環境省
Ministry of the Environment

Objective of two-day workshop and Japan's efforts for adaptation

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1. Background

Lots of various experiences, good practices and lessons on mainstreaming adaptation and implementation of adaptation actions in developing countries

On-going bilateral and multilateral cooperation with international organizations for the process and implementation of actions in developing countries

HOWEVER, these experiences and cooperation are STILL not well shared among relevant stakeholders.

Ministry of the Environment, Japan decided to take an initiative to **develop case studies** of mainstreaming adaptation and implementation of actions in different sectors in the Asia-Pacific region, to **share them with relevant stakeholders** through the website and **the workshop in Bangkok, Thailand**.

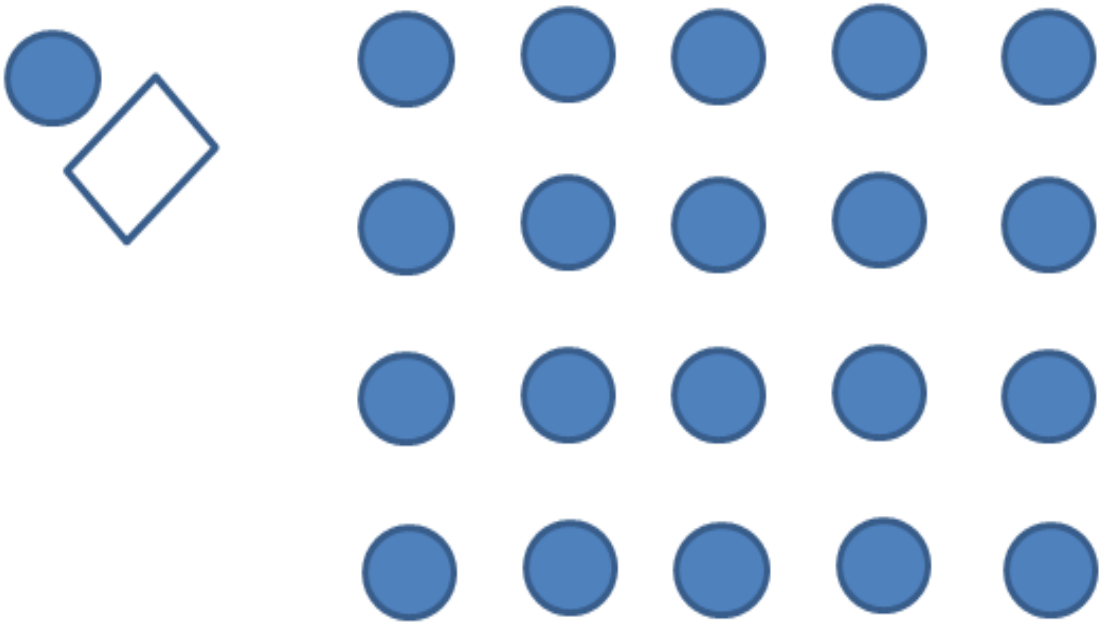
2. Objectives

- **To share lessons from experiences and exchange their views on:**
  - Coordination mechanisms among relevant stakeholders for expanding NAP process into local level New!
  - How to align budgets to address climate risk through national adaptation planning and to ensure international funding sources
  - How to roll out and scale up local adaptation activities New!
  - How to utilize data and scientific knowledge for implementation and evaluation of adaptation projects
  - How to conduct monitoring and evaluation (M&E) of adaptation plans, policies, programs and actions in each country to update and report periodically

4. Outline of the workshop (1/3): One Plenary session

Gain new knowledge

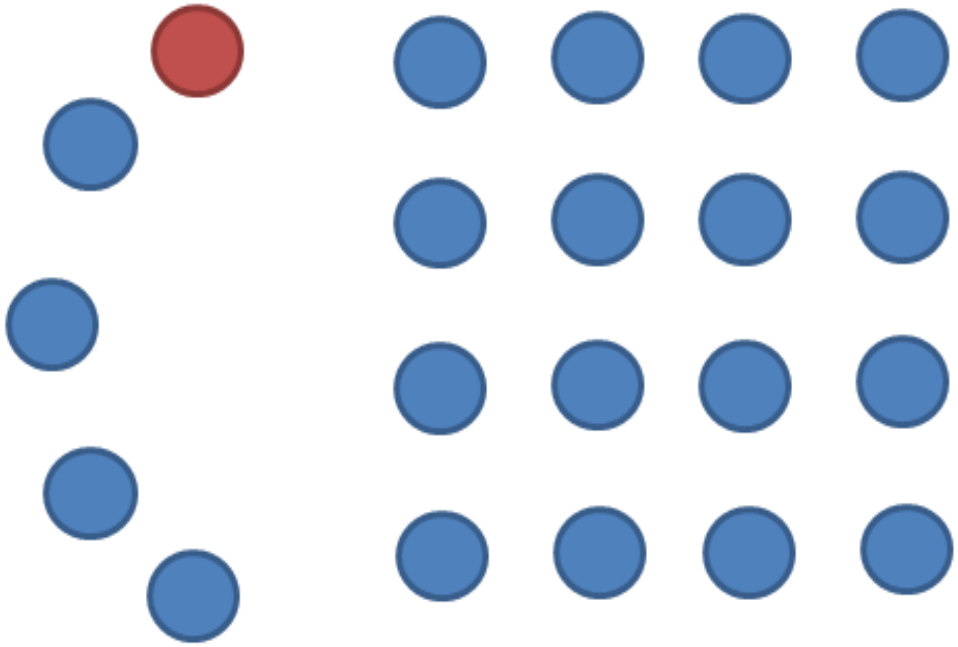
- Presentations will be made by resource persons.
- After the presentations, there will be a Q&A session and discussion with all participants.



