

# Updates and recent activities of A-PLAT

Yoshifumi Masago

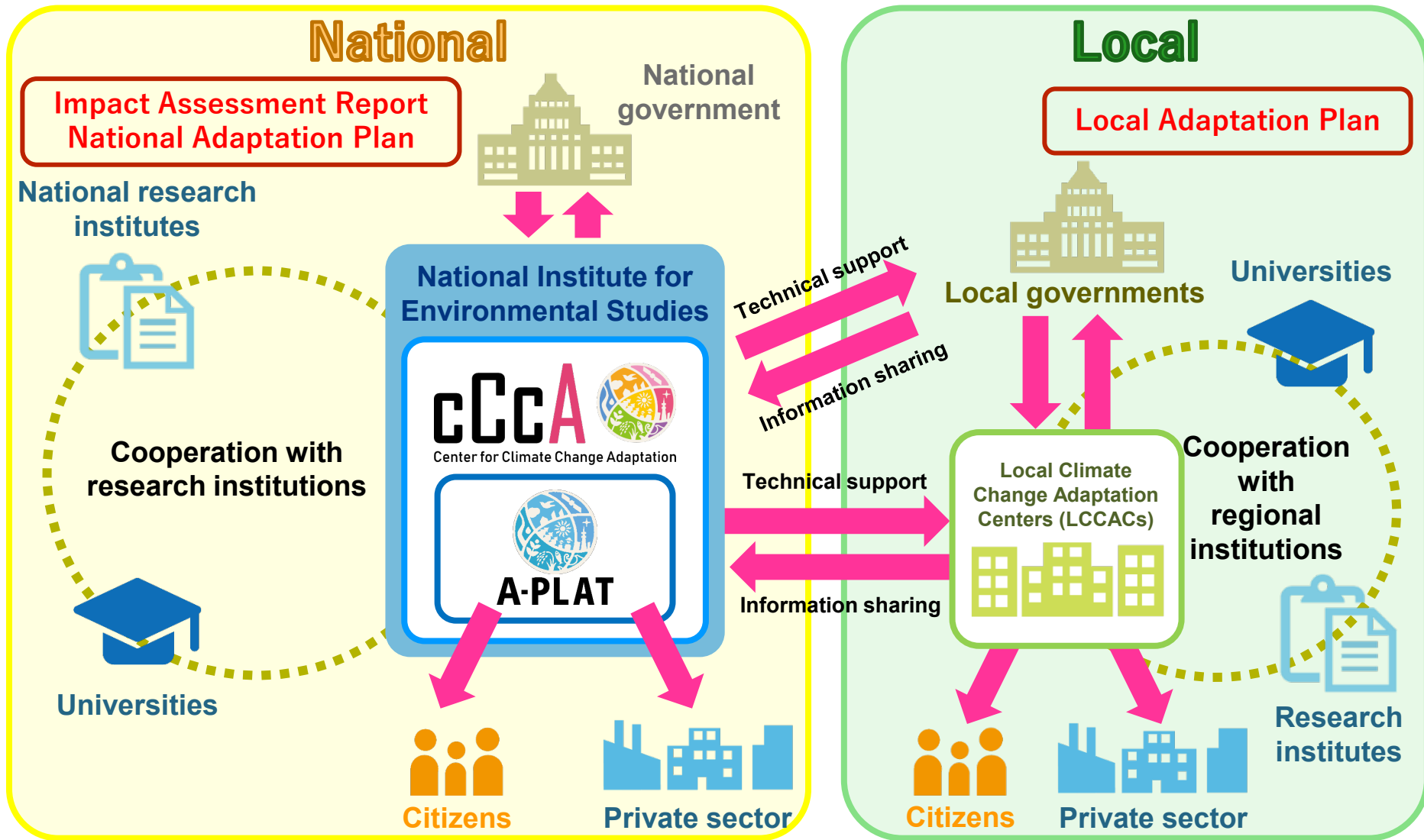
Center for Climate Change Adaptation  
National Institute for Environmental Studies

## Contents

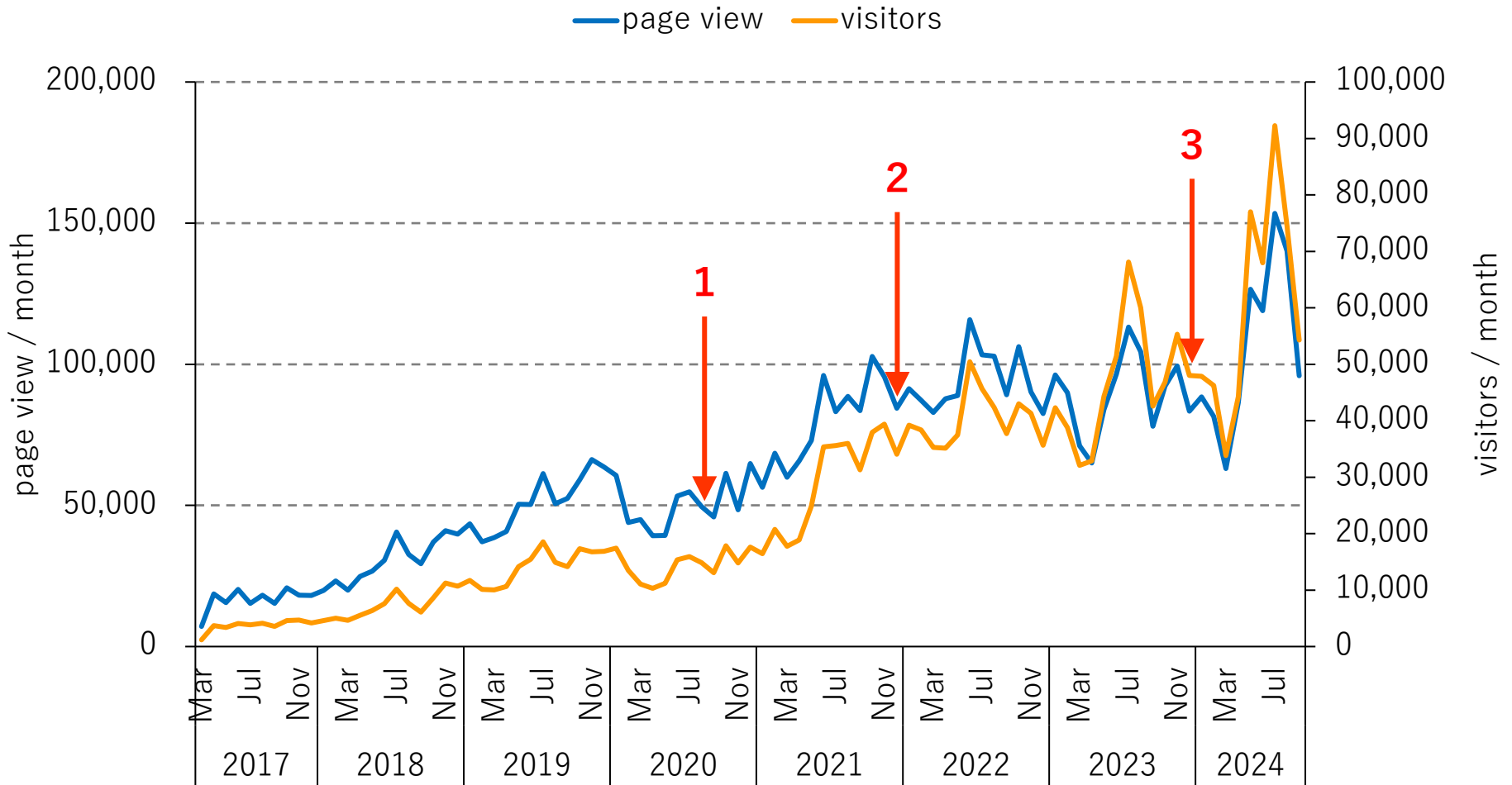
1. PVs trends and popular pages
2. A-PLAT contents for the private sectors

