行政法人 國家災害防救科技中心
National Science and Technology Center for Disaster Reduction

The 5th International Climate Change Adaptation Platforms Meeting/
AP-PLAT Plenary Meet, October 24th - 25th, 2024, Tsukuba, Japan.

Taiwan Climate Change Summary 2024 for local scale

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National Science and Technology Center for
Disaster Reduction (NCDR)

Core Policy in-country

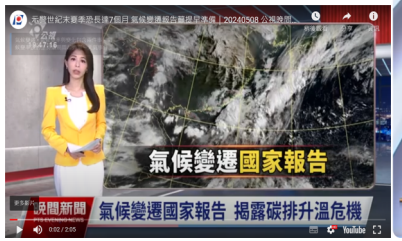
Climate Change Response Act

Climate Change Response Act

- On January 2023, Taiwan revised the Greenhouse Gas Reduction and Management Act and renamed it as the **Climate Change Response Act**
- **A specific chapter was dedicated to Climate Change Adaptation**, aiming to enhance Taiwan's ability to with climate change by improving scientific research on climate change and improving evidence-based decision-making.

Public briefing on the national climate change science report

- A total of **680 participants** (in-person+online)
- The electronic version of the report has been downloaded over **14,050** times
- Approximately **94** reports in print or media
- References from ministries (Ministry of Transportation, Water Resources Agency) and NGOs



- Hosted by the NSTC(NCDR)and MoE

Future Change

Taiwan continues to warm, with shorter winters and longer summers

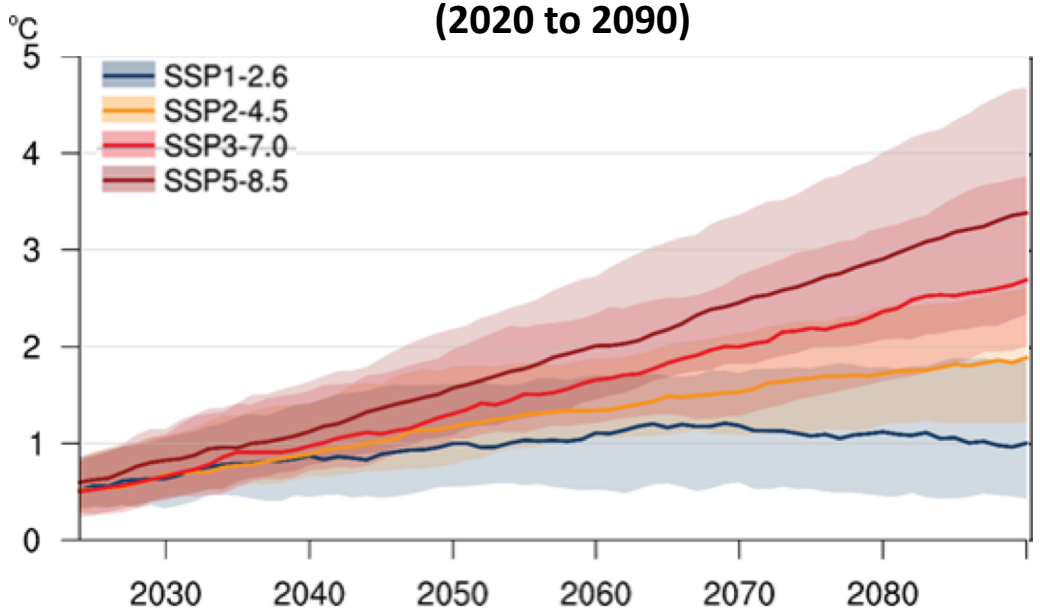
Annual Temperature Changes

Due to globalization, temperatures continue to rise (global carbon reduction success is necessary to slow down this trend)

