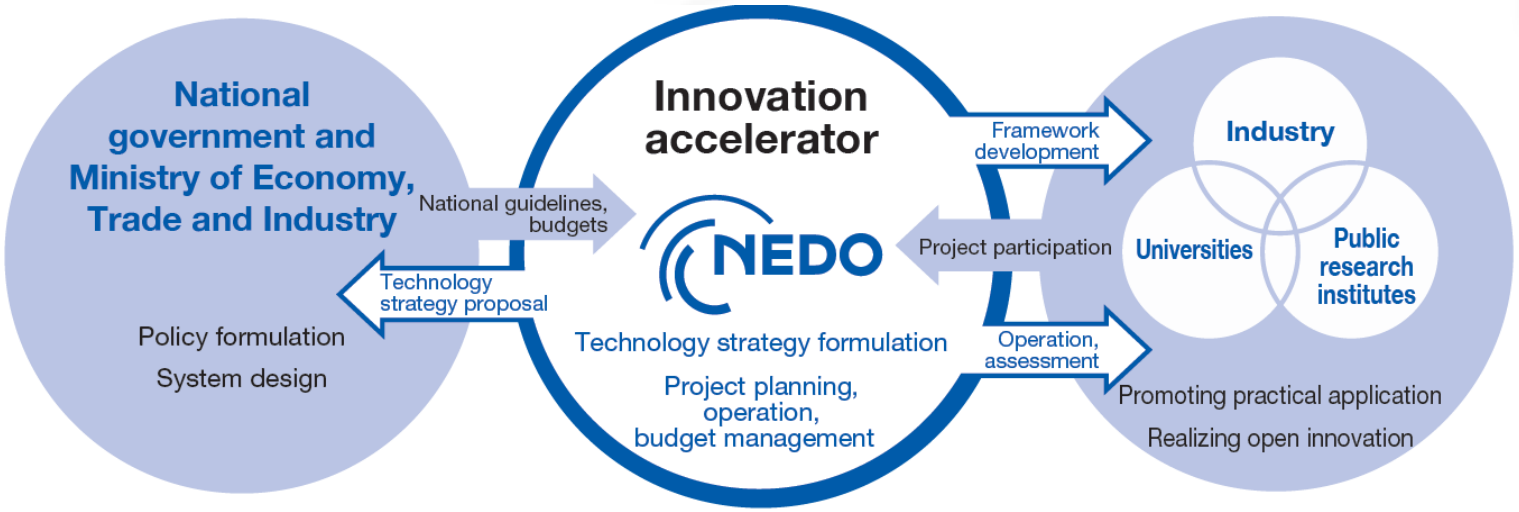
NEDO New Delhi Office

Overview of NEDO
（New Energy and Industrial Technology Development Organization, under METI）

Positioning of NEDO

- In its role as an **innovation accelerator**, NEDO formulates project plans and establishes project implementation frameworks by combining the capabilities of industry, academia, and government, including public solicitations of project participants.
- NEDO carries out research and development projects and set targets based on changes in social conditions in order to realize maximum results.

Head Office:	Kawasaki City, Japan		
Personnel:	1,256 (as of 1st April,2021)		
Budget:	Approx.$1.28 billion (2022FY)	* $=122 yen	
Fund:	Green Innovation	$16.39	billion
	Semiconductor	$5.06	billion
	Post 5G	$2.54	billion
	Economic Security	$1.02	billion
	Moonshot	$207	million



6 Overseas Branch Offices

NEDO's Core Technologies

Renewables

Energy Conservation

Electronics / ICT

Materials/Nanotech

Hydrogen /Battery

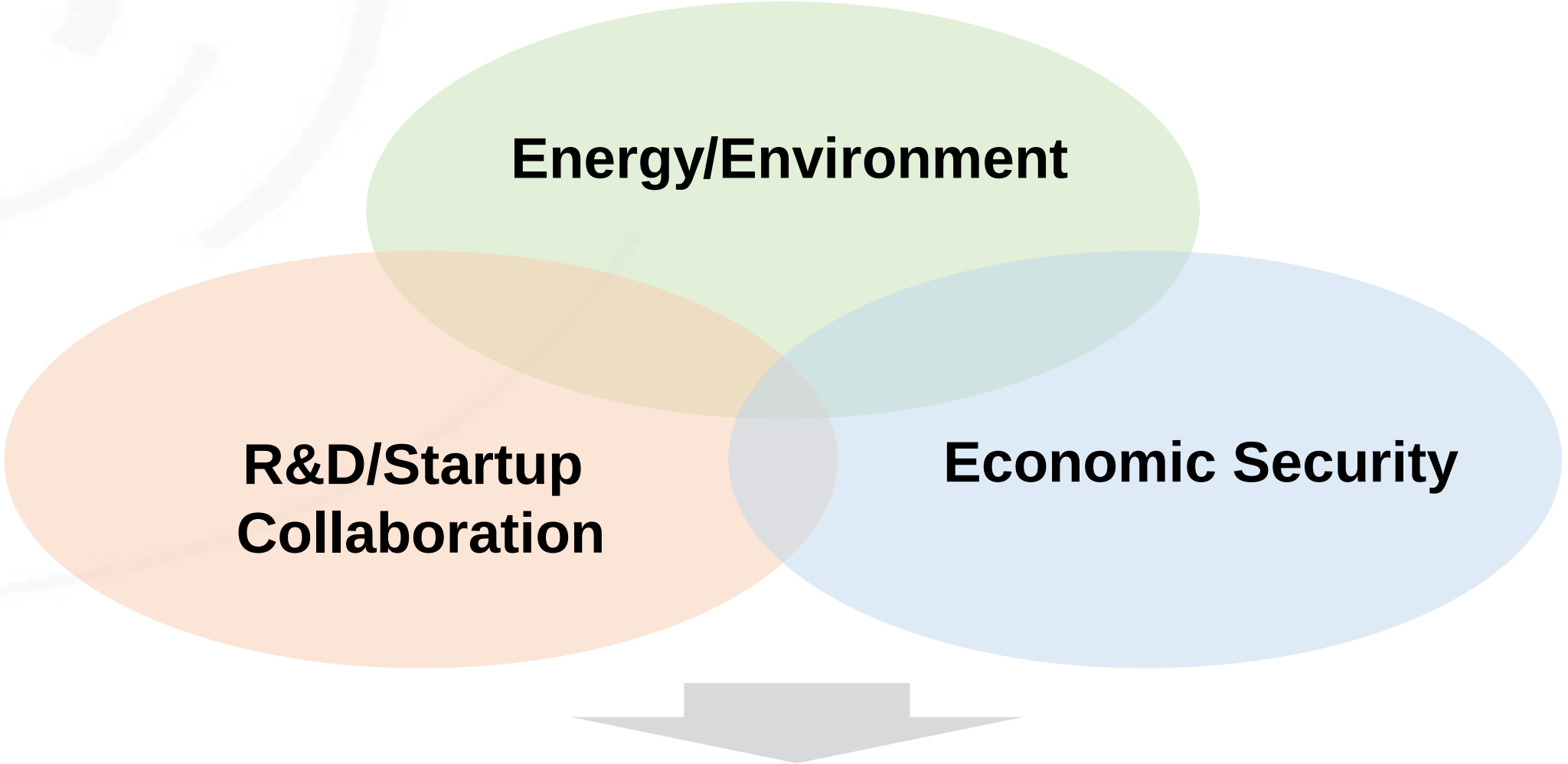
Water Treatment

Smart Community

Environment/ Next Generation Thermal Power/CCUS

Robotics/AI

NEDO India's Main Activities



Promoting further India-Japan Collaborations

R&D / Startup Collaboration

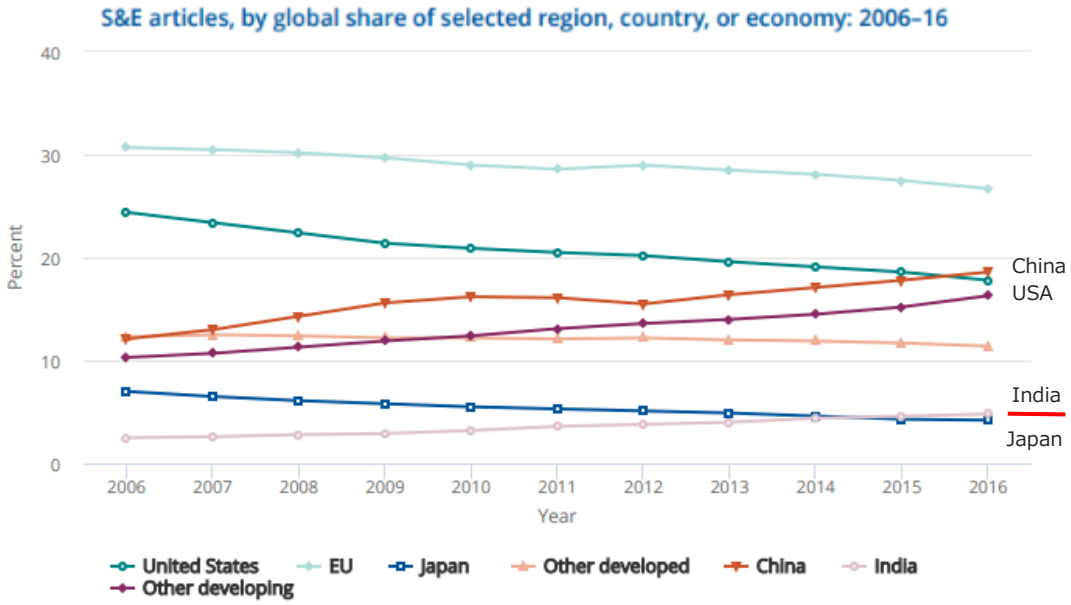
India's Science & Technology Level has been increasing

- **<u>The importance of India's papers in the field of S&T has increased</u>**.