4. Outline of the workshop (2/3): Three Panel discussion sessions

Discuss interactively

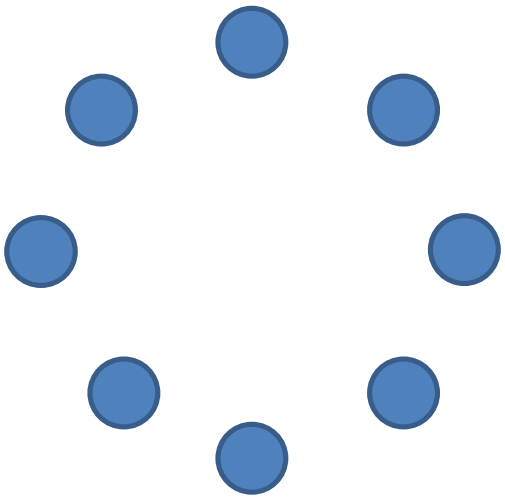
- First, panelists will share their own experience on each topic in accordance with the given guiding questions.
- Interactive discussion will be held between the panelists and other participants, managed by the facilitator.

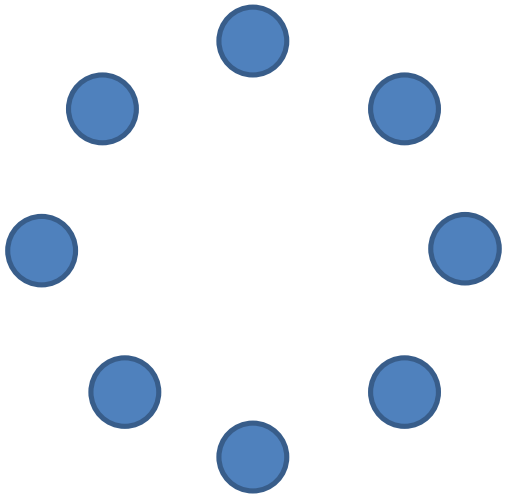


4. Outline of the workshop (3/3): Two Breakout sessions

Exchange views

- First, participants will be separated into two groups.
- After explanation of given guiding questions from a facilitator, ice-breakers will share their experiences and views for 5 minutes.
- Then, each group will discuss in accordance with the given guiding questions, managed by a facilitator.
- After the group discussions, rapporteur of each group will share the main outcome.





NAP formulation process in Japan

2000s - : Research projects on climate change impacts — Start

2012: 4th Basic Environmental Plan, "Government should promote adaptation actions" — Decide

2013: White Paper on Environment, "Government will formulate comprehensive adaptation measures based on climate change impact assessment in Japan.

2015 March: Climate Change Impact Assessment Report, Central Environment Council

September: Inter-Ministry Meeting on Climate Change Adaptation was established

November: Cabinet decided the National Adaptation Plan — Establish

Overview of Japan's NAP Process

Climate Change Impact Assessment

- 7 sectors, 56 sub-categories (Agriculture & Forestry & Fisheries, Ecosystem, Natural Disasters & Coastal Zones, Human health, Life of Citizenry & Urban life) Classification
- Over 500 papers were reviewed by 57 experts Expert judge
- Level of significance, urgency and scientific confidence were judged Evaluation
- Agriculture, Disasters & Coastal Areas, Human health are at high risk

Setting common strategies

- Mainstreaming adaptation into relevant policies and measures
- Enhancing scientific knowledge
- Sharing climate risk information
- Promoting local actions
- Promoting international cooperation

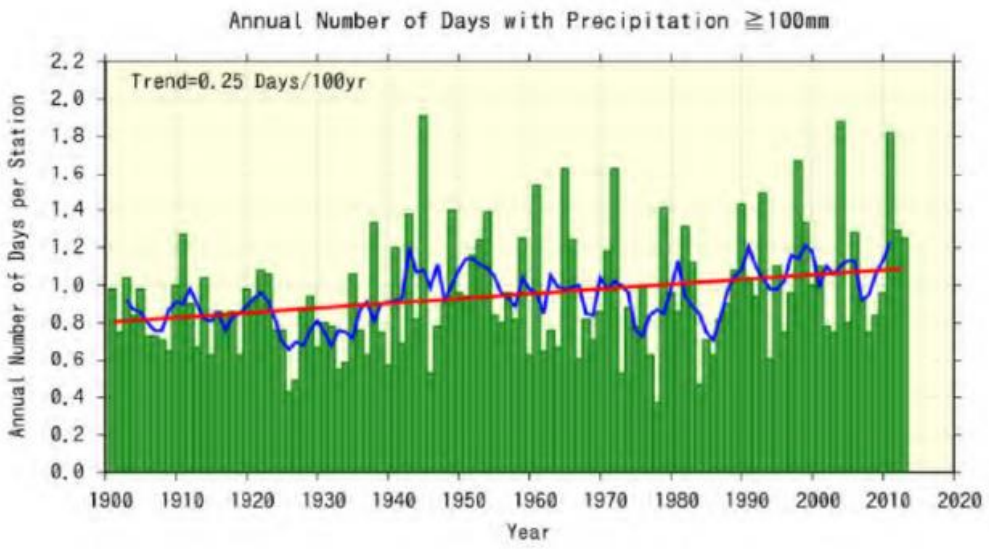
Observed Climate Change in Japan (selected examples)