Seasonal Change Trends

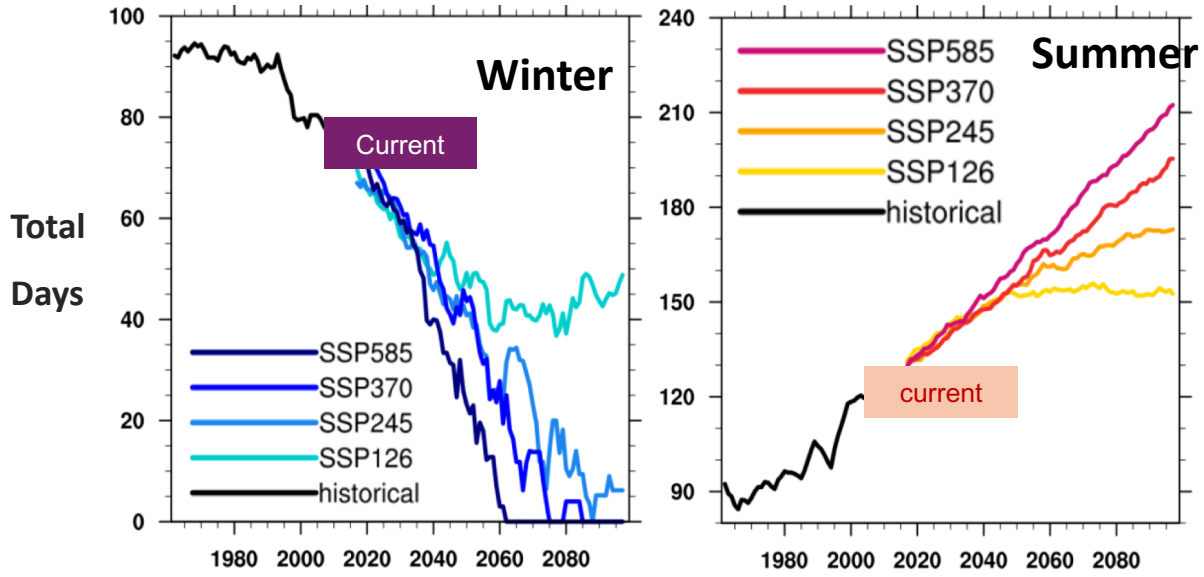
Future winters will be shorter, and summers will be longer

Estimated changes in Taiwan's surface temperature (2020 to 2090)



(Using 1995-2014 as the reference period)

Total Days of Winter and Summer in Taiwan



The Worst-case Scenario: No winter by 2065, with summers lasting over half a year

NSTC 國家科學及技術委員會 National Science and Technology Council

環境部 Ministry of Environment

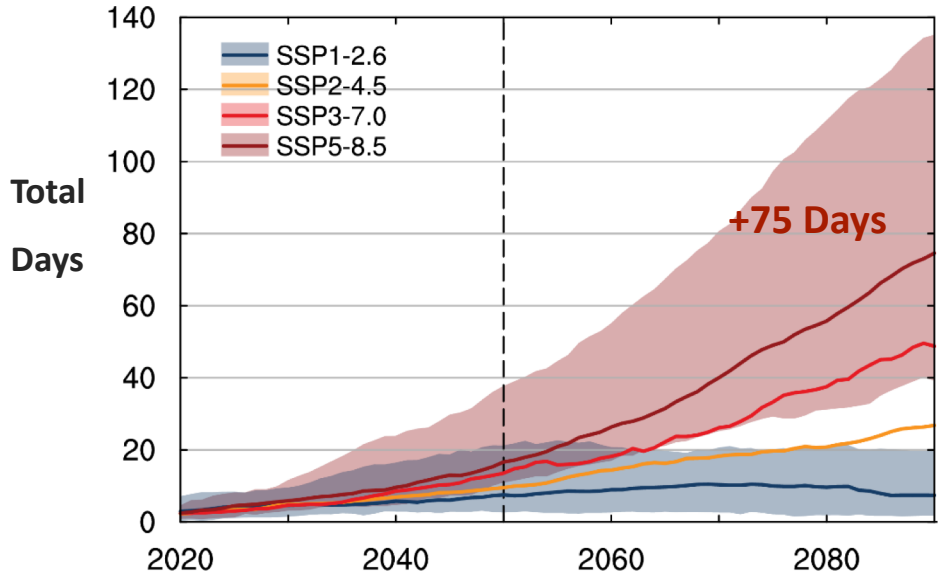
Reference: Climate Change Scientific Report 2024, NSTC & MOENV