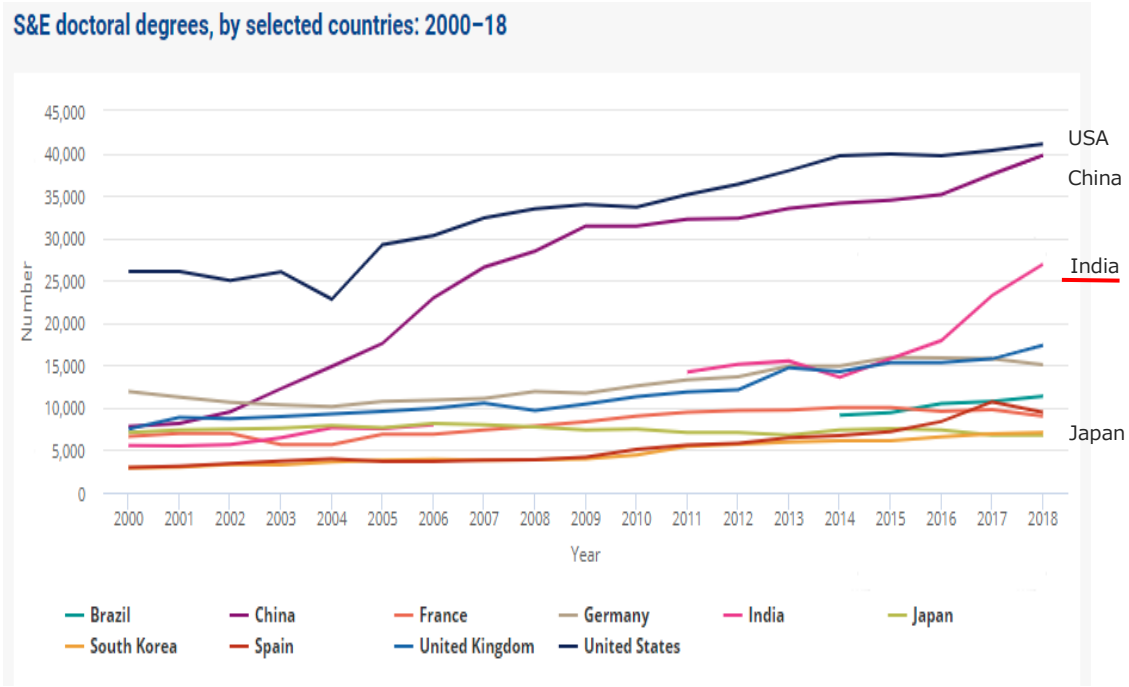
  The number of them increased 7 times from 21,400 (2000) to 149,200 (2020). Its global share has increased every year (3rd in the world). （※Japan's number of papers in this field was surpassed by India's in 2015）

- They have strengths in **<u>chemistry, materials science, physics, computers & mathematics, and engineering</u>**.

- The number of **<u>doctoral degrees in S&T</u>** in India has shown rapid growth in recent years.



Sources：NCSES, special tabulations (2018) by SRI International
and Science-Metrix of Elsevier's Scopus abstract and citation database.



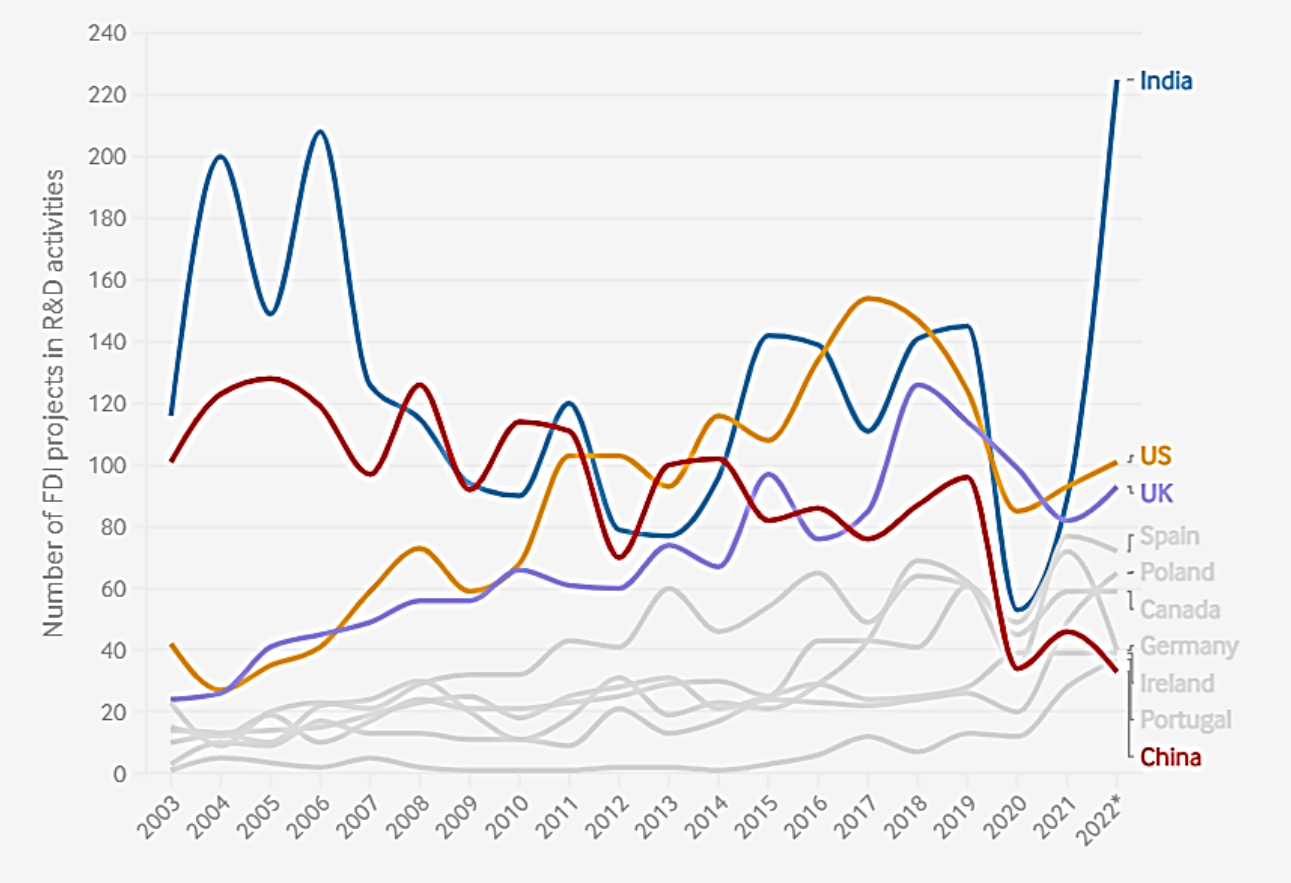
Sources：NCSES, special tabulations (2021) by SRI International
and Science-Metrix of Elsevier's Scopus abstract and citation database.

Comparison of R&D-related FDI* trends by country

*Foreign Direct Investment

● Global tech companies has been trying to become “**Indian insiders**,” setting up R&D centers and working with Indian high-level human resources and startups to develop the world's most advanced technologies.

- India attracted 225 R&D FDIs (worth $14.9 billion) during 2022 (Jan-Oct), according to a study by fDi Markets, UK.
- This represents a 1.5-fold increase over last year. It accounts for one-third of the world's total R&D FDI, more than double that of the U.S., the second largest FDI destination.
- This is indicative of a trend where global companies are augmenting their own engineering R&D departments in India.
- The largest amount of R&D FDI in India was in the state of Karnataka with Bengaluru.