Note: Most English sentences of the A-PLAT contents in this presentation were generated using Microsoft Edge machine translation.

# CCCA's roles under the Climate Change Adaptation Act



# Page views and visitors of A-PLAT



- 1.2M PVs and 688k visitors in the last 12 months

## A-PLAT pages with > 1,000 PV/month

Rank	Title	PVs	Category
No.1	A-PLAT KIDS: Temperature changes over the past 100 years	9,658	<b>2</b>
No.2	A-PLAT home page	6,184	Category top
No.3	"Climate Change and Adaptation" TOP page	4,015	<b>3</b>
No.4	Q3.Can organisms evolve in response to climate change?	2,717	<b>1</b>
No.5	Search within this site	2,308	Site search
No.6	Q6.What are the effects of the loss of tropical forests?	1,962	<b>1</b>
No.7	"Adaptation for the Private Sector" TOP page	1,407	Category top
No.8	A-PLAT KIDS Top Page	1,287	<b>2</b>
No.9	"Local Adaptation" TOP page	1,166	Category top
No.10	Q10.What kind of changes will climate change bring to marine life?	1,139	<b>1</b>
No.11	01-03 Future Climate	1,125	<b>3</b>
No.12	Changes in temperature and precipitation (graph images by JMA)	1,027	
No.13	01-01 What is climate change?	1,015	<b>3</b>

# 1: What we want to know about global warming

- NIES researchers answer basic questions about climate change adaptation
- 25 articles
  - 16 on CC adaptation
  - 9 on CC impacts



## Climate Change Adaptation

**Q1** What is climate change adaptation?

I heard that the "Climate Change Adaptation Act" was established in Japan in 2018. What is **climate change adaptation** in the first place? What are the basics?

**A** 私が + 答えます!

**Hitoshi Mukai**  
Visiting Researcher, Laboratory of Material Cycle Observation, Earth System Division

**Q2** Is climate change adaptation mandatory?

Is there a **law**?

**A** 私が + 答えます!

**Miya Yuki**  
Deputy Director, Climate Change Adaptation Center July 31, 2020

**Q3** Can organisms evolve in response to climate change?

**Living organisms** have evolved in response to past climate changes. Isn't it possible to **adapt** to the climate change that is currently underway?

**A** 私が + 答えます!

**Jun Nishihiro**  
Deputy Director, Climate Change Adaptation Center

**Q4** Is adaptation OK if the SDGs are achieved?

If the **Sustainable Development Goals (SDGs)** can be **achieved**, can we say that we have **achieved sufficient "adaptation"**?

**A** 私が + 答えます!

**Yoshifumi Masago**  
Director, Climate Change Adaptation Strategy Laboratory, Climate Change Adaptation Center

**Q5** What is bias correction for climate projection information?

What is **bias correction** for climate projection information?

**A** 私が + 答えます!

**Noriko Ishizaki**  
Climate Change Impact Assessment Laboratory, Climate Change Adaptation Center

**Q6** What are the consequences of tropical forest loss?

We see reports of deforestation and **fires in the tropics**. If forests in the **South American Amazon and Southeast Asia** continue to be lost, what will be the **impact on the global scale**?

**A** 私が + 答えます!

**Akihiko Ito**  
Visiting Researcher, Earth System Division

**Q7** I want to know the future impact of climate change on my city.

**Q8** Is there a global agenda for adaptation?

**Q9** Do mangrove forests have promising functions for climate change?



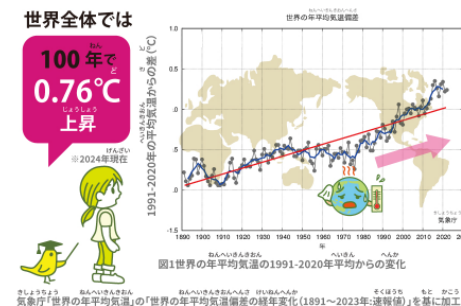
## 過去 100年間の気温の 変化

## 2: A-PLAT KIDS

- Target: 4<sup>th</sup> – 6<sup>th</sup> grade kids
- Basic knowledge on climate change and adaptation
- Materials for schoolwork