Future Change | Increase in extreme high temperatures and the likelihood of heavy rain

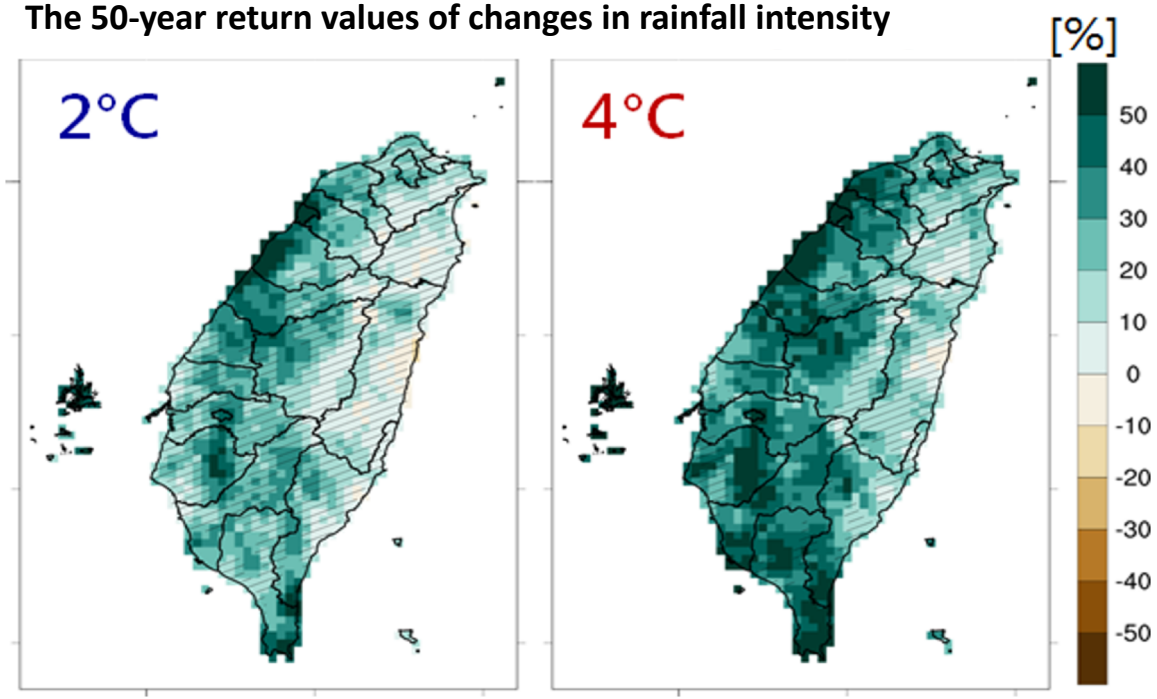
High temperature days continue to increase in lowland areas under SSP5-8.5 (global carbon reduction failure scenario) with an average increase of 75 days across Taiwan

50-year recurrence period extreme rainfall intensity generally increases in western Taiwan with an average intensity increase of 40% under 4°C warming

Future projections of high temperature (36°C) days in Taiwan (relative to 1995-2014)



The 50-year return values of changes in rainfall intensity



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Future Change

Decrease in the number of typhoons, increase in the likelihood of strong typhoons, exacerbation of droughts and floods

In the future, the number of typhoons affecting Taiwan will decrease, but both wind speed and rainfall will increase, with an increase in the frequency of strong typhoons