Sources：fDi Markets

Status of International Co-authored Papers in S&T in Japan and the U.S.

(*Japanese ONLY)

Japan

主要な国際共著相手国・地域(2009-2011年、%)

日本	1位	2位	3位	4位	5位	6位	7位	8位	9位	10位
全分野	米国	中国	ドイツ	英国	フランス	韓国	カナダ	イタリア	オーストラリア	台湾
	35.1%	17.4%	10.7%	9.8%	8.1%	8.1%	5.5%	4.8%	4.7%	3.7%
化学	中国	米国	韓国	ドイツ	フランス	英国	インド	台湾	カナダ	オーストラリア
	22.2%	21.1%	9.3%	8.5%	7.0%	5.7%	5.4%	3.5%	3.3%	3.1%
材料科学	中国	米国	韓国	ドイツ	英国	インド	フランス	オーストラリア	カナダ	台湾
	29.1%	17.0%	12.5%	6.5%	5.7%	5.1%	5.0%	3.3%	2.9%	2.3%
物理学	米国	ドイツ	中国	フランス	英国	イタリア	ロシア	韓国	スペイン	スイス
	38.2%	21.6%	16.2%	15.6%	15.5%	11.2%	10.4%	10.3%	8.5%	7.5%
計算機・数学	米国	中国	ドイツ	韓国	フランス	英国	カナダ	イタリア	スペイン	台湾
	22.1%	20.3%	8.6%	8.5%	8.5%	6.6%	4.9%	4.1%	3.9%	3.7%
工学	中国	米国	韓国	ドイツ	英国	フランス	オーストラリア	カナダ	台湾	イタリア
	24.9%	22.5%	9.7%	7.2%	6.3%	5.8%	3.8%	3.6%	2.9%	2.5%
環境・地球科学	米国	中国	英国	ドイツ	フランス	オーストラリア	カナダ	韓国	インド	ロシア
	34.0%	20.1%	10.8%	10.5%	9.2%	7.1%	7.0%	6.8%	4.7%	3.9%
臨床医学	米国	中国	英国	ドイツ	カナダ	オーストラリア	フランス	イタリア	韓国	オランダ
	52.7%	13.3%	10.6%	9.0%	6.4%	6.2%	6.2%	5.9%	5.9%	5.1%
基礎生命科学	米国	中国	英国	ドイツ	韓国	フランス	カナダ	タイ	オーストラリア	イタリア
	39.3%	13.1%	9.2%	7.5%	6.4%	5.5%	5.2%	4.8%	4.5%	2.5%

主要な国際共著相手国・地域(2019-2021年、%)

日本	1位	2位	3位	4位	5位	6位	7位	8位	9位	10位
全分野	米国	中国	ドイツ	英国	フランス	オーストラリア	韓国	イタリア	カナダ	スペイン
	33.1%	25.7%	13.3%	12.8%	9.9%	8.2%	7.6%	7.1%	6.9%	5.6%
化学	中国	米国	ドイツ	フランス	韓国	英国	インド	オーストラリア	台湾	タイ
	28.6%	17.3%	8.9%	7.2%	6.7%	6.5%	6.0%	5.7%	4.9%	3.6%
材料科学	中国	米国	韓国	ドイツ	オーストラリア	英国	フランス	インド	台湾	ロシア
	38.5%	16.2%	9.6%	7.6%	6.4%	5.9%	5.7%	5.5%	4.6%	3.0%
物理学	米国	中国	ドイツ	英国	フランス	イタリア	ロシア	韓国	スペイン	スイス
	41.7%	26.9%	26.3%	20.0%	19.9%	14.8%	11.6%	11.6%	11.3%	10.8%
計算機・数学	中国	米国	ドイツ	英国	フランス	韓国	カナダ	台湾	イタリア	オーストラリア
	33.7%	18.4%	8.0%	7.8%	7.7%	5.6%	5.0%	5.0%	4.7%	4.7%
工学	中国	米国	英国	ドイツ	韓国	オーストラリア	フランス	インド	ベトナム	マレーシア
	40.1%	15.1%	7.0%	5.2%	5.2%	5.0%	4.9%	4.6%	3.8%	3.7%
環境・地球科学	米国	中国	英国	ドイツ	オーストラリア	フランス	カナダ	韓国	イタリア	インド
	28.5%	28.4%	13.6%	12.7%	10.5%	10.1%	7.4%	6.0%	5.3%	5.0%
臨床医学	米国	英国	中国	ドイツ	イタリア	カナダ	フランス	オーストラリア	韓国	オランダ
	57.0%	19.3%	17.7%	16.1%	13.8%	13.2%	12.8%	12.3%	10.0%	9.7%
基礎生命科学	米国	中国	ドイツ	英国	オーストラリア	フランス	カナダ	韓国	タイ	スウェーデン
	36.8%	17.0%	12.3%	11.9%	7.3%	7.2%	6.9%	5.5%	5.0%	4.7%

US

主要な国際共著相手国・地域(2009-2011年、%)

米国	1位	2位	3位	4位	5位	6位	7位	8位	9位	10位
全分野	中国	英国	ドイツ	カナダ	フランス	イタリア	日本	韓国	オーストラリア	スペイン
	14.0%	13.2%	12.5%	11.5%	8.3%	7.1%	6.9%	5.5%	5.4%	5.1%
化学	中国	ドイツ	英国	韓国	フランス	日本	カナダ	イタリア	インド	スペイン
	19.1%	10.9%	8.7%	7.4%	6.5%	6.2%	5.6%	5.1%	5.0%	4.4%
材料科学	中国	韓国	ドイツ	英国	日本	カナダ	フランス	インド	台湾	イタリア
	23.9%	12.9%	9.1%	7.2%	6.3%	5.2%	4.9%	4.2%	3.6%	3.6%
物理学	ドイツ	英国	フランス	中国	イタリア	日本	カナダ	スペイン	ロシア	スイス
	22.8%	18.6%	15.8%	13.9%	11.6%	10.8%	9.9%	9.1%	7.6%	6.7%
計算機・数学	中国	カナダ	英国	フランス	ドイツ	韓国	イスラエル	イタリア	スペイン	日本
	18.2%	9.7%	8.6%	8.2%	8.0%	6.2%	5.0%	4.8%	4.0%	3.3%
工学	中国	韓国	カナダ	英国	ドイツ	イタリア	フランス	日本	台湾	スペイン
	21.2%	10.4%	8.3%	5.9%	5.7%	5.3%	5.0%	4.7%	4.6%	3.3%
環境・地球科学	中国	英国	カナダ	ドイツ	フランス	オーストラリア	日本	イタリア	スイス	スペイン
	15.6%	14.5%	14.1%	11.7%	10.0%	7.9%	5.9%	5.0%	4.8%	4.4%
臨床医学	カナダ	英国	ドイツ	中国	イタリア	フランス	オランダ	日本	オーストラリア	スペイン
	15.4%	14.1%	13.0%	9.8%	9.7%	7.1%	6.7%	6.7%	6.6%	5.0%
基礎生命科学	英国	中国	カナダ	ドイツ	日本	フランス	オーストラリア	イタリア	スペイン	オランダ
	13.6%	12.3%	11.5%	11.4%	7.2%	7.1%	5.8%	5.8%	4.5%	4.4%

主要な国際共著相手国・地域(2019-2021年、%)