### 1. 世界の気温は高くなってきている。

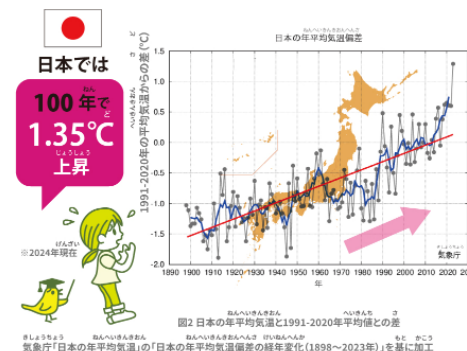
これまでに世界で観測された気温をグラフで見てみよう。世界の年平均気温は、過去100年あたりで0.76℃上がっているよ。



出典・参考はこちら

### 2. 日本でも気温の上昇が続いている。

日本はどうなっているだろう。日本の年平均気温は、過去100年あたりで1.35℃も上がっているよ。



出典・参考はこちら



# 3: What is “climate change adaptation”?

- Reading / learning materials on climate change adaptation

## 01 What is climate change?

- What is climate change?
- Factors of climate change
- Climate so far
- Future climate
  - How to predict the future climate

## 02 Climate Change Impacts and Countermeasures

- Impact on different fields
- mitigation
- adaptation

## 03 Climate Change Impacts and Adaptation in Various Fields

- Agriculture, Forestry & Fisheries
- Water Environment and Water Resources
- Natural Ecosystems
- Natural Disasters and Coastal Areas
- health
- Industrial and economic activities
- National Life and Urban Life
- Influence abroad

## 04 Adaptation in Japan

- Adaptation of the country
  - Adaptation method
  - Impact Assessment Report
  - National Adaptation Plan
  - Initiatives of Ministries and Agencies
- Regional adaptation
  - Role of Local Governments
  - Initiatives of Local Governments
  - Initiatives of Research Institutes
- Adaptation of operators

## 05 Adaptation of the world

- Global Framework
  - Paris Agreement
  - IPCC
  - IPCC Sixth Assessment Report

## 06 Adaptations we can make

- Learning Content
- Adapt in real life
- Participate in activities (citizen participation, citizen science)

- Chapter 1 was released in December 2023
- Remaining chapters will be released later this year



# Climate Change Adaptation Information Platform (A-PLAT)

- Japan's one-stop resource hub on climate change adaptation

## Basic information



CCA Act, NAP  
Reports, guidelines  
e-learning materials

## Scientific information



Climate scenarios  
Climate change impacts  
References, statistics

## Knowledge sharing



Good practices  
Interview  
Seminars, symposia



Adaptation for  
local governments



Adaptation for  
private sector



Adaptation for  
citizens



# Adaptation for Private Sector



## **Adaptation for Private Sector**

"Adaptation for Private Sector" provides climate change adaptation information for business operators.

Information and materials, case studies and events for businesses can be found here. Please make use of them to promote adaptation actions in your business activities.

- Good practices on
  - Climate risk management
  - Adaptation business
  - TCFD Initiatives
- Infographic for business sectors
- Information site for TCFD
- Networking activities
  - Industry-government-academia network on climate change risks in Japan

# Good practices by private sector

## Examples of Climate Risk Management



"Climate risk management" is an effort to reduce the impact of climate change on the company's business activities.

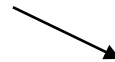


### Construction industry

## Examples of Adaptation Business



"Adaptation business" refers to an effort to develop products and services that promote adaptation by others, considering adaptation as a business opportunity.



### Agriculture, Forestry, Fisheries

## Examples of TCFD Initiatives



This section introduces information for businesses that can be used to help them respond to TCFD (Task Force on Climate-related Financial Disclosures).



Human Health  
Industrial and economic activities

Publication date: March 30, 2021

#### TOBISHIMA CORPORATION

Worker Safety and Health Management System with Pulse Monitoring



Human Health  
Industrial and economic activities

Publication date: May 12, 2021

#### TAISEI CORPORATION

Countermeasures Against Heat Stroke in Summer



**Daiwa House®**  
Daiwa House Group

Human Health  
Industrial and economic activities

Update: March 5, 2021  
Publication date: July 25, 2018

#### Daiwa House Industry Co., Ltd.

Heatstroke Prevention and Risk Reduction Using Environmental Sensors

Eat Well, Live Well.



Agriculture, Forestry, Fisheries

Updated: July 23, 2018  
Publication date: February 16, 2018

#### Ajinomoto Co., Inc.

Contributing to Sustainable Agriculture Through Bio-Cycle



Agriculture, Forestry, Fisheries

Publication date: July 6, 2022

#### ENEOS Techno Materials Corporation

CLAF®-Based Fabric MEIRYO®(BerryCool®) That Protect Crops From High Temperature Damage



Agriculture, Forestry, Fisheries

Publication date: July 6, 2022

#### OPTiM Corporation

Smart Agriculture Using AI, IoT, and Robotics Technologies

A-PLAT URL : [https://adaptation-platform.nies.go.jp/en/private\\_sector/index.html](https://adaptation-platform.nies.go.jp/en/private_sector/index.html)

**Just Released on A-PLAT**

# Infographic for private sector in English

## Contents

- **Current Situation and Future Projections**
- **Impacts and Adaptation measures by Management resources**
- **Effect / Cost / Time span for Adaptation measures**

### By industry(10)



Construction



Information and Communication



Real Estate



Finance and Insurance



Manufacturing



Healthcare and welfare



Wholesale and retail



Accommodation and food services



Electricity, water, gas, and heat supply



Transportation and postal services

### Common to all industries (3)



Buildings and Facilities



Customers



Employees

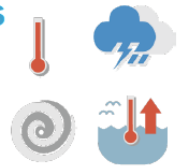
**A-PLAT URL: [https://adaptation-platform.nies.go.jp/en/private\\_sector/infographic/index.html](https://adaptation-platform.nies.go.jp/en/private_sector/infographic/index.html)**

Next Release Plan for the coming year: Agriculture and forestry, and Fisheries

# Construction

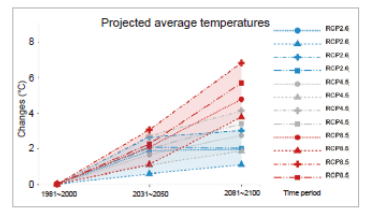
## Major Factors of Impacts

Rising temperatures, increased frequency and intensity of extreme weather events, increased number of strong typhoons, and rising sea levels

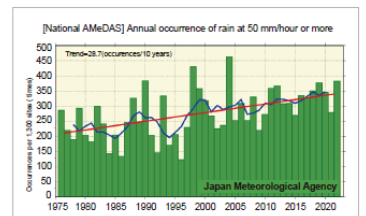


## Current Situation and Future Projections

Rising average temperatures, increased frequency and intensity of extreme precipitation events, and increased number of strong typhoons have been observed. These factors have led to increase frequency of river flooding, inland flooding and landslides, affecting buildings and infrastructure. If climate change progresses in the future, the extent and frequency of these impacts will further escalate.