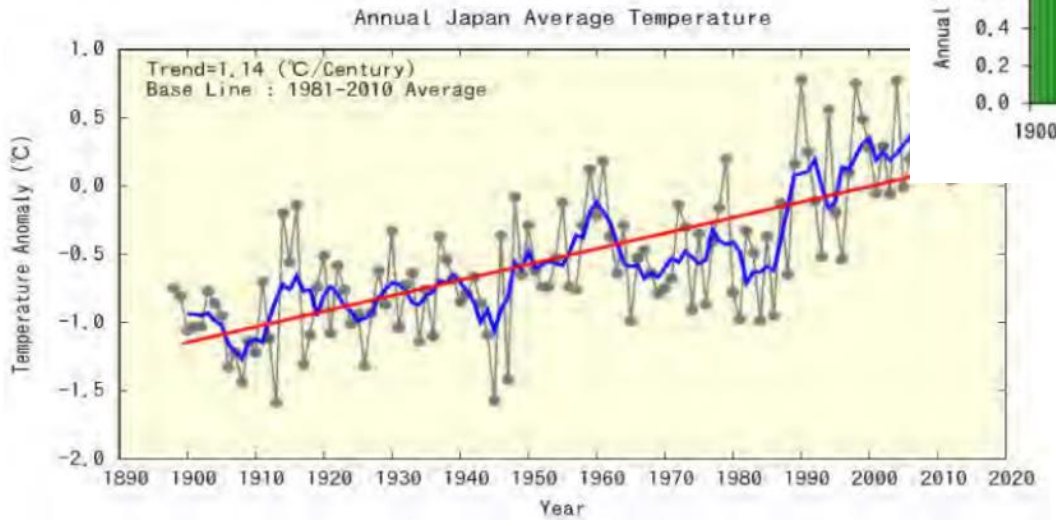
Annual mean temperature

- Annual mean temperature Increased from 1898 to 2013 at a **rate of 1.14°C per 100 years**.
- From 1931 to 2013, number of days with a **maximum temperatures of 35°C or higher was increased**.

Precipitation

- There is a clear trend from 1901 to 2013 showing
  Increase: Number of days, **>100 mm/day and > 200 mm/day**
  Increase: Number of days, **no rainfall**





Source: Climate Change Monitoring Report 2013 (Japan Meteorological Agency)

Climate Change Impacts in Japan

Associated with temperature rising and precipitation changing,

Rice
Fruit Trees

Decline in rice quality.

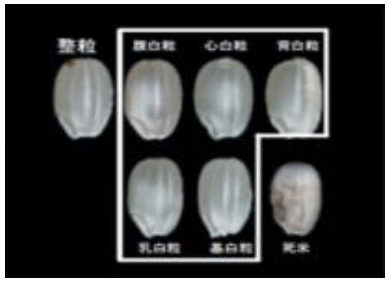


Figure: White immature rice grains (Source:MAFF)

・Rice becomes white/immature when the average temperature during its ripening phase exceeds 27℃.
・ The problem is especially severe in Kyushu prefecture, where average temperature has risen during the rice's ripening phase.

Figure: Rind puffing of Mandarin (Source:MAFF)

Rind puffing occurs due to high temperature/extreme precipitation (Decline in quality/storability)

Extreme Weather Disasters

Figure: Impact of Flood (Source:MLIT)

Increase in days of extreme rain events (> 200 mm/day)

The distribution of Aedes albopictus, the primary vector of dengue virus, has moved northward

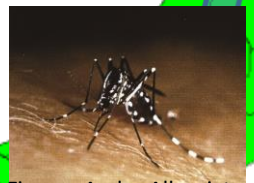
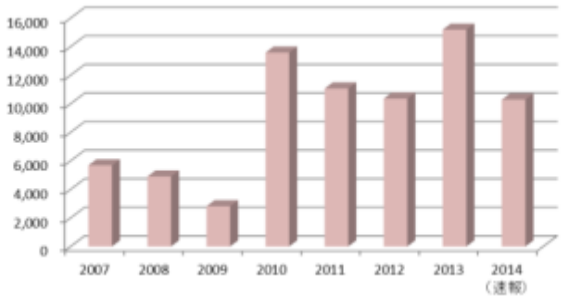


Figure: Aedes Albopictus (Source: Department of Medical Entolomology, National Institute of Infectious Diseases)

Heat stroke, Vector borne disease

In the summer of 2013, a total of 15,189 people (20 cities) were taken to the hospital for heat stroke (Source: NIES)



Increase in Coral Bleaching
Growing Sika Deer Population

Ecosystem

Figure: Coral Bleaching (Source:MOE)

Figure: Sika Deer (Source: Toru Nakashizuka)

Crops/ plants are consumed and destroyed

Due to decline in human population, number of hunters and **snowfall**

Projections of Climate Change in Japan

Projections for the end of the 21st century relative to the end of the 20th century