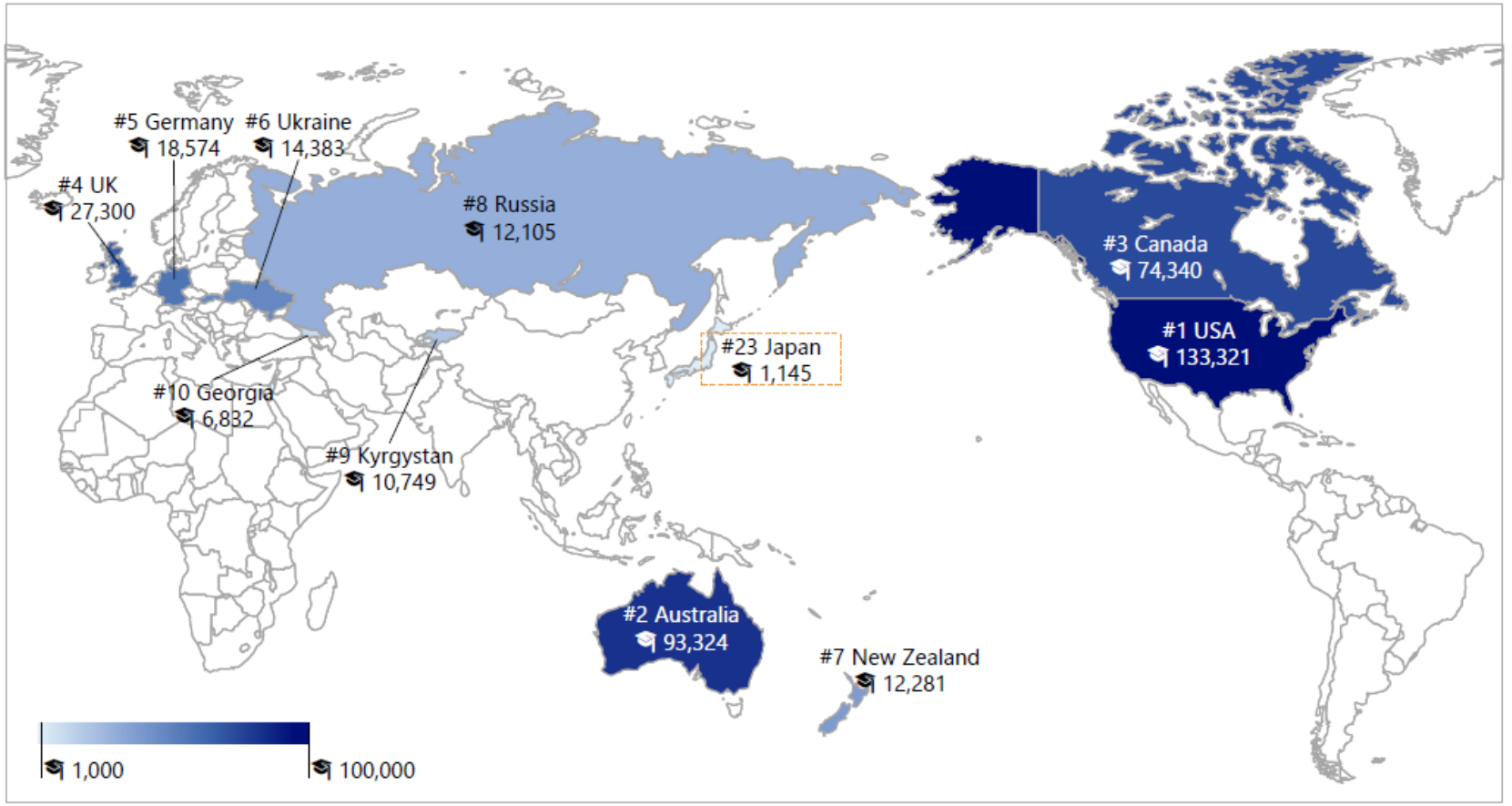
米国	1位	2位	3位	4位	5位	6位	7位	8位	9位	10位
全分野	中国	英国	ドイツ	カナダ	フランス	オーストラリア	イタリア	日本	スペイン	オランダ
	27.6%	14.5%	11.8%	11.0%	7.7%	7.2%	7.2%	5.7%	5.6%	5.2%
化学	中国	ドイツ	英国	韓国	インド	フランス	カナダ	イタリア	日本	スペイン
	35.3%	9.7%	8.3%	5.9%	5.6%	5.6%	5.3%	5.0%	4.8%	4.2%
材料科学	中国	韓国	ドイツ	英国	日本	インド	カナダ	フランス	オーストラリア	イタリア
	49.8%	8.9%	7.4%	6.5%	4.6%	4.5%	4.4%	4.0%	4.0%	3.1%
物理学	中国	ドイツ	英国	フランス	イタリア	日本	スペイン	カナダ	スイス	ロシア
	27.1%	24.2%	21.7%	16.3%	13.1%	11.8%	10.4%	10.4%	8.7%	8.4%
計算機・数学	中国	英国	カナダ	ドイツ	フランス	韓国	インド	オーストラリア	イタリア	スペイン
	38.6%	9.6%	7.8%	7.1%	5.6%	4.5%	4.3%	4.1%	4.1%	3.1%
工学	中国	英国	韓国	カナダ	ドイツ	インド	イタリア	オーストラリア	イラン	フランス
	46.5%	6.6%	6.5%	5.7%	4.8%	4.3%	4.2%	3.9%	3.7%	3.6%
環境・地球科学	中国	英国	カナダ	ドイツ	オーストラリア	フランス	スイス	スペイン	イタリア	オランダ
	32.5%	15.0%	12.0%	11.5%	9.3%	8.9%	5.2%	5.2%	5.0%	4.5%
臨床医学	英国	カナダ	中国	ドイツ	イタリア	オーストラリア	オランダ	フランス	スペイン	日本
	18.6%	16.7%	16.5%	13.0%	11.1%	9.4%	8.5%	8.3%	7.1%	6.9%
基礎生命科学	中国	英国	ドイツ	カナダ	オーストラリア	フランス	ブラジル	イタリア	日本	スペイン
	22.4%	14.6%	11.6%	10.9%	7.2%	7.1%	6.2%	6.2%	5.6%	5.4%

Sources： “Benchmarking of Scientific Research 2023,” Ministry of Education, Culture, Sports, Science and Technology (MEXT), colored yellow.

Status Survey on International Joint R&D

✓ Outbound Indian students are highest in US, Australia & Canada while **Japan lags far behind at 23rd rank** with just ~0.25 % of total outbound students from India

Indian Outbound Students (Top 10 nations + Japan)



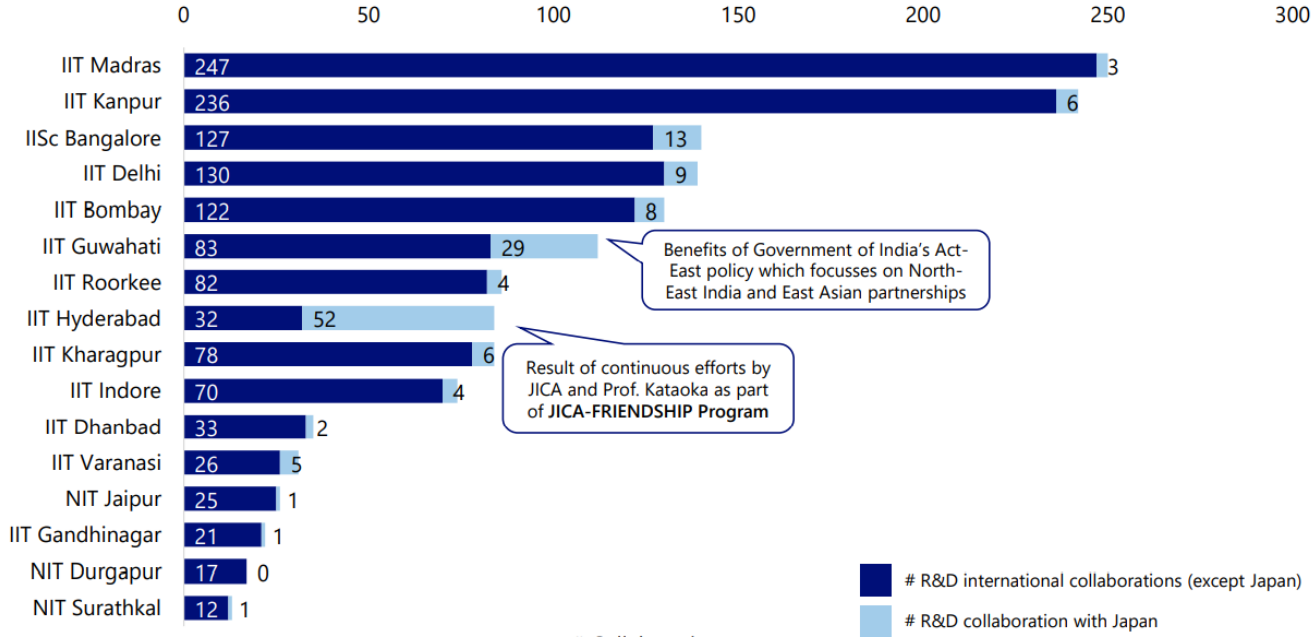
Sources : UNESCO&NRI

Status Survey on International Joint R&D

- In March 2022, NEDO India compiled a **Status Survey Report**, concerning international joint R&D and start-up support at Indian universities including IITs, NITs and IISc. This research was commissioned to NRI India.