Projected average temperatures (annual average temperature projections based on emission scenarios and climate models (difference from standard period)) Source: A-PLAT



Changes in the annual occurrence of precipitation of 50 mm/hour or more in Japan Source: Japan Meteorological Agency website (translated by NIES)

The number of emergency medical transports for heat stroke is on the rise. In the past five years, construction industry recorded the largest number of deaths and injuries due to heat stroke at workplaces (Source: Ministry of Health, Labour, and Welfare, 2020). By the end of this century, hours suitable for outdoor labor during the day in Tokyo and Osaka are projected to be 30-40% shorter than today (Source: National Institute for Environmental Studies, 2018).

## Adaptation

There are both hard and soft measures against increasingly severe weather disasters (torrential rains, typhoons, floods, etc.), as well as efforts to improve deteriorating labor environment at construction sites caused by climate change. Development of climate-resilient products, development of robots to save labor in construction, and other adaptation businesses are expected to grow.

		Rising temperatures, increased frequency and intensity of extreme weather events			
		Core business	Markets/Customers	Adaptation business	
		Impacts on construction sites	Impacts on buildings and infrastructure	Market shifts	Product/Service development
Factors	Management resources	<ul style="list-style-type: none"> <li>Damage to construction sites</li> <li>Increased risk of causing damage to third parties</li> <li>Deterioration of working environment due to rising temperature, etc.</li> <li>Damage to suppliers</li> </ul>	<ul style="list-style-type: none"> <li>Damage and functional deterioration of buildings, infrastructure, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Increased demand for buildings and infrastructure with climate resilience and high environmental performance</li> <li>Growing demand for construction for disaster prevention and mitigation, and for maintenance and restoration of buildings and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Increased demand for buildings and infrastructure with climate resilience and high environmental performance</li> <li>Deterioration of work environment</li> </ul>
	Impacts				
Adaptation measures		<ul style="list-style-type: none"> <li>Formulate and implement BCP</li> </ul>	<ul style="list-style-type: none"> <li>Enhance resilience of buildings and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Construct buildings with climate resilience/high environmental performance</li> </ul>	<ul style="list-style-type: none"> <li>Product development for climate resilient buildings and infrastructure</li> </ul>
		<ul style="list-style-type: none"> <li>Quick access to weather information and implement disaster prevention measures</li> </ul>	<ul style="list-style-type: none"> <li>Locate critical facilities on upper floors</li> </ul>	<ul style="list-style-type: none"> <li>Disaster prevention and mitigation work</li> <li>Maintenance and renewal work</li> </ul>	<ul style="list-style-type: none"> <li>Product development for buildings with high environmental performance including ZEB and ZEH</li> </ul>
	<ul style="list-style-type: none"> <li>Improve working environment</li> </ul>	<ul style="list-style-type: none"> <li>Improve design standards to ensure performance</li> </ul>	<ul style="list-style-type: none"> <li>Respond to restoration needs</li> </ul>	<ul style="list-style-type: none"> <li>Develop construction robots</li> </ul>	

# Construction

The construction industry consists of the constructing sector, which constructs buildings including houses, schools, hospitals, and high-rise buildings, and the civil engineering sector, which develops infrastructure including roads, bridges, tunnels, dams, and water supply and sewage facilities.

Factors	Increased temperatures, increased frequency and intensity of extreme weather events			
Management resources	Core business		Markets/Customers	Adaptation business
Impacts	Impacts on construction sites	Impacts on buildings and infrastructure	Market shifts	Product /Service development

- Damage to construction sites
- Increased risk of causing damage to third parties
- Deterioration of working environment due to rising temperatures, etc. (resulting in a serious shortage of skilled workers and an increase in heat stroke)
- Increased number of days when construction site operations are difficult
- Disruption of the supply chain and obstacles to procurement of materials and equipment

- Damage of buildings, infrastructure, etc. (roads, bridges, tunnels, dams, water supply and sewage systems, power generation facilities, gas facilities, communication facilities, etc.)
- Functional deterioration of buildings, infrastructure, etc.
- Increased costs for disaster prevention and mitigation construction, maintenance and renewal construction
- Increased air conditioning load

- Increased demand for buildings and infrastructure with climate resilience and high environmental performance
- Growing demand for construction for disaster prevention and mitigation, and for maintenance and restoration of buildings and infrastructure
- Increased demand for water environment facilities (e.g., gray water utilization) due to decreased precipitation, increased air conditioning load

- Increasing demand for buildings and infrastructure with climate resilience and high environmental performance
- Deterioration of working environment