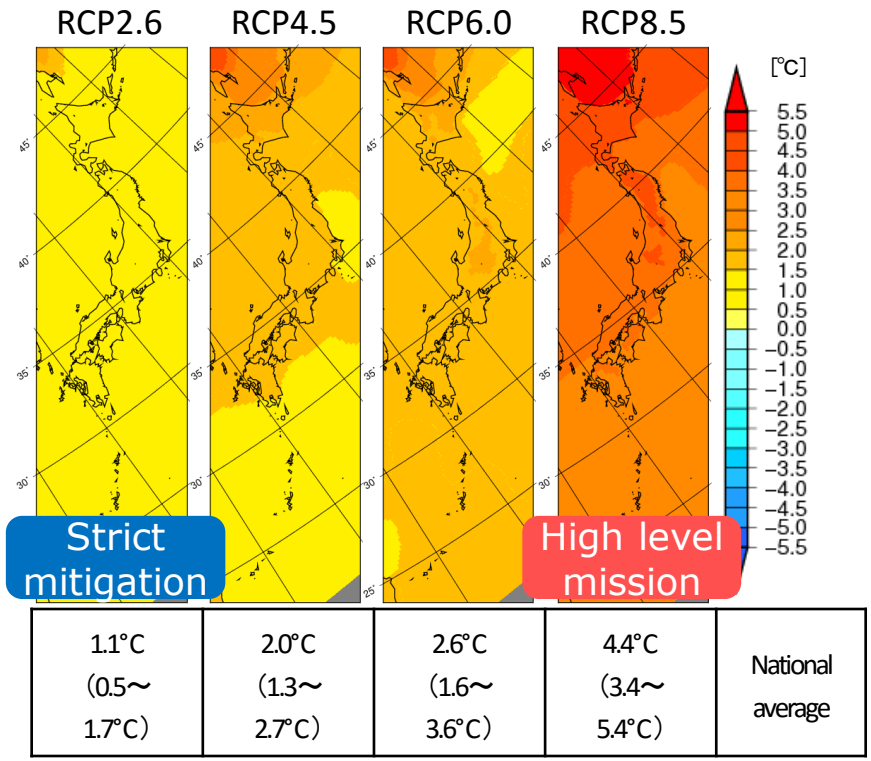
Projection of annual mean temperature

- Increase **in 1.1°C (0.5–1.7°C)**, if strict mitigation measures are taken.
- Increase in **4.4°C (3.4°-5.4°C)** if GHGs are emitted at a very high level.

Projection of precipitation

- Increase in the frequency of heavy rainfall, with higher amount, and the number of days with no precipitation.

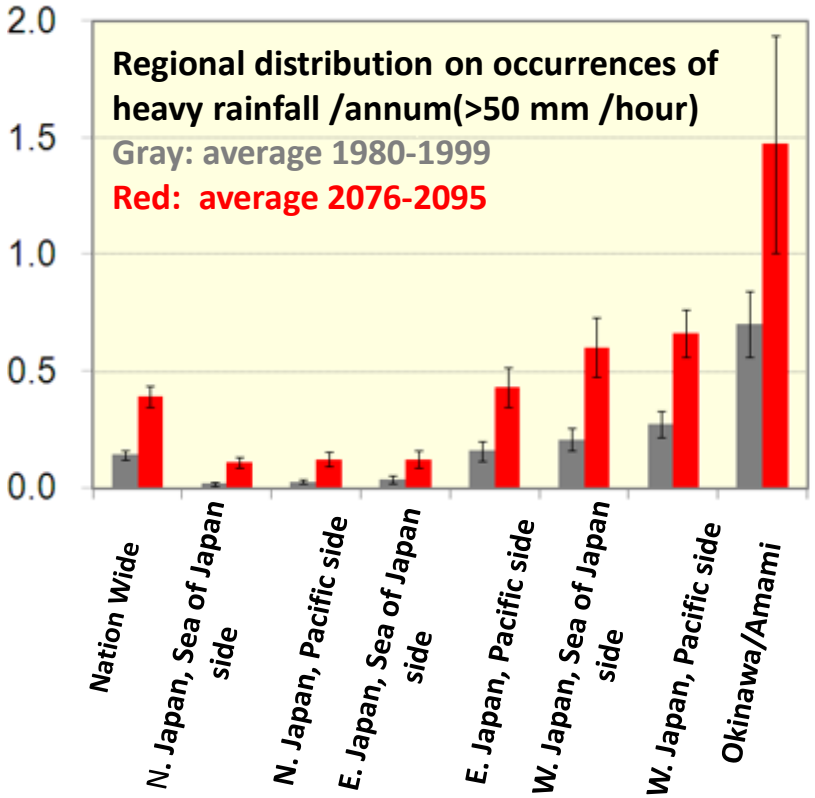
Distribution of changes of annual mean temperature



1.1°C (0.5～1.7°C)	2.0°C (1.3～2.7°C)	2.6°C (1.6～3.6°C)	4.4°C (3.4～5.4°C)	National average

※Map of distribution of changes shows partial results of calculations (SST1 and YS cases)

Source: Results of Climate Change Projections in Japan Considering Uncertainty (Announcement) (December 12, 2014) (Japan Meteorological Agency, Ministry of the Environment)



Source: Japan Meteorological Agency

Assessment of climate change impacts (summary)

【Significance】 Very High ◇ Not "Very High" —: N/A(currently cannot be assessed)
【Confidence】 High △ Medium □ Low —: N/A(currently cannot be assessed)

【Urgency】 High △ Medium □ Low —: N/A(currently cannot be assessed)

Chapter	Section	Sectors	Significance	Urgency	Confidence
Agriculture, Forest/Forestry, Fisheries	Agriculture	Paddy field rice	○	○	○
		Fruit trees	○	○	○
		Barley/Wheat, Soybean, Feed crops..	○	△	△
		Vegetables	—	△	△
		Livestock Farming	○	△	△
		Plant Pests, Weeds	○	○	○
		Water, Land and Agricultural Infrastructure	○	○	△
	Forest Forestry	Sediment, Landslide..	○	○	△
		Storm surges Tidal waves	○	○	○
		Coastal Erosion	○	△	△
		Water supply (Surface water)	○	○	△
		Timber production (e.g. Plantations)	○	○	□
		Planted forests	○	△	△
		Natural forests/ Secondary forests	○	△	○
		Non-wood forest products (e.g. Mushrooms)	○	○	□
	Fisheries	Migratory fish stocks (Ecology of fishes..)	○	○	△
		Marine ecosystems	○	○	△
		Coastal ecosystems	○	△	□
		Propagation and Aquaculture..	○	○	□
		Freshwater ecosystems	○	△	□
		Sea-level rise	○	△	○
		Storm surges, Tidal waves	○	○	○
		Coastal Erosion	○	△	△
	Others	Risk of Mortality	○	○	○
		Heat stroke	○	○	○
		Damage from Wildlife	○	○	—
		Shifts in Distribution and Populations	○	○	○
Water environment, Water resources	Water environment	Lakes/Marshes, Dams(Reservoir)	○	△	△
		Rivers	◇	□	□
		Coastal areas & Closed sea areas	◇	△	□