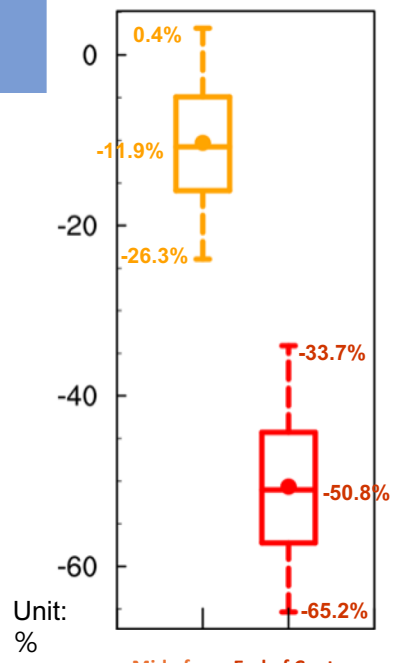
Future Typhoon Changes
(Change rate relative to the baseline/current)

Currently, an average of 3.5 typhoons affect Taiwan per year

Baseline: 1979-2015
Mid of century: 2031-2065
End of century: 2071-2099

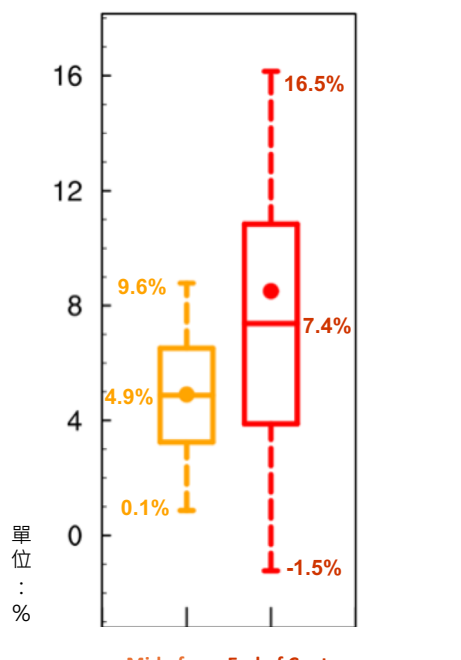
35-year average changes (dots in the figure)

Decrease in Number of Typhoons Affecting Taiwan



-15% -55%

Increase in Wind Speed of Typhoons Affecting Taiwan



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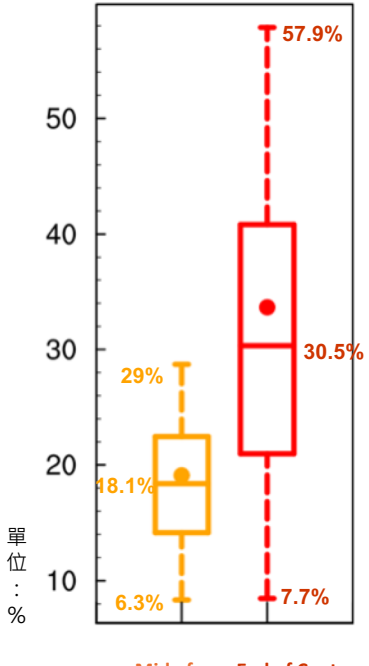
Increase in Rainfall of Typhoons Affecting Taiwan



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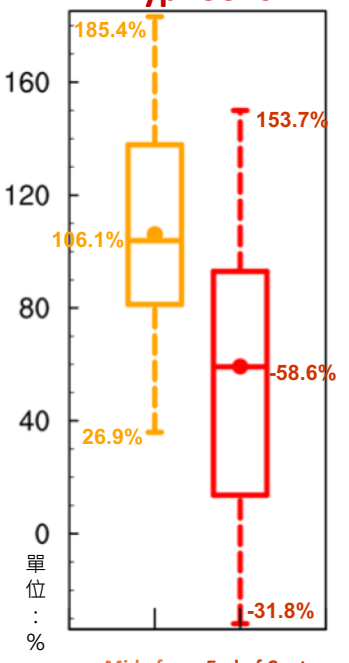
Increase in Frequency of Strong Typhoons