- Key Insights:
  - Key Institutes: Older IITs (estd before 2008) and IISc have the highest number of international Joint R&D projects
  - Industry and Academia: **~75% collaborations are with academia**; lack of collaborative R&D with industry partners
  - Major Collaborating Countries: **US, European countries** (Germany, France, UK, etc.), **Australia are major collaborators**
  - Collaboration with Japan: **Contribution from Japan is not as significant except for IIT Hyderabad and IIT Guwahati**

Sources : NRI



- **Example of Key researchers in Battery field**

Scopus

VIDWAN Expert Database & National Researcher's Network

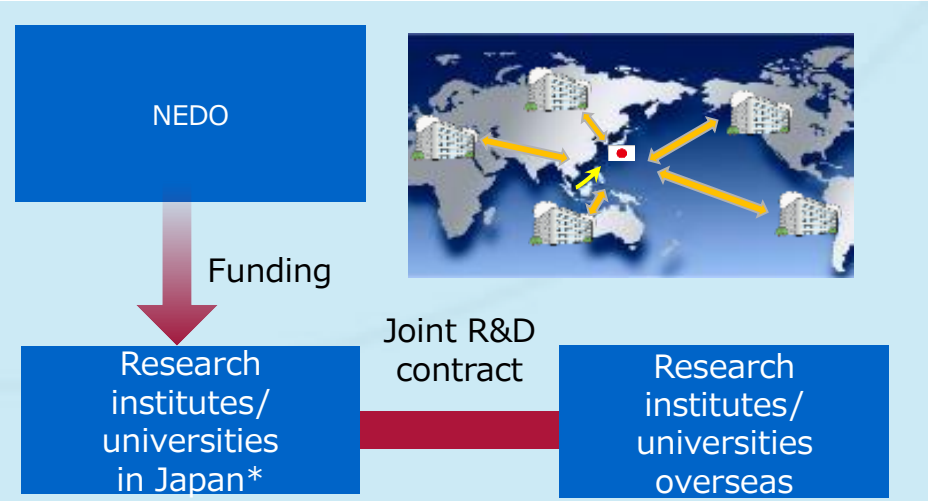
NEDO's R&D Support Program for Promoting Innovative Clean Energy Tech

● Program Outline

✓The aim of this program is to develop and strengthen international joint Research and Development between Japan and other countries in order to create new and innovative clean energy technologies that will have practical use after 2040.

✓This program supports Japanese research institutes and universities conducting joint international R&D projects with institutions from G20 member and other countries.

● Program Scheme



※Indian universities and companies may also participate in the program together with Japanese research institutes/universities.

● Project Details

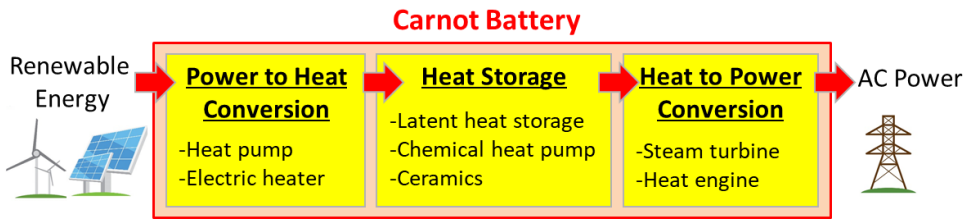
Project scheme	International collaboration between Japanese research institutes/universities and research institutes/universities overseas. Private companies may participate but only when research institutes/universities also participate.
Project budget	Maximum of almost **INR 1.5 crores** per project/per year. Note: NEDO will only fund the Japanese side of the international collaboration.
Project term	**Maximum of 3 years.**
Target technologies	- Clean energy technologies, including RE and energy-saving and environmental technologies that will have practical application after 2030. - 3 R&D themes have been selected for FY2023.
Project with India-Japan collaboration	**"Development of Innovative High-temperature Thermal Energy Storage technology" (Hokkaido univ., AIST, IIT Jammu etc.)** has been adopted in FY2021.

International Joint Research and Development of Innovative High-temperature Thermal Energy Storage Technology

Entrusted Parties : Hokkaido University, National Institute of Advanced Industrial Science and Technology (AIST) （2021～2024*） *scheduled

Outline of the Project

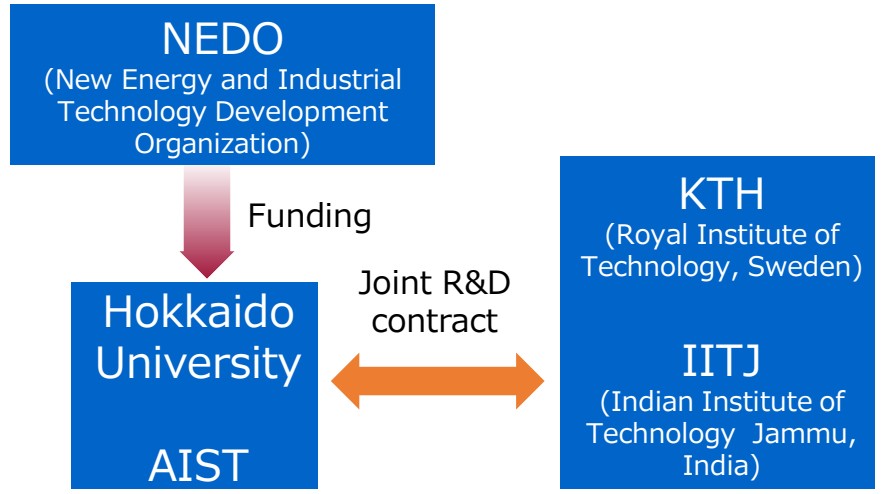
- **Background:** Long-duration energy storage is a key technology to mitigate fluctuation and intermittency of renewable energy.
- **Purpose:** “Carnot Battery”- in which electricity is converted to heat, stored in heat storage system, and converted back to electricity – enables energy storage in large scale with low cost. In order to realize long-duration energy storage using Carnot Battery, this project will carry out R&D for long-duration thermal energy storage at high-temperature.
- **Scope:** This project is developing innovative high-temperature, large-capacity, and high-throughput heat storage systems by utilizing novel heat storage material, h-MEPCM*, and chemical heat pump.
  *_h_-MEPCM （_H_okkaido univ.- Micro Encapsulated Phase Change Material）



Significance of International R&D

- Carnot Battery is an emerging technology as IEA started Annex 36 for it in 2020, and foreign institutes have more knowledge and experience on it. International collaboration will sophisticate the heat storage systems being developed in this project.
- KTH has exceptional expertise in thermo-fluid simulation and designing heat storage systems.
- IITJ has knowledge and experience on designing and developing chemical heat pumps.