Chapter	Section	Sectors	Significance	Urgency	Confidence
Water environment, Water resources	Water resources	Water supply (Surface water)	○	○	△
		Water supply (Groundwater)	◇	△	□
		Water demand	◇	△	△
Natural Ecosystems ＊Only Described "assessment for Ecosystems"	Terrestrial ecosystems	Alpine / Subalpine zone	○	○	△
		Natural forests/ Secondary forests	○	△	○
		Countryside-landscape (Satochi-Satoyama)	◇	△	□
		Planted forests	○	△	△
		Damage from Wildlife	○	○	—
		Material Balance	○	△	△
	Freshwater ecosystems	Lakes / Marshes	○	△	□
		Rivers	○	△	□
		Marshlands	○	△	□
	Coastal ecosystems	Subtropics	○	○	△
		Temperate / Subarctic	○	○	△
	Marine ecosystems	Marine ecosystems	○	△	□
	Phenology	Phenology	◇	○	○
	Shifts in Distribution and Populations	Native species	○	○	○
		Alien species	○	○	△
Natural disasters, Coastal areas	Water-related disasters	Floods	○	○	○
		Inland waters	○	○	△
		Storm surges, Tidal waves	○	○	○
	Storm surges, Tidal waves	Sea-level rise	○	△	○
		Storm surges, Tidal waves	○	○	○
		Coastal Erosion	○	△	△
	Sediment-related disasters	Sediment, Landslide..	○	○	△
	Others	Strong wind..	○	△	△

Chapter	Section	Sectors	Significance	Urgency	Confidence
Human health	Heat stress	Risk of Mortality	○	○	○
		Heat stroke	○	○	○
	Infection	Vectorborne diseases	○	△	△
		Water- and food-borne diseases	—	—	□
		Other infectious diseases	—	△	△
	Others	Combined impacts (warming and air pollution)	—	○	□
		Impacts on vulnerable populations	—	□	□
		Health impacts without leading to clinical symptoms	◇	□	□
			◇	□	△
Industrial / Economic activities	Industrial / Economic activities	Manufacture			□
		Energy Demand and Supply	○	△	△
		Commerce	○	△	○
		Construction	—	—	—
		Medical	—	—	—
	Finance, Insurance	Finance, Insurance			
	Tourism	Tourism			□
	Others	Other impacts (e.g. Overseas impact)	○	○	□
Life of Citizenry, Urban Life	Urban Infrastructure, Lifeline	Water supply, Transportation..	◇	○	○
	Life with sense of culture & history	Phenology		○	□
		Traditional events / Local industry	—		
	Others	Impact on life due to Heat stress	○	○	○

Adaptation to Impacts of Climate Change (Structure)

Basic concept (Part1)

■Vision

Promoting adaptation measures to climate change impacts, to build a **safe**, **secure** and **sustainable society** that is able to **minimize and avoid damages** for life of citizens, properties, economics, and natural environment due to its impacts, and to **be resilient** against damages.

■ Basic Strategy

- **Mainstreaming** adaptation into **government policies**
- Enhancement of **scientific findings**
- Promotion of understanding and cooperation through **sharing and providing information on climate-related risks**
- Promotion of adaptation in **local governments**
- Promotion of **international cooperation** and contribution

■ Period

Considered with long-term perspective till the end of 21st century, showing the basic direction in about coming 10 years.

■ Basic approach

○Observe/forecast climate change, assess its impacts, and develop/conduct adaptation plan. This cycle is repeated several times.

○Duration: 5 years (will revise the plan when necessary)

Sectoral measures (Part 2)

The following 7 chapters were compiled; "**Agriculture**, **Forest/Forestry**, **Fisheries**", "**Water environment, water resource**"," **Natural ecosystems**", "**Natural disaster, Coastal area**", "**Human health**", "**Industrial / Economic activities**", and "**Daily Life, Urban Life**"

International measures(Part 3)

- ■Observe and research
- ■Exchange and deliver climate risk information
- ■Promote adaptation efforts at regional/local levels
- ■Expand adaptation efforts on an international scale

Example of Impacts and Basic Measures: Natural Disasters

Impacts (Examples)

- **Water-related disasters**: There are growing concerns about the frequent occurrence of water-related disasters due to natural hazards exceeding the capacity of facilities, and about the occurrence of water-related disasters on an extremely large scale, caused by natural hazards significantly exceeding the capacity of facilities but relatively rare.
- **Storm surges and tidal waves**: There are concerns about greater inundation damage on the land side, increased coastal erosion, and sea-level-rise-induced declines in port waterfront industries and logistics (including decreased cargo handling efficiency).
- **Sediment-related disasters**: Major damage has occurred in many places in Japan in recent years, and there are concerns about increases in the frequency of occurrence.

Overtopping of Formerly Kumanogawa River Ohhashi Bridge (photo taken from the right bank)

The discharge of the Shingugawa river-system exceeded its peak run-off specified in the Basic Policy for River Improvement and eventually, the highest river discharge in the recorded history of Japan came about (about 24,000m ^{3}/s).