Adaptation measures	Soft		Hard		Soft		Hard		Soft		Hard	
	<ul style="list-style-type: none"> <li>• Formulate and operate BCP (strengthen disaster responses conduct disaster drills, etc.)</li> <li>• Acquire weather information at an early stage and implement disaster prevention measures (formulate disaster prevention plans)</li> <li>• Strengthen supply chain</li> <li>• Obtain insurance coverage for construction work</li> <li>• Develop and implement construction plans that take into account the impact of climate change (shift/shorten summer working hours)</li> <li>• Raise awareness of heat stroke prevention</li> <li>• Monitor heat index (WBGT)</li> <li>• Promote manpower-saving and unmanned construction using ICT, AI, etc.</li> </ul>		<ul style="list-style-type: none"> <li>• Improve work environment (e.g., installation of resting facilities)</li> <li>• Reinforce disaster prevention measures at construction sites</li> <li>• Install emergency power supply, drainage pumps, and other disaster-prevention equipment</li> <li>• Utilize construction robots</li> </ul>	<ul style="list-style-type: none"> <li>• Formulate and operate BCP (strengthen disaster response, conduct disaster drills, etc.)</li> <li>• Revise design standards to ensure performance (air conditioning load, water resistance)</li> <li>• Conduct regular inspections of buildings and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Enhance resilience of buildings and infrastructure (water-resistant construction, introduction of green infrastructure)</li> <li>• Locate critical facilities on upper floors (power receiving and transforming equipment, emergency power generators, etc.)</li> <li>• Improve design standards to ensure performance (introduction of high-performance thermal insulation, solar shading, highly efficient air conditioning, and energy-saving equipment)</li> <li>• Implement flooding countermeasures by raising height of site, building pilots, using water barrier panels, watertight doors, etc.</li> <li>• Strengthening countermeasures against performance deterioration</li> <li>• Perform reinforcement, maintenance, and improvement work</li> </ul>	<ul style="list-style-type: none"> <li>• Construct buildings with high climate resilience/high environmental performance (plan, design, and construct buildings and infrastructure)</li> <li>• Plan, design, and construct buildings with high environmental performance including ZEB, ZEH, etc.</li> <li>• Perform disaster prevention and mitigation work</li> <li>• Perform maintenance and renewal work</li> <li>• Respond to restoration needs</li> <li>• Participate in relocation projects</li> <li>• Strengthen construction of water environment facilities (gray water utilization, etc.)</li> </ul>			<ul style="list-style-type: none"> <li>• Product development for climate resilient buildings and infrastructure (develop water-resistant buildings and materials that can be easily restored)</li> <li>• Product development for buildings with high environmental performance including ZEB, ZEH, etc.</li> <li>• Develop construction robots</li> <li>• Develop smart cities</li> <li>• Develop disaster detection and forecasting systems</li> </ul>			

Effect	Low ~ Medium	Low ~ Medium	Medium	Medium ~ High	Medium ~ High	-
Cost	Medium	Medium	Low ~ Medium	Medium ~ High	Medium ~ High	-
Time span	Short ~ Medium	Short ~ Medium	Short ~ Long	Short ~ Long	Short ~ Long	-

**How to proceed with adaptation measures**

**[Current approach]** The main focus is on countermeasures against increasingly severe weather disasters (torrential rains, typhoons, floods, etc.) and efforts to improve the environmental degradation of construction sites caused by climate change.

**[Climate change-aware approach]** Plan and design buildings and facilities with high climate resilience, taking into account future projections of climate change, including increased short duration intense rainfall and strong typhoons. Risks and opportunities should be identified based on the scenarios assumed by the company, and corresponding countermeasures should be incorporated into business plans.

[References] Ministry of the Environment (2018) "Climate Change Adaptation Plan" <http://www.env.go.jp/earth/tekiou/tekioukaiku.pdf>, Ministry of Land, Infrastructure, Transport and Tourism (2018) "Ministry of Land, Infrastructure, Transport and Tourism Climate Change Adaptation Plan" <https://www.mlit.go.jp/common/001264212.pdf>, Ministry of the Environment (2020) "Assessment Report on Climate Change Impacts in Japan (Detailed)" <http://www.env.go.jp/press/files/jp/115262.pdf>, Ministry of the Environment (2022) "Climate Change Adaptation Guide for Private Sector - Preparing for Climate Risk and Surviving-" [https://adaptation-platform.nies.go.jp/private\\_sector/guide/index.html](https://adaptation-platform.nies.go.jp/private_sector/guide/index.html), Japan Meteorological Agency "[National AMeDAS] Annual occurrence of rain at 50 mm/hour or more" [https://www.data.jma.go.jp/cpdinfo/extreme/extreme\\_p.html](https://www.data.jma.go.jp/cpdinfo/extreme/extreme_p.html), National Institute for Environmental Studies (2018) "Estimating the effects of changing outdoor working hours as an adaptation measure to global warming - The effect of only changing the time of day on increasing heat stress is limited" <https://www.nies.go.jp/whatsnew/20181121/20181121.html>, Ministry of the Environment (2019) "Recommendations for business strategy planning using TCFD - Practical guide for scenario analysis incorporating climate-related risks and opportunities" [http://www.env.go.jp/policy/Practical\\_guide\\_for\\_Scenario\\_Analysis\\_in\\_line\\_with\\_TCFD\\_recommendations.pdf](http://www.env.go.jp/policy/Practical_guide_for_Scenario_Analysis_in_line_with_TCFD_recommendations.pdf), Ministry of Health, Labour and Welfare (2020) "Occurrence of Deaths and Injuries due to Heat Stroke in the Workplace in 2019 (Confirmed)" <https://www.mhlw.go.jp/content/11303000/000634421.pdf>, Suzuki-Parker A, Hiroyuki Kusaka "Future projections of labor hours based on WBGT for Tokyo and Osaka, Japan, using multi-period ensemble dynamical downscale simulations" *Int J Biometeorology*, 60(2), 307-10 (2016), UK environmental Agency (2015) "Business Opportunities in a Changing Climate", Australian National University & Investor Group on Climate Change (2013) "ASSESSING CLIMATE CHANGE RISKS AND OPPORTUNITIES FOR INVESTORS"



# Employees

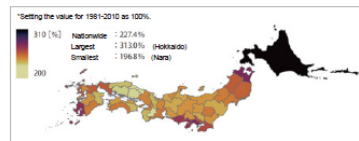
## Major Factors of Impacts

Rising average temperatures, increased number of summer days, increased heavy rainfall and large typhoons, rising sea levels and storm surges



## Current Situation and Future Projections

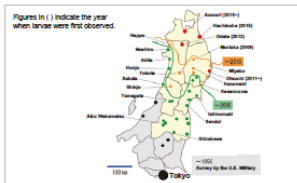
There is a nationwide trend of increase in number of emergency medical transports, etc., due to heat stroke. A study projecting number of people transported due to heat stroke in the future showed that number of people transported would be approximately 1.3 to 2.9 times higher for RCP 2.6 and 3.2 to 13.5 times higher for RCP 8.5, compared to current number for each prefecture.