Project Scheme

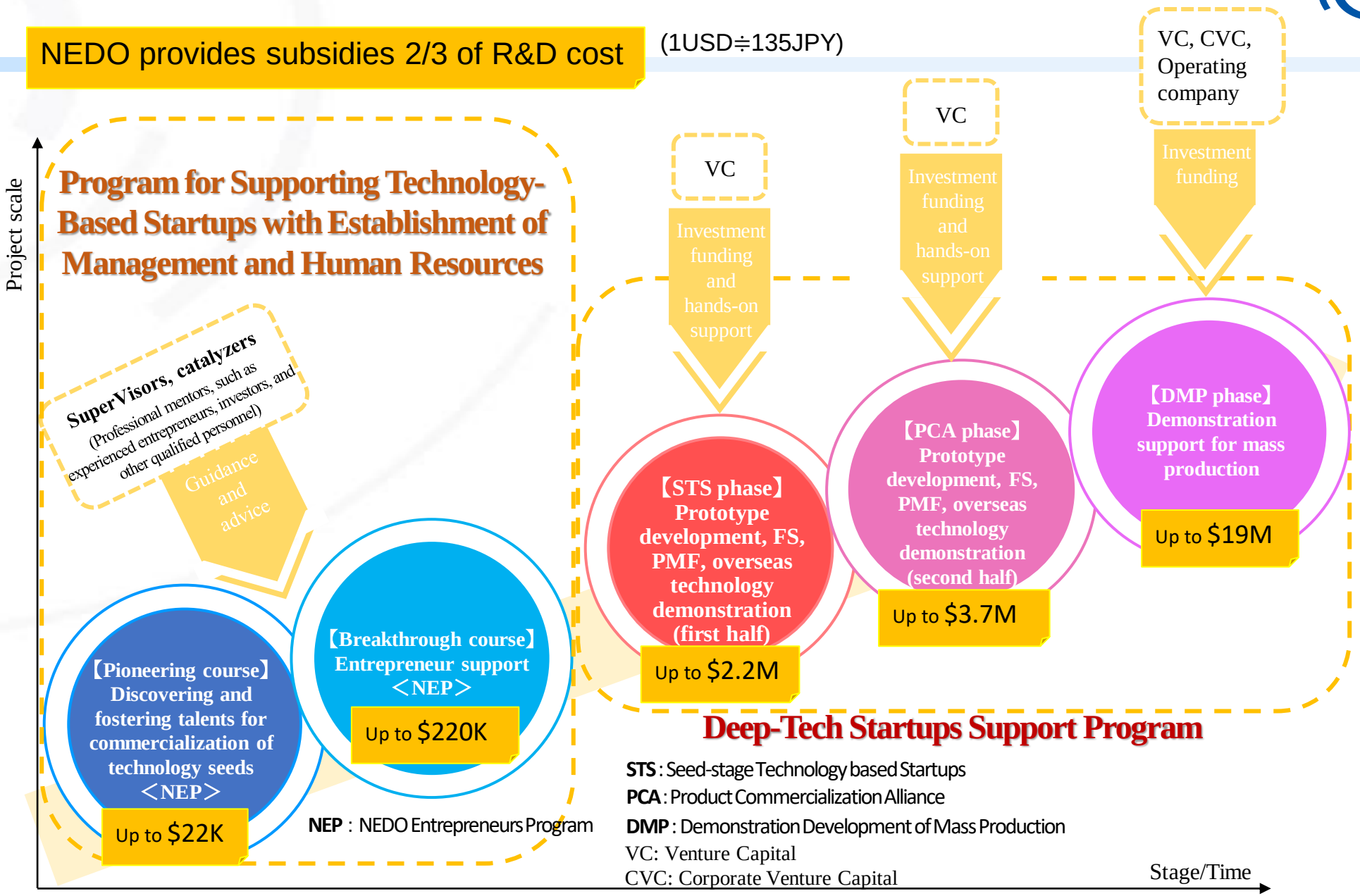


Expected Outcomes

- Long-duration, low-cost and large-scale energy storage system.
- Electrification of industry by supplying heat from the developed high-temperature heat storage systems.
- CO_2 emission of 1.6 Mt/year from coal fired power plant can be reduced by utilizing solar power with Carnot Battery. Annual average of facility utilization rate of solar power is estimated to be increased 1% in 2030.

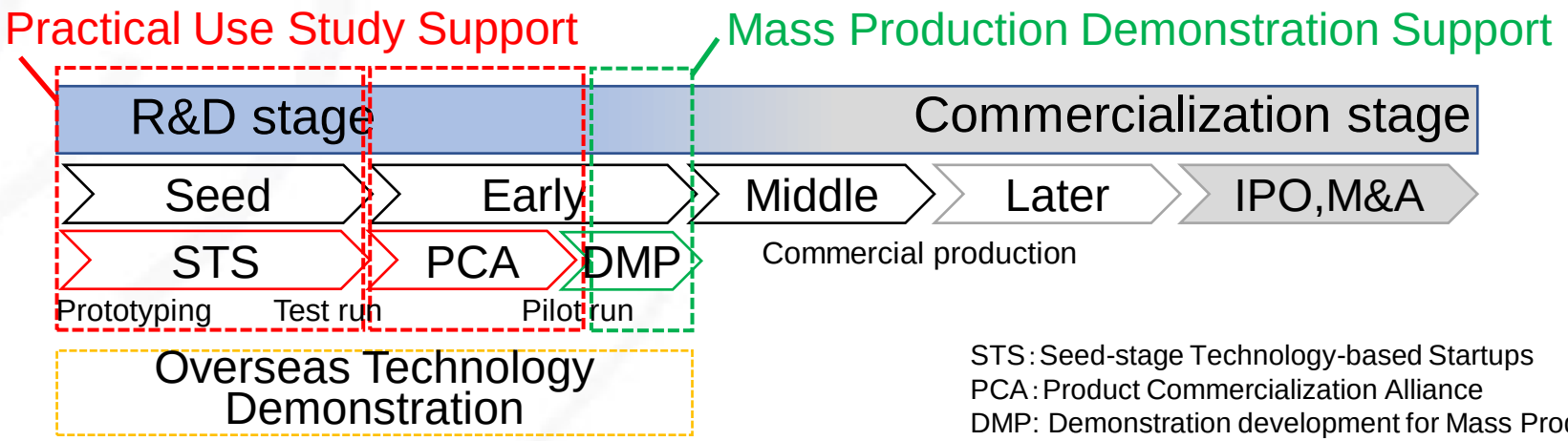
Overview of Supporting Deep Tech Startups by Stage

NEDO provides subsidies 2/3 of R&D cost (1USD≒135JPY)



Overview of “Deep Tech Startups Support Program”

Budget : 100B JPY(around 750M US$) for 5years（1USD=135JPY）



STS：Seed-stage Technology-based Startups
PCA：Product Commercialization Alliance
DMP: Demonstration development for Mass Production

- Practical Use Study Support program (STS & PCA): the program supports the development of production technology by prototyping, joint R&D with other companies, implementation of F/S surveys and so on.
- Mass Production Demonstration Support program (DMP): the program supports initial costs for mass production demonstration such as design, fabrication, installation, building facilities and so on.
- Overseas Technology Demonstration program: the program supports for a series of overseas development products, including R&D costs for conforming to overseas markets and regulations and costs for demonstrating products and services in the local markets.

	Subsidy amount (up to 2/3 of total amount)		Period	
STS：Seed-stage Technology-based Startups (Seed Stage)	Up to 300 M JPY (2.2M USD)	Up to 3 B JPY (22M USD) (*Possible to support overall periods if the startup clear the stage-gate.)	2-4 Years	6 Years in maximum
PCA：Product Commercialization Alliance (Early Stage)	Up to 500 M JPY (3.7M USD)		2-4 Years	
DMP: Demonstration development for Mass Production	Up to 2.5 B JPY (19M USD)			

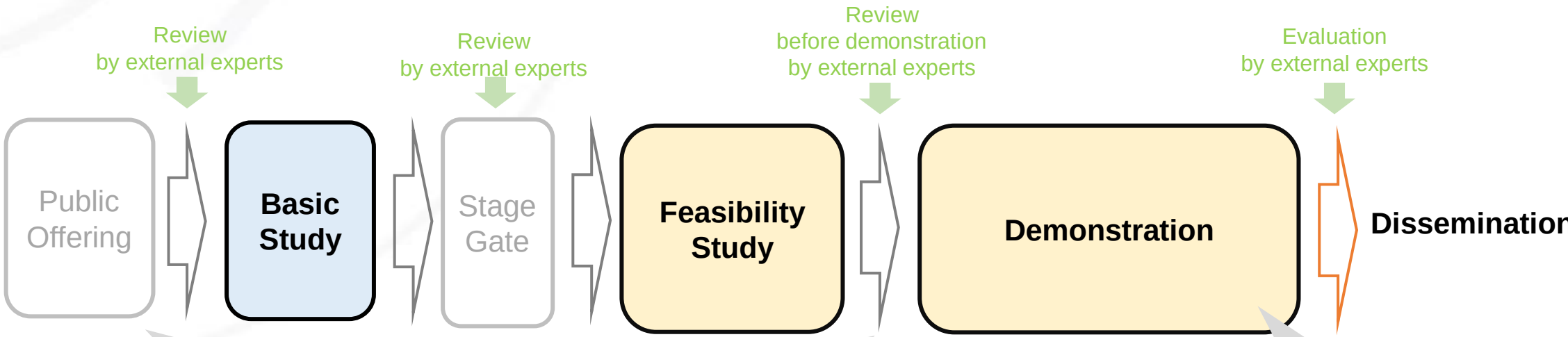
Energy / Environment

International Energy Demonstration Project

Purpose

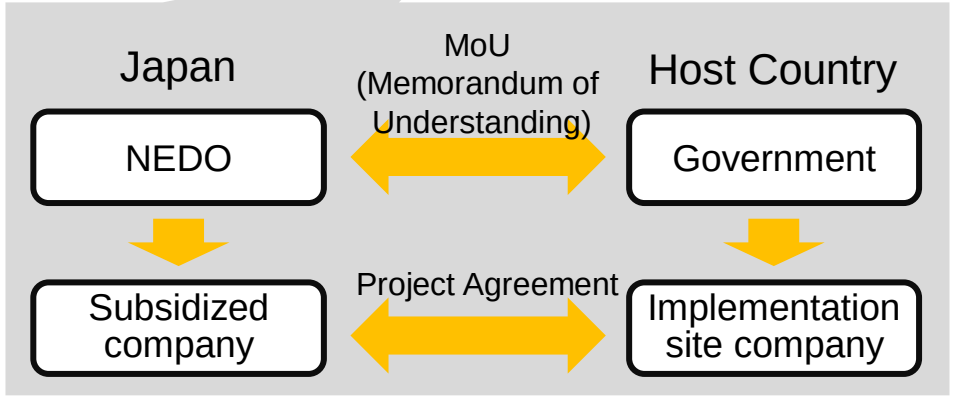
- ✓ Contribute to solving foreign energy problems through a demonstration of Japanese technology and systems for energy conservation.
- ✓ Contribute to obtaining energy security by reducing energy consumption through the dissemination of technology.