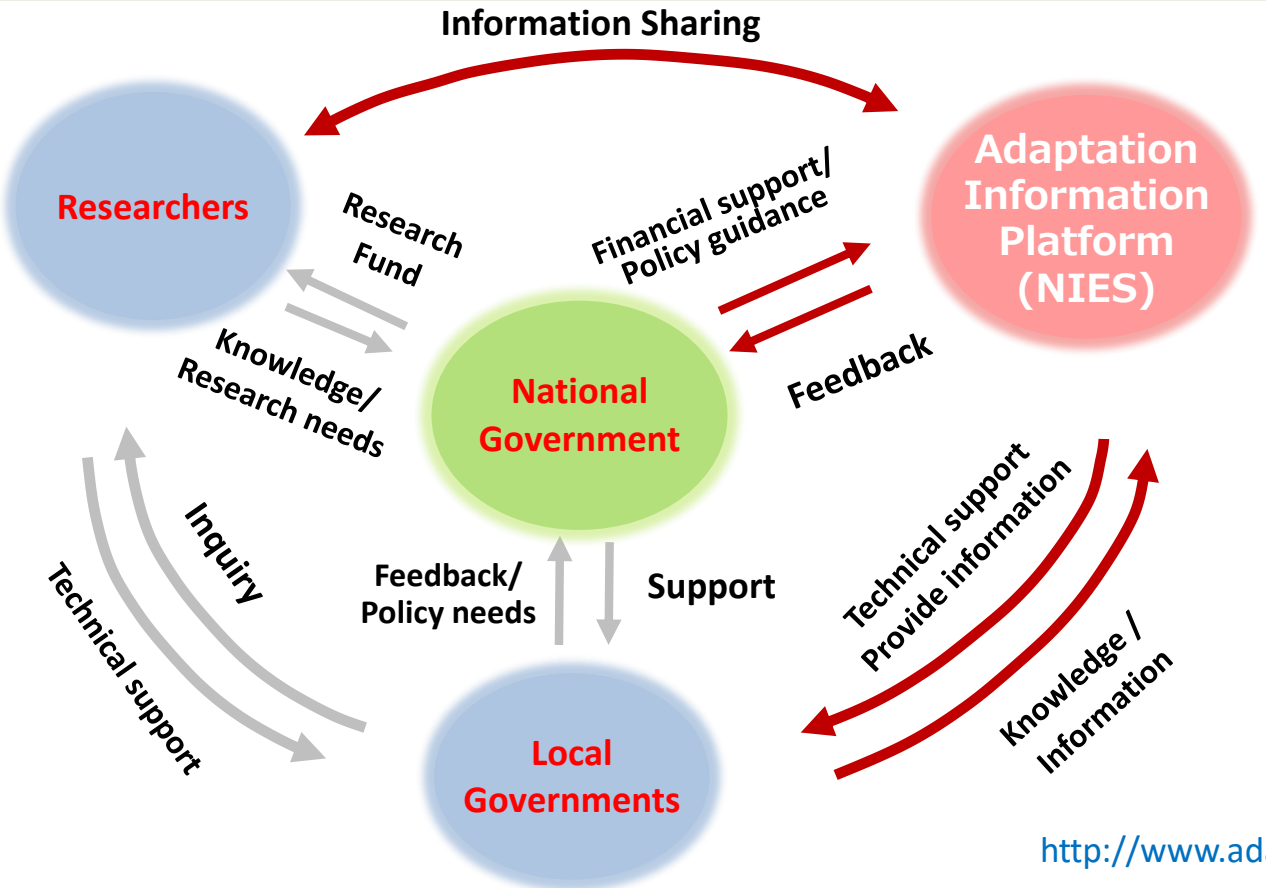
Kanto-Tohoku Heavy Rainfall Disaster in Sep.2015 (Flooding of Kinugawa-River)

Basic Measures (Examples)

- **Water-related disasters**
  - **Natural hazards that could occur relatively frequently** : Continue to steadily promote improvements that have been ongoing to date for construction of facilities and conduct maintenance and upgrades as appropriate.
  - **Natural hazards that exceed the capacity of facilities**: Endeavor to reduce risk by making improvements in facilities' operations, design, and maintenance and upkeep procedures; promote urban and local development in ways that consider disaster risk reduction; and endeavor to enhance preparedness for actions such as evacuations, emergency operations, and business continuity.
- **Storm surges and tidal waves**
  - Implement accurate weather and marine monitoring, and promote measures strategically and adaptively with policies from perspectives of a combination of hard and soft, based on regular assessments of climate change impacts.
- **Sediment-related disasters**
  - Promote construction of sediment-related disaster prevention facilities in locations that can be most effective in protecting human life, and that can protect evacuation sites and routes, public facilities, socioeconomic activities.
  - Promote the designation of sediment-related disaster hazard areas.

Adaptation Information Platform

- "Climate Change Adaptation Platform (A-PLAT)" was established in August, 2016 with a view to enhancement of adaptive capacity through sharing knowledge and experience （Secretariat : NIES）。
- Aims at serving as a basis for adaptation actions of local governments, businesses, and citizens.
- In cooperation with relevant ministries and agencies, it provides information for meeting users' needs; develops and furnishes tools to promote adaptation actions; and collects, organizes, and provides the best practices.