\*Note: The actual number of people transported for heat stroke has more than doubled since 2010 compared to 2008 (the year the Fire and Disaster Management Agency of the Ministry of Internal Affairs and Communications started surveying the number of people transported for heat stroke) - 2009 (Ministry of the Environment 2018, see Figure 1-5)

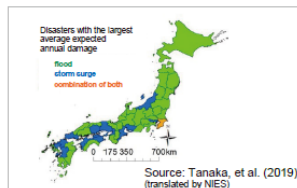
Heat stroke risk map in the future (2031-2050) climate under RCP8.5 scenario (average of 4 GCM) Source: Kusaka (2020) (translated by NIES)

It has been observed that habitat range of *Aedes albopictus*, an infectious disease vector, is expanding and period of time during which they can be active is growing longer. In the future, frequency of infectious disease outbreaks may increase as period of their activity grows longer.



Changes in the northern limit of the *Aedes albopictus* in the Tohoku region (2019) Source: National Institute of Infectious Diseases (edited and translated by NIES)

Heavy rainfall events with potential to cause floodings are projected to increase at the end of the century in major river basins, with 31 prefectures projected to suffer the greatest level of damage from floods alone.



Types of disasters that cause the greatest damage\*\* \*\*Note that this figure only shows type of disasters that cause the largest amount of damage between flood, storm surge, and combination of both, but other disasters are also projected to occur

## Adaptation

To address health risks, health of employees will be protected from both soft measures (e.g., improvement of work styles) and hard measures (e.g., improvement of facilities). For disaster risks, lives of employees will be protected from disasters by strengthening disaster countermeasures such as BCPs.

		Rising temperatures, increased heavy rainfall / large typhoons	
		Increased health risk	Increased disaster risk
Factors		<ul style="list-style-type: none"> <li>Increased heat stroke, etc.</li> <li>Increased costs for heat stroke prevention</li> <li>Decreased labor productivity</li> </ul>	<ul style="list-style-type: none"> <li>Increased risk of infectious diseases</li> <li>Increased costs for infection control</li> </ul>
	Impacts		
Adaptation measures	Soft measures Improve work styles / Work management	<ul style="list-style-type: none"> <li>Health management</li> </ul>	<ul style="list-style-type: none"> <li>Hard measures Install and improve equipment</li> </ul> <ul style="list-style-type: none"> <li>Install highly efficient air conditioning</li> </ul>
	Soft measures / Hard measures Work environment control	<ul style="list-style-type: none"> <li>Heat control measures for workplaces</li> </ul>	<ul style="list-style-type: none"> <li>Install alarm systems</li> </ul>
	Soft measures / Hard measures Work environment control	<ul style="list-style-type: none"> <li>Infection control measures</li> </ul>	<ul style="list-style-type: none"> <li>Introduce robot technology, ICT, etc.</li> </ul>
	Soft measures Strengthen disaster countermeasures	<ul style="list-style-type: none"> <li>Formulate and implement BCP</li> </ul>	<ul style="list-style-type: none"> <li>Hard measures Improve disaster prevention functions</li> </ul> <ul style="list-style-type: none"> <li>Repair/reconstruct facilities</li> </ul>
			<ul style="list-style-type: none"> <li>Raise ground level</li> </ul>
			<ul style="list-style-type: none"> <li>Optimal placement of facilities</li> </ul>



# Employees

Climate change impacts and adaptation measures on "employees" common to various industries

Factors

Rising temperatures, increased heavy rainfall/large typhoons

Impacts

Increased health risk

Increased disaster risk

- Increased heat stroke, etc. (Increased excess deaths and number of people transported by ambulance due to heat stress)
- Increased costs for heat stroke prevention costs
- Decreased labor productivity due to heat

- Increased risk of infectious diseases (e.g., mosquito-borne)
- Increased costs for infectious disease control
- Increased job turnover due to worse working environment and difficulty in securing human resources

- Increased risk of suffering from disasters (torrential rains, typhoons, floods, storm surges)
- Increased costs for disaster countermeasures, work-related injuries, etc.
- Interference with commuting and working

Adaptation measures

Soft measures

Hard measures

Soft measures

Hard measures

[ Improve work styles / work management ]

- Health management
- Adopt remote work
- Raise awareness of heat stroke and infectious disease prevention
- Prepare health guidance manuals, etc.
- Adjust or shorten business hours and working hours in summer
- Promote "Cool Biz", sunshades, hats, etc.
- Ensure work intervals and rest time
- Heat acclimatization
- Recommend water and salt intake
- Consider appropriate clothing (introduction of air-conditioned clothing, etc.)
- Supervisory patrols during work, etc.

[ Work environment management ]

- Provide heat control measures and rest areas at workplaces
- Monitor heat index (WBGT)
- Control air conditioning settings
- Infection control measures (surveys and countermeasures for outbreaks and distribution of vectors, insect repellent spray, and recommendations for appropriate clothing such as long-sleeved work wear, Vaccines for infectious diseases etc.)
- Promote automated and unmanned work using ICT, AI, etc.

[ Others ]

- Take out accident insurance (accident and medical insurance for employees)

[ Install and improve equipment ]

- 1) Install highly efficient air conditioning
- 2) Install alarm systems
  - Disseminate heat index set by Ministry of the Environment
  - Monitor heat index set by Ministry of the Environment
- 3) Introduce robot technology, ICT, etc.
- 4) Improve workplace environment for outdoor workers
  - Provide rest areas to avoid exposure to the sun
  - Install early alert systems of environmental sensors
  - Thorough measures against vector-bearing mosquitoes (eliminate infestation conditions such as not creating watering holes where mosquitoes are likely to occur)
- 5) Introduce technology to reduce labor
  - Improve performance of machinery
- 6) Optimal placement of facilities
- 7) Introduce highly insulated facilities

[ Strengthen disaster countermeasures ]

Precautionary measures

- Formulate and implement BCP
- Review hazard maps
- Evacuation drills
- Raise public awareness

Remedial measures

- Planned shutdowns

[ Improve work styles ]