Scheme



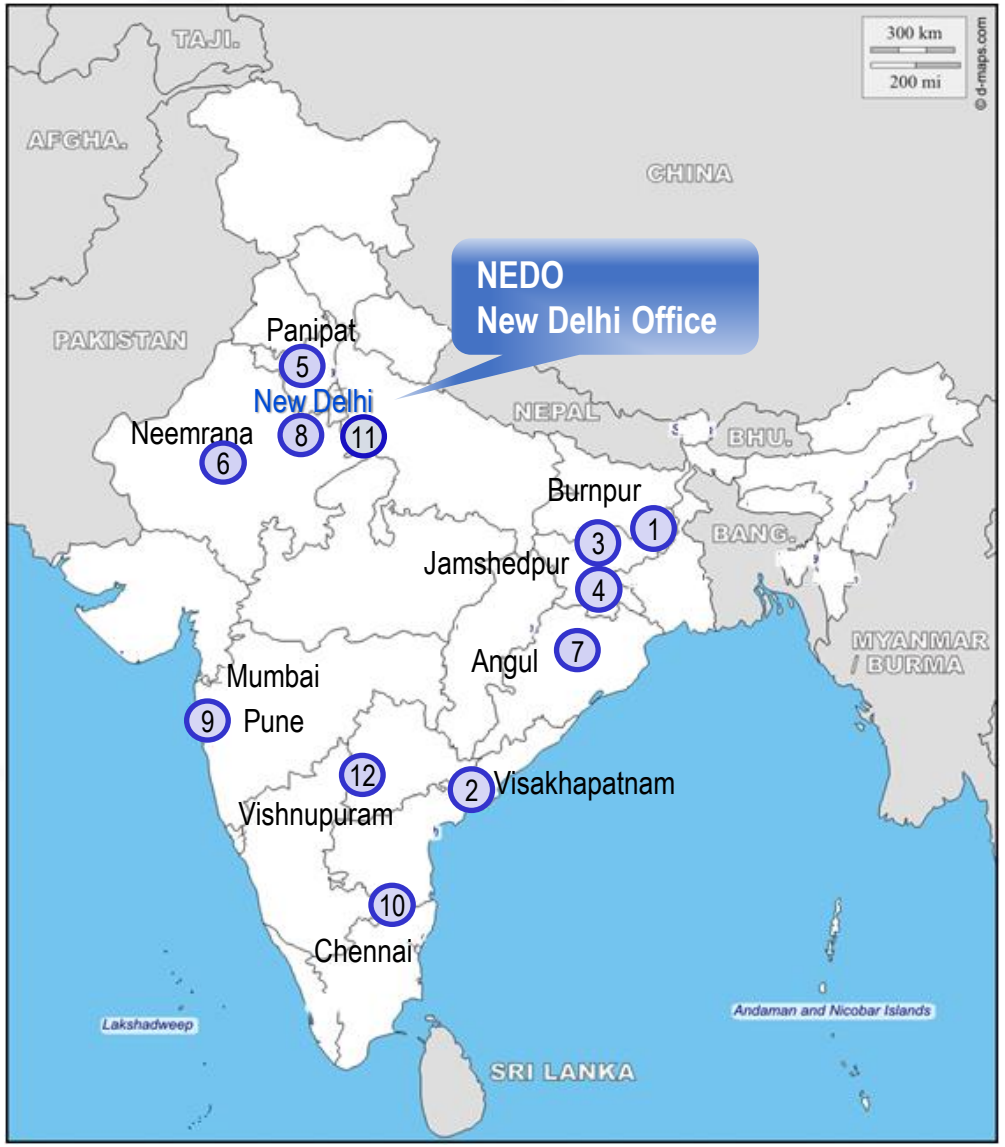
2 public bids / year

※ Indian companies or universities may participate in the projects, together with Japanese companies which are supposed to apply for the offering.



Maximum for each project is around **3 Billion Rupees (4 Billion Yen)**

Implemented NEDO Demonstration Projects in India



Current Projects

NEW Electric Mobility Operation System for realizing Last-mile Transportation

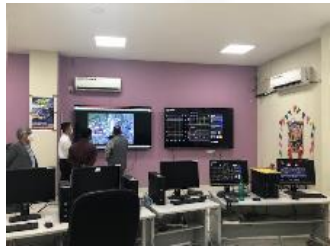
Completed Projects (FY)

1. EMS for Multiple Energy Sources at Steel Plant (2021)
2. Sinter Cooler Waste Heat Recovery (2014)
3. Coke Dry Quenching System (2011)
4. Utilization of Sensible Heat from Blast Furnace Hot Stove Waste Gas (2004)
5. Green Telecom Tower Project (2016)
6. Micro-Grid System with PV Power Generation (2019)
7. Highly Efficient Coal Preparation Technology (2014)
8. Smart Grid Pilot Project (2018)
9. Converting a Diesel Generator to Dual-fuel Operation (2011)
10. Regional Energy Efficiency Centre (2011)
11. ICT Based Green Hospital (2019)
12. Waste Heat Recovery System of Cement Plant (2004)

Recent Projects in India

Dissemination

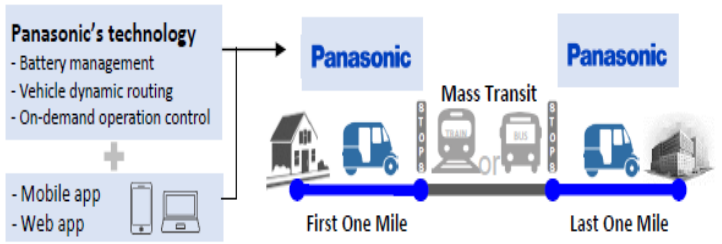
1 Fuji Electric (2014-2021)



- Energy saving in steel plants at the SAIL Banpur Plant in West Bengal.
- Launched a promotion video for this project.

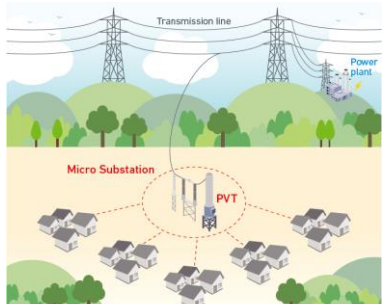
Demonstration

2 Panasonic (2020-)



- Introduction of a system to optimize the operation of EV operators and drivers in the last-mile transportation.
- Demonstration is planned to start from 2023 in Delhi, collaborated with the Delhi Metro.

3 Nissin Electric (2020-)



- Aiming to ensure a stable supply of electricity in unelectrified areas.
- After the demonstration is completed in Delhi, Nissin will try to disseminate this technology to remote areas.

Recent Projects in India

Feasibility Study（FS）

4 IHI Corp., Kowa Company (2022-)

- Aiming to study various technologies and evaluate the economic feasibility of co-firing 20% ammonia gas into the existing boilers at APL(Adani Power Ltd.)-owned Mundra Coal Power Plant in Gujarat.

Basic Study（Pre-FS）

5 Yamanashi Hydrogen Company, Suzuki (2022-)

- This project will study the possibility of establishing an optimal thermal operation system in a Maruti-Suzuki automobile plant, by utilizing green hydrogen produced there.

6 Sojitz, JR Freight, Suzuki (2021-)

LNG Transportation by Railways

CNG Station

Refrigerated Truck

- This project's objective is to supply gas and cold heat, to places with underdeveloped gas pipelines and cold chains.

Seminars / Events

- ✓ In July 2023, NEDO / JETRO organized a seminar for on **Deep Tech Innovation and Clean Energy**.
- ✓ Speakers from METI Minister, NITI Aayog, CHT (under MoPNG), Greenko, Suzuki, IIT Kanpur, IHI, Hitachi Zosen, FICCI, TERI, 15 Japanese SUs etc.

- ✓ In March 2023, NEDO India organized a seminar for deliberating on **Energy Transition and Finance (G7 & G20 collaboration)**.
- ✓ Speakers from PMO, NITI Aayog, BEE (under MoP), ISA, METI, MUFG, Power Finance Corp., IHI, TERI, CSEP, Gateway House etc.

- ✓ In March 2022, NEDO India hosted a seminar on **Hydrogen**. Speakers from NITI Aayog, MNRE, Kerala State, JBIC, TERI etc.