≪Content≫

■ Government action
- National Adaptation Plan
- Climate research

■ Local Government action
- Climate change adaptation plan guideline
- List of research on climate change impacts
- Website exclusive to members of the local government

■ Private Sector action
- Case studies of successful firms/companies that have successfully managed climate risk while adapting to climate change

■ Individual action
- Information on ways of adapting to changing climate

http://www.adaptation-platform.nies.go.jp/index.html

Content : Adaptation Plan

Summary and link to the “National Adaptation Plan” (Decided at the Cabinet Meeting in 2015)

Link to adaptation plans approved by the local governments (Only licensed materials)

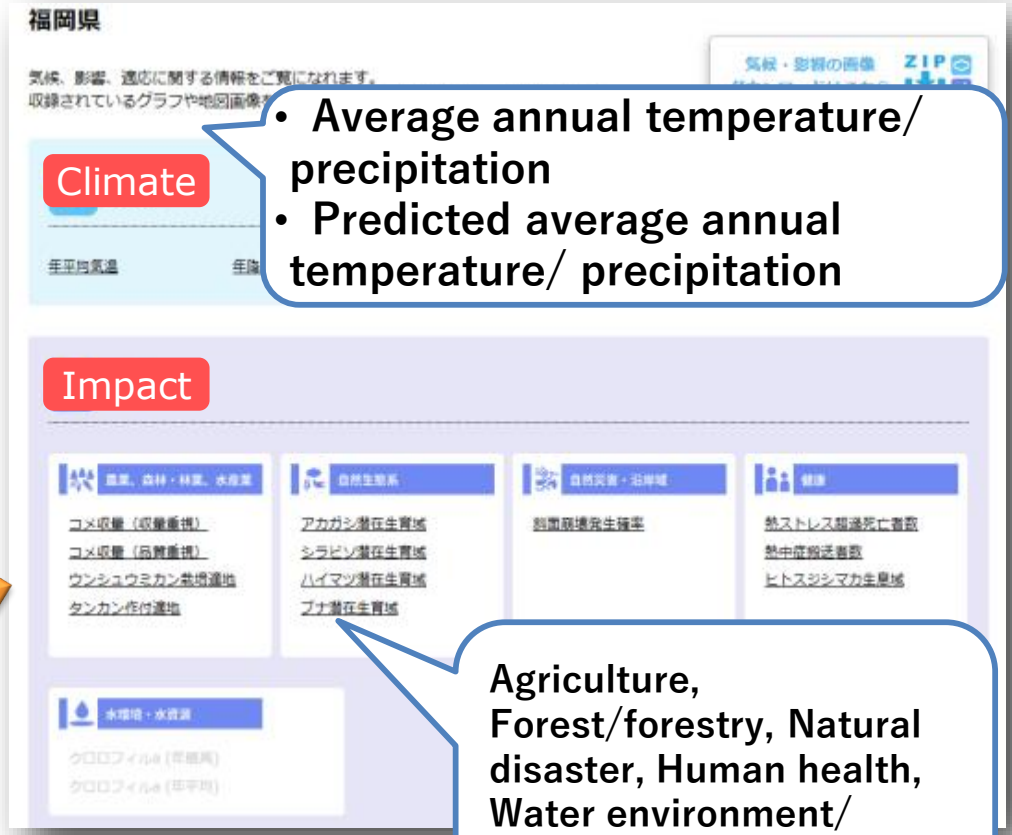
※As of November, 2016: 32 out of 47 prefectures have formulated adaptation plans.

Content : National/Prefectural Information

Projection of climate situation and impacts on the prefectural basis

Download graph/map data

Criteria for assessing climate change impacts



- Average annual temperature/ precipitation
- Predicted average annual temperature/ precipitation

Agriculture, Forest/forestry, Natural disaster, Human health, Water environment/ water resource

Way forward

- PDCA should be established, need to enhance governance and institutions
- Encouraging local governments to take further adaptation actions including formulation of local adaptation plans
- Establishing platform to collect and inform climate risk information to stakeholders
- Further enhancing scientific knowledge
- Enhancing outreach to private sectors and public

Support for Adaptation Planning in Developing Countries
Efforts of Ministry of the Environment

●Projection of climate change impact assessment & promotion of adaptation

(climate change impact assessment / support for promotion of adaptation in Asia-pacific region)

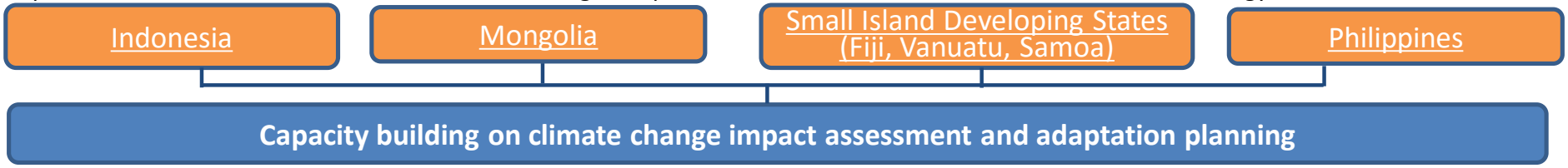
① **Under the bilateral cooperation, implement the survey of needs and climate change impacts assessment for adaptation planning**

Host countries ：Indonesia, Mongolia and small island states in Pacific are being planned

Implementation structure：To establish a consortium by research institutions and consultants for each country

② **Capacity building on climate change impact assessment and adaptation planning for developing countries such as Asia-Pacific region**

Implementation structure：Asia Pacific Climate Change Adaptation Network （APAN）, Asian Institute of Technology （AIT）, and others.