+105% +60%

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Reference: Climate Change Scientific Report 2024, NSTC & MOENV

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Technical Assistance at local level

Adaptation Implementation Plan

MoE & NCDR: Collaborations for Policy Implementation

2021-2023 Two-Year MoU between EPA & NCDR (on risk assessment)

2023-2027 **Four-Year MoU between MoE & NCDR**

Main items of collaborations:

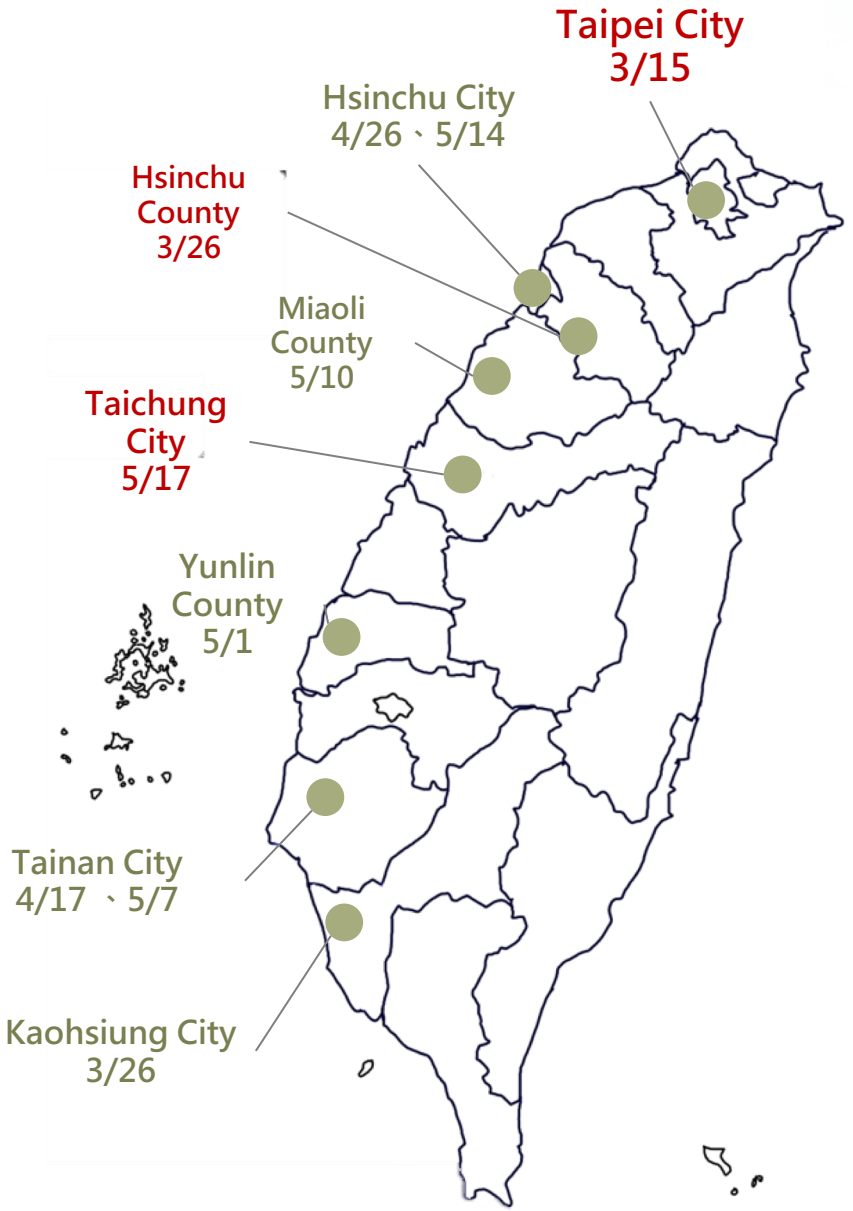
- Science-based policy/decision making for climate change adaptation program
- Drafting/Implementing of National Climate change Risk Assessment Regulations
- Technical advisory on the development of Inter-sectoral Climate Change Adaptation Platform
- Assist National Climate Change Reports and Adaptation Information Disbursement
- Capacity building and training on Climate Change Adaptation

