TAIWAN INT'L WATER WEEK

TW-NL water challenges conference: Request for effective solution!

Strengthen Flood and Drought Resilience under Climate Change

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