- Adopt remote work

[ Others ]

- Take out damage insurance

[ Improve disaster prevention functions ]

Buildings

- 1) Repair and reconstruct facilities
- 2) Reinforce structures and take countermeasures based on regular inspections of structures
- 3) Raise ground level
- 4) Construct outer embankments
- 5) Optimal placement of facilities

Facilities and equipment

- 6) Prepare for loss of power and other lifelines
  - Wireless and satellite phone communication networks
  - Uninterruptible power supply (UPS)
  - Secure multiple means of energy including power generation equipment and air conditioning for power outages
- 7) Install watertight panels and watertight doors

Effect

Low ~ Medium

1) ~ 5)Low ~ Medium

6) ~ 7)High

Low

1) ~ 5)Medium ~ High

6) ~ 7)Low ~ Medium

Cost

Low ~ Medium

1) ~ 5)Low ~ Medium

6) ~ 7)High

Low

1) ~ 5)Medium ~ High

6) ~ 7)Low ~ Medium

Time span

Short ~ Medium

1) ~ 5)Short ~ Medium

6) ~ 7)Long

Short

1) ~ 5)Medium ~ Long

6) ~ 7)Short ~ Medium

How to proceed with adaptation measures

**[Current approach]** Ensure that each employee has correct knowledge about heat stroke and takes precautions to prevent it, and take appropriate measures when an employee suffers from heat stroke. Enable employees to take action to reduce risk of disasters and to take measures to reduce risk of suffering in the event of an emergency.

**[Climate change-aware approach]** Heat stroke is one of direct effects of heat, which is strongly correlated with climate change, and as for mortality risk, an increase in excess mortality has been observed due to rising temperatures. Long-term shutdowns and large amounts of damage caused by disasters and other events are major threats to business continuity and reliability of companies, and climate change adaptation needs to be mainstreamed in terms of employee security.

**[Preparing and planning for climate change]** To address health risks, it is necessary to take measures to protect employees' health from both soft measures (e.g., raise public awareness and improve work environment) and hard measures (e.g., improve facilities). To address disaster risks, it is necessary to protect employees' lives from disasters by strengthening disaster countermeasures including formulation of business continuity plan (BCP).

[References] Ministry of the Environment (2018) "Heat Stroke Environmental Health Manual 2018" [https://www.wbgt.env.go.jp/healthiness\\_manual.php](https://www.wbgt.env.go.jp/healthiness_manual.php), Ministry of the Environment (2008) Global Warming Impacts and Adaptation Research Committee Report "Smart Adaptation to Climate Change" [http://www.env.go.jp/earth/ondanka/rc\\_eff-adp/index.html](http://www.env.go.jp/earth/ondanka/rc_eff-adp/index.html), Ministry of the Environment (2022) "Climate Change Adaptation Guide for Private Sector - Preparing for Climate Risk and Surviving-" [https://adaptation-platform.nies.go.jp/private\\_sector/guide/index.html](https://adaptation-platform.nies.go.jp/private_sector/guide/index.html), National Institute of Infectious Diseases "Expansion of the distribution range of Aedes albopictus" (IASR Vol. 41 p92-93: June 2020) <https://www.niid.go.jp/niid/images/dsc/iasr/41/484.pdf>, Tanaka, Yukako et al. (2019) "Assessment on the Risk of Flood and Storm Surge with Flood Control Facilities" [https://doi.org/10.2208/jscejhe.75.2\\_1\\_109](https://doi.org/10.2208/jscejhe.75.2_1_109), Kusaka, Hiroyuki (2020) "Future Heat Stroke Risk Assessment (SI-CAT Guidebook Editorial Board, Social Implementation Guidebook for Climate Change Adaptation Technologies)" [https://www.mext.go.jp/content/20200325-mxt\\_kankyou-1345230\\_3.pdf](https://www.mext.go.jp/content/20200325-mxt_kankyou-1345230_3.pdf), Smith, Michael (2013) "Assessing Climate Change Risks and Opportunities for Investors: Property and Construction Sector - Investor Group on Climate Change and ANU", DOI:10.13140/RG.2.1.3851.4169



*Released in March*

# Climate Change Risk Analysis Information Site



The Climate Change Risk Analysis Information Site introduces **disclosure trends**, **analysis methods**, and **examples of countermeasures** related to physical risks, as well as **analysis tools and data** that can be used for business impact assessment.

A-PLAT URL : <https://adaptation-platform.nies.go.jp/moej/tcfd-scenario-analysis/index.html>

Disclosure Trends (268)

Ind... ▼

Types of Physical Risks ▼

Risks/Opportunities ▼

Free Word Search 🔍

How-to guide ?

Clear All

Risk (201) ✕

Opportunities (67) ✕

List of Disclosure Trends

▼ Their | ▼ client | ▼ Market Trends

In-house (risks/opportunities related to the physical impact of the company's business activities)

Details of Disclosure	Target Locations	Mitigation	Examples of Disclosure
<p>Damage to factories and research facilities due to natural disasters</p> <p>foodstuff acute risk</p>	In-house bases (Japan)	<ul style="list-style-type: none"> <li>Strengthening Disaster Risk Assessment and Prevention Measures</li> </ul>	<p>[Analysis method]</p> <p>▶ <a href="#">Nissin Oilio Group Corporation</a></p>
<p>Suspension of production due to damage to factories, disruption of raw material delivery, and increased cost of restoration</p> <p>foodstuff acute risk</p>	In-house bases (Japan)	<ul style="list-style-type: none"> <li>Factory Hazard Analysis</li> <li>Enhancement of Business Continuity Plan (BCP)</li> </ul>	-
<p>Risk of shutdown of factories located in coastal areas due to widespread storm surge damage and increased cost of recovery</p> <p>foodstuff acute risk</p>	In-house bases (Japan)	<ul style="list-style-type: none"> <li>Enhancement of Business Continuity Plan (BCP)</li> <li>Establishment of a mutual supply system between our own factories</li> </ul>	-

## Information that can be used for scenario analysis (96 items)

Types of Physical Risks ▼

Reference Scenarios ▼

area ▼

Period covered ▼

Free Word Search 🔍

How-to guide ?