Integrate Scientific Evidence into Policy & Decision Making

2023.07.06
Local Government General Meeting

2024.01.17
Local Government Consultation Session

2024.03.16
Capacity Building Workshop-Local Government



Bridging Knowledge Gaps

1. **Explain adaptation Concepts through case studies**
2. **Gather local needs of scientific evidence and information**
3. **Analyze formal operational structure for establish/executing Adaptation Implementation Plan**

Communicate based on Adaptation Framework

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Why we need to do adaptation?

Explain the climate change trend in Taiwan and how adaptation is different from disaster reduction and climate change mitigation.

What project may be related to climate change?

Discuss how operational activities or projects may be different from adaptation and how it might be relevant

When to incorporate adaptation strategies?

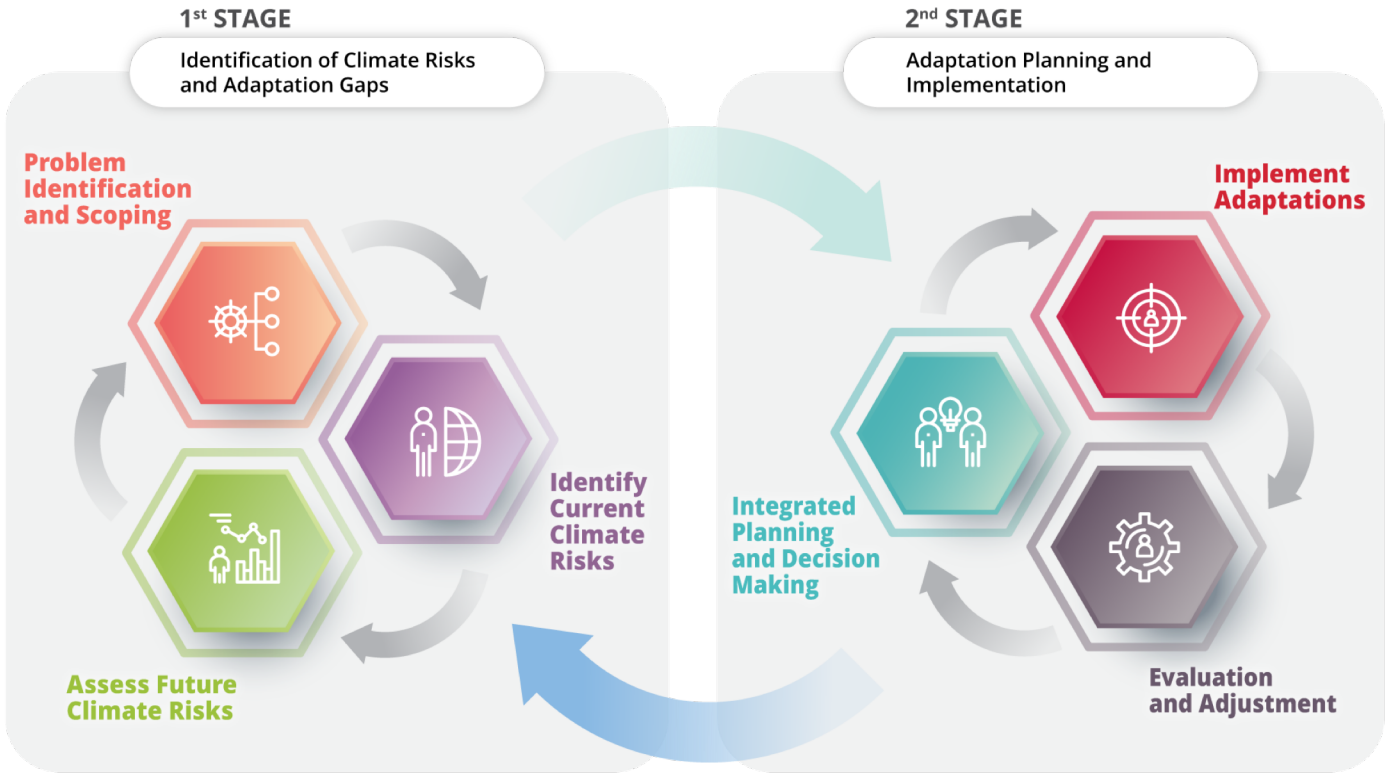
Discuss how to revise current policy/strategies when future climatic risk is likely to increase