INDIA-JAPAN SCRIPT AN EXPANDING PARTNERSHIP FOR A SHARED FUTURE

India and Japan are identifying new technology areas to widen partnership, create new industries and reinvigorate the existing ones

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Technology is redefining the Indo-Japanese partnership. The two nations are looking to tap into the opportunities presented by Japanese startups as well as large corporations, which are looking for technology and services partnerships to present their solutions to the world.

During his visit to India, the Economy, Trade and Industry Minister Yasutoshi Nishimura emphasised the key pillars that are driving the rapidly expanding business relationship between the two countries. With innovation and partnership,

Creation of future industries: India and Japan have identified cutting edge areas like digital services, clean energy, healthcare, mobility and electric vehicles and aerospace as areas of cooperation. Japan has also stressed on the collaboration and bringing resilience to the semiconductor supply chain, to enhance bilateral cooperation in this sector. That had set the ball rolling for companies to ideate on finding the business opportunities in semiconductors and relevant fields. India MSME sector.

Entering new markets: Several Japanese companies are making India their manufacturing base for exports, which contributes to India's 'Make for World' initiative. With time high exports to Latin America and Africa. Daikin has announced plans to export air conditioners manufactured in India to 100 countries. Kubota is looking to expand to African markets as part of the India-Japan alliance.

commitment of enhance energy cooperation between the two countries. With the two governments laying the ground for expanding the cooperation, the list of emerging sectors for expanding the business relationship is long – hydrogen and ammonia, biofuel, CCUS, sustainable transport and electrical vehicle and battery, energy efficient buildings, and more.

At the Indo-Japan Deeptech Innovation and Clean Energy Seminar last week, a number of startups from Japan also joined in, detailing their business. These startups companies are working in various technological fields such as healthcare, AI, agritech, energy and mobility, and drones.

ADVERTORIAL

G7&G20 Partnership in Energy Transition

H E Hiroshi SUZUKI, Ambassador Extraordinary and Plenipotentiary, Embassy of Japan in India, talks about growing cooperation between India and Japan

COVID-19, Russia's aggression against Ukraine, and climate change - we are concerned that a series of global shocks and challenges that demand quick response will deteriorate global economic situation and cause further suffering to vulnerable populations.

The leadership of the G20 and the G7 has become more important than ever this year, especially to ensure that energy issues do not exacerbate the situation, as now its impact is extending to food security.

Through 'Free and Open Indo-Pacific,' Japan and India are trying to deal with various difficult situations, including the worsening energy crisis

While global energy demand continues to grow, especially in Asia, the possibility for further energy price hikes and energy shortages due to the impact of COVID-19 and climate change, which have restricted upstream energy investment, has marked the world into a "critical territory."

In particular, Russia's aggression against Ukraine has triggered a rapid increase in demand for LNG in Europe, leading to a global spike in fuel prices.

>> **H E Hiroshi SUZUKI**, Ambassador Extraordinary and Plenipotentiary of Japan to India and Bhutan

Sources : Economic Times

Economic Security

Importance of Economic Security

- Recently, Japan, India, the United States and Australia have moved toward **QUAD**. It is expected that there is potential for collaboration (including technological collaboration) in the area of economic security between Japan and India.
- Against these backdrops, NEDO India promotes research on economic security and promote cooperation between 2 countries in this field.

●Economic Security

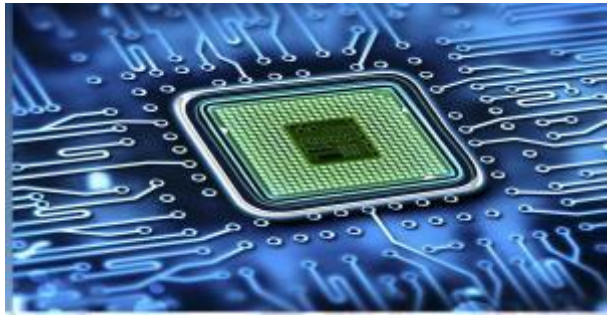
NEDO compiled this report in March 2022, with a support of Gateway House, an Indian think tank.

●Individual Areas

Supported by Tech-Sci Research

Space

AI



Semiconductor

Quantum Computing

Collaborations in Drone fields

●Technology collaboration

✓Autonomy Holdings, Inc. (CEO: Prof Kenzo Nonami) and NewSpace Research and Technologies (NRT) (Based in Bengaluru) signed an MOU in July 2023, in order to explore collaboration opportunities.

✓NRT conducted the first swarming demo flight in Japan in August 2023.

●Test site

✓Fukushima Robot Test Field and Drone Federation of India (DFI) signed an MOU in March 2022.

✓This MOU is expected to promote the exchange of information on international standardization and testing technologies related to UAVs.

●Drone manufacturing

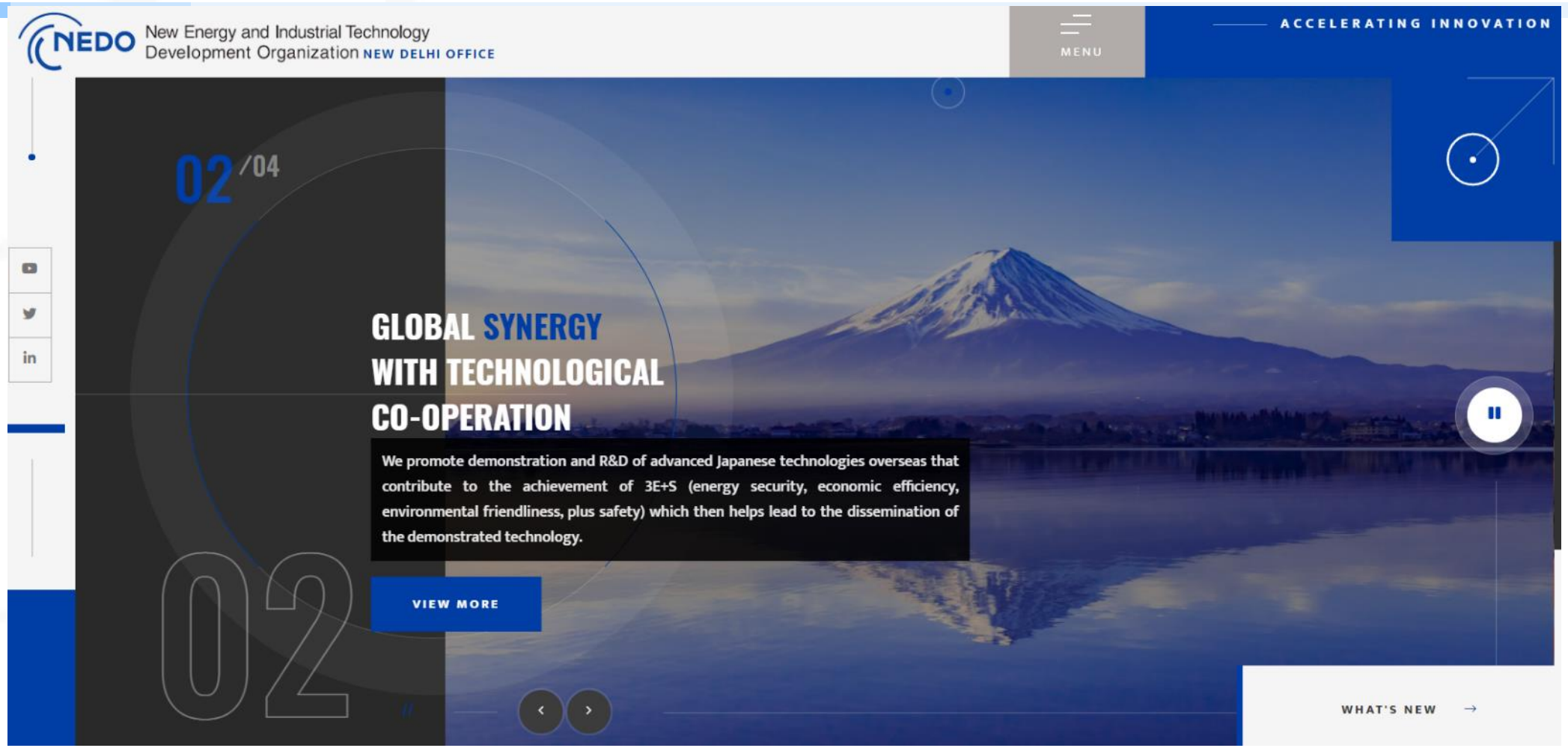
✓ACSL, a leading drone makers in Japan, established a JV in India in May 2022, and will manufacture industrial drones in India through this JV.

ACSL PF2

ACSL SOTEN

✓SkyDrive and Suzuki signed a collaboration agreement in March 2022, with the aim of commercializing Advanced Air Mobility (Flying Taxi), with a view to developing it in India.

Thank you for your attention!



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