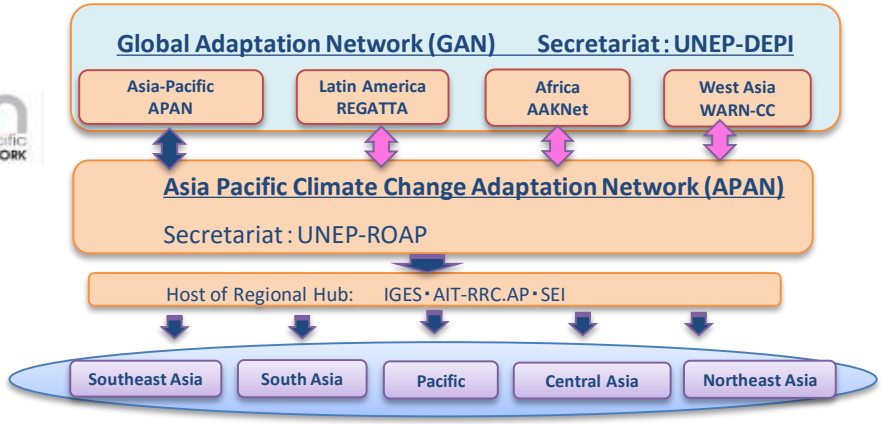
●Financial support to the Global Adaptation Network

Global Adaptation Network (GAN)

A global network for adaptation proposed by UNEP.

Asia Pacific Climate Change Adaptation Network (APAN)

APAN organized more than 40 trainings, workshops, forums and others since 2011.



Asia-Pacific Adaptation Information Platform

◯ **Asia Pacific Adaptation Information Platform** will be established by 2020 to share **climate risk information** via online with research institutes/universities in both developing/developed countries.

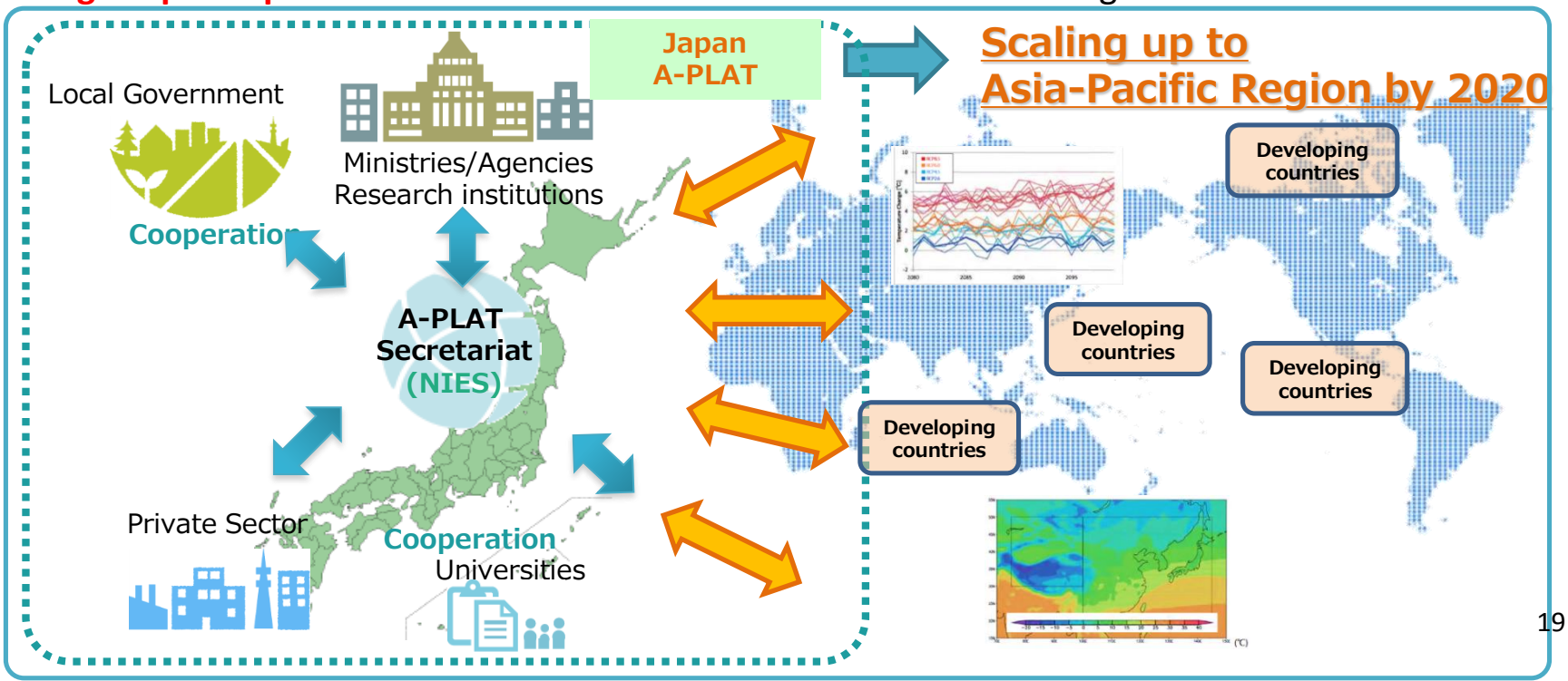
◯ This platform will be established based on Japan's A-PLAT starting its operation in Aug 2016

◯ To support adaptation measures by providing advanced scientific climate risk information

◯ Japan will take a lead in the following activities under the Platform

- Develop dataset on projection of climate change impacts in the region through bilateral & intensive studies
- Develop supporting toolkits for officials and stakeholders engaged in adaptation planning
- Build capacity on climate change impact assessment/ adaptation planning

◯ **Calling for participation** from the countries in Asia Pacific and other Regions



Thank you for your attention!