How to know the risk trend?

Explain how to do a complete risk assessment and whether all assessments should be quantitative.

National Adaptation Framework

The “Two-Stage, Six Elements” Framework developed by TCCIP is officially adopted by the National Adaptation Program, therefore will be utilized at local level as well.



Challenges for Locally-led Adaptation

On Scientific Evidence

1 Difficulties in Supporting Local Adaptation Planning with Existing Scientific Information

- Incomplete data (the Central government has not yet produced or provided the necessary indicators/raw data)
- The spatial resolution of data provided is not useful on local scale.

2 Insufficient Capacity for Local Adaptation Planning

- Technical barriers to data understanding, mapping and analysis
- Lack of ability to interpret and information application
- Lack of integrated channel or platform for data and information extraction

Challenges for Locally-led Adaptation

On Governmental Procedure

1 **The top-down approach has made key decision makers the main (sometimes sole) success factor of adaptation planning**

- Top-level officials will decide the overall direction, blueprint and proactiveness of local governance on adaptation.
- Cross-departmental discussions tend to be very limited when decision-makers do not understand the importance or cannot envision how adaptation might relate to their works, therefore making it difficult to discuss holistic strategies.
- Due to frequent replacement or changing of personnel handling local adaptation-related work makes it difficult to execute or promote tasks with continuity.

2 **Capacity of Consulting Teams for Adaptation Planning**

The analysis of the scientific data is mostly dependent on the capacity of the project teams of the governmental unit and the analytical and policy capabilities vary greatly.

3 **Funding and Result Evaluation**

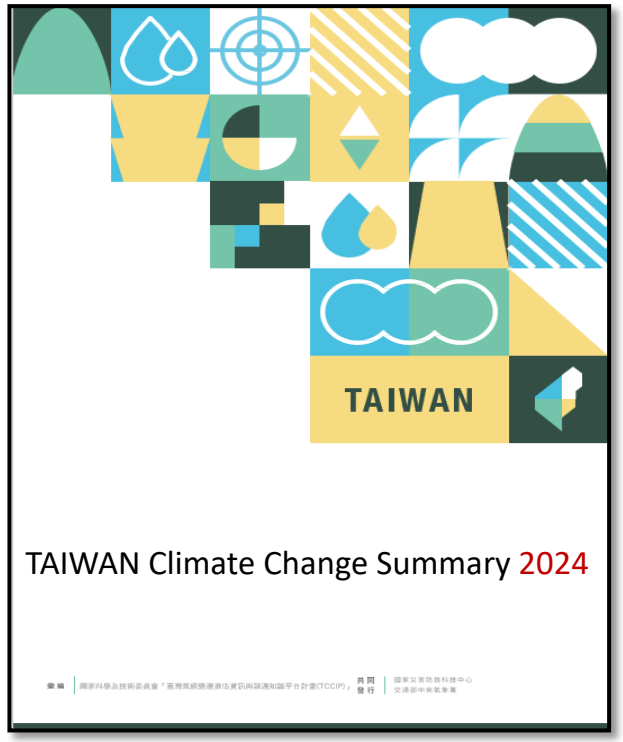
- Insufficient adaptation funds and potential competition with mitigation needs.
- Unclarity on how to set the evaluation criterial for reviewing the rationale, effectiveness adaptation planning and the results of adaptation action.