### List of analysis data (as of the end of June 5, Reiwa)

All the details open



atmosphere

#### Global and Japan climate projection data

Temperature, precipitation, solar radiation, wind speed, humidity, snowfa...

link



▶ [Global and Japan climate proje...](#)



atmosphere

#### Japan climate prediction data

Temperature, precipitation, snow cover, snowfall

link



▶ [Japan climate prediction data](#) ↗



atmosphere

#### Multi-Scenario, Multi-Physical Prediction Data

Temperature, precipitation, solar radiation, wind speed, humidity, snowfa...

link



▶ [Multi-Scenario, Multi-Physical ...](#)



atmosphere

#### 150 consecutive years of experimental data from the whole world and Japan

Temperature, precipitation, solar radiation, wind speed, humidity, snowfa...

link



▶ [150 consecutive years of exper...](#)

# Industry-government-academia network on climate change risks in Japan

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## ■ Concept

### Background :

- Growing need for information on climate change and climate change impacts (mainly physical risks)
- Lack of physical risk information for private companies to conduct risk/scenario analysis in TCFD, etc.

### Objective :

- To establish a forum for exchanging opinions and collaboration in order to understand the needs for climate change risk information, to enhance the information infrastructure such as the provision of information in line with those needs, and to promote the utilization of climate change risk information.

**Start :** September 2021

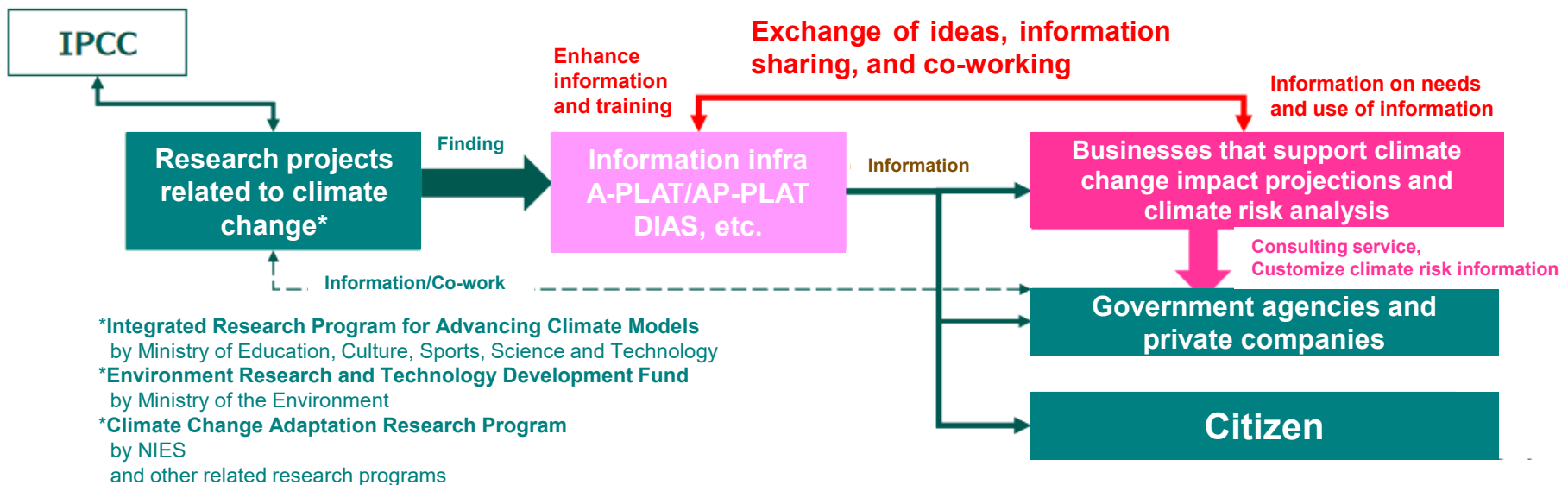
**Organizers :** Ministry of the Environment, Ministry of Education, Culture, Sports, Science and Technology, Ministry of Land, Infrastructure, Transport and Tourism, Financial Services Agency, National Institute for Environmental Studies (NIES)

**Participants :** Companies that utilize climate change risk information (mainly physical risks) and provide consulting services, etc. (59 companies as of October 2024)

# Industry-government-academia network on climate change risks in Japan

## ■ Activities

- Exchange of opinions on climate risk information infrastructure
- Study sessions and seminars on scientific findings and technologies (once every few months)
- Establishment of thematic section meetings
- Symposiums for Private Sector (← The 4<sup>th</sup> symposium will be held in November, 2024)



# Lessons learned

- “Data” must be transformed into “information”
  - Numerical data -> visualization (graphs, Web)
  - Reading / learning materials, infographic
  - Next step: Tailored information for each user
    - Storytelling, Generative AI
- “Posting useful information” is not enough
  - > 99% Japanese people do not know A-PLAT
  - Attract the attention of **search engines** (Google)
    - #1 in “climate change adaptation”
    - #2 in “climate change”
    - **#5 in “climate change impacts”**: Next target
- Direct communication with users
  - Social media: SNS, YouTube, etc. -> Session 1
  - Networking with local authorities, private sector

気候変動

すべて ニュース 画像 ショッピング 動画 地図 ウェブ もっと見る ツール

## 気候変動

きこうへんどう

概要 要因 行動 影響

国連広報センター  
https://www.unicc.or.jp

### 気候変動とは何か?

気候変動は、気温および気象パターンの長期的な変化を指します。これらの変化は太陽活動の変化や大規模な火山噴火による自然現象の場合もありますが、1800年代以降は主...

関連する質問

- 気候変動とは何ですか?
- 気候変動の別の言い方は?
- 気候変動の最近の例は?
- 気候変動 どんなことが問題か?

フィードバック

気候変動適応情報プラットフォーム (A-PLAT)  
https://adaptation-platform.nies.go.jp

### 気候変動と適応

気候変動について、過去のデータや将来予測、様々な対策の紹介とともに6つの項目に分けて解説していきます。第1弾として「気候変動とは」を公開します。

気候変動とは・ココが知りたい地球温暖化 気候...・03 将来の気候・気候変動適応用語集