TAIWAN Climate Change Summary 2024

- Use meteorological scientific data to briefly describe the climate change situation of a county or city, and provide climate change information for each county or city for users to use as a reference for decision-making.

Features

- Describe current climate
- Overview of past climate change
- Projection of future climate



Targeting regional characteristics
- detailed output and application

Time

Provide extreme weather information: Monthly scale spatial distribution (temperature), Seasonal rainfall

Space

Taiwan’ s complex terrain results in different climate characteristics . Practical for local use

Co-participation: Central Weather Administration (CWA)

Work in progress: “Local Climate Overview”

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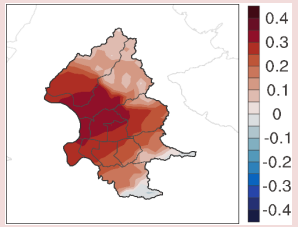
Time

(2) Past 60 years	(1) Last 30 years	(3) till year 2100
Past Trend	Current Climate	Future Projection

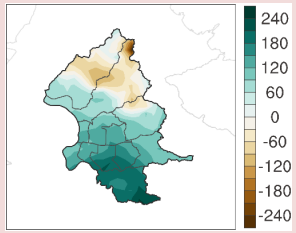
Space

Past Trend	Current Climate	Future Projection
All Areas	All Areas	All Areas
Lowlands (under 500m)	Lowlands (under 500m)	Lowlands (under 500m)
Mt. Range (500~1499m)	Mt. Range (500~1499m)	Mt. Range (500~1499m)

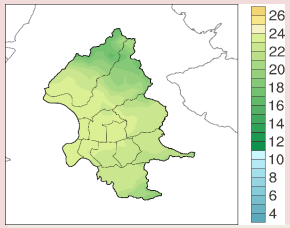
Temperature



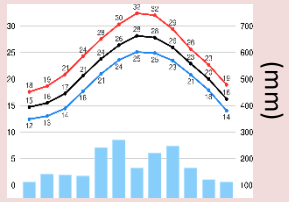
Total Precipitation



Temperature (Annual Average)

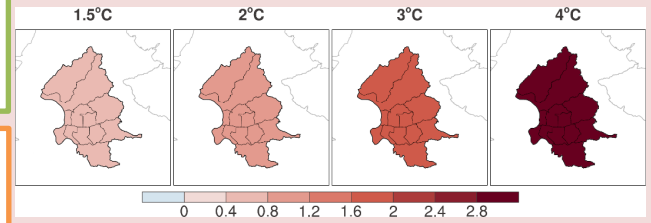


Temp. (Monthly Average)

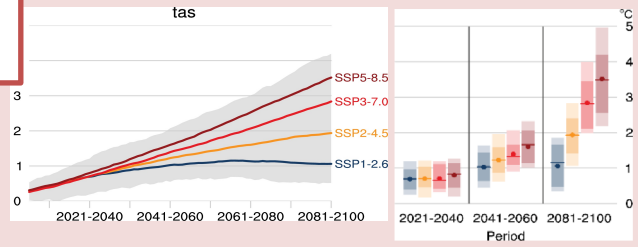


Provide specific climatic information: temperature in hot/cold months, seasonal precipitation

Different Global Warming Levels



Different SSPs



Offer ranges in numbers to display uncertainties

Graphs	Past Trend	Current Climate	Future Projection
	Spatial Distribution (2)、Regional Average(6)、Observation Data Trend(2)	Spatial Distribution (9)、Monthly Climate Characteristics (3)	Regional Average (4)、Spatial Distribution (5*indicators)

Indicators	Past Trend	Current Climate	Future Projection
	Average temperature, total precipitation	Average temp, total precipitation, Monthly temp (Max, Min), Monthly Precipitation	Average temperature, total precipitation, max daily precipitation, max days without rain, Days hotter than 36°C (Top95%)

Thank you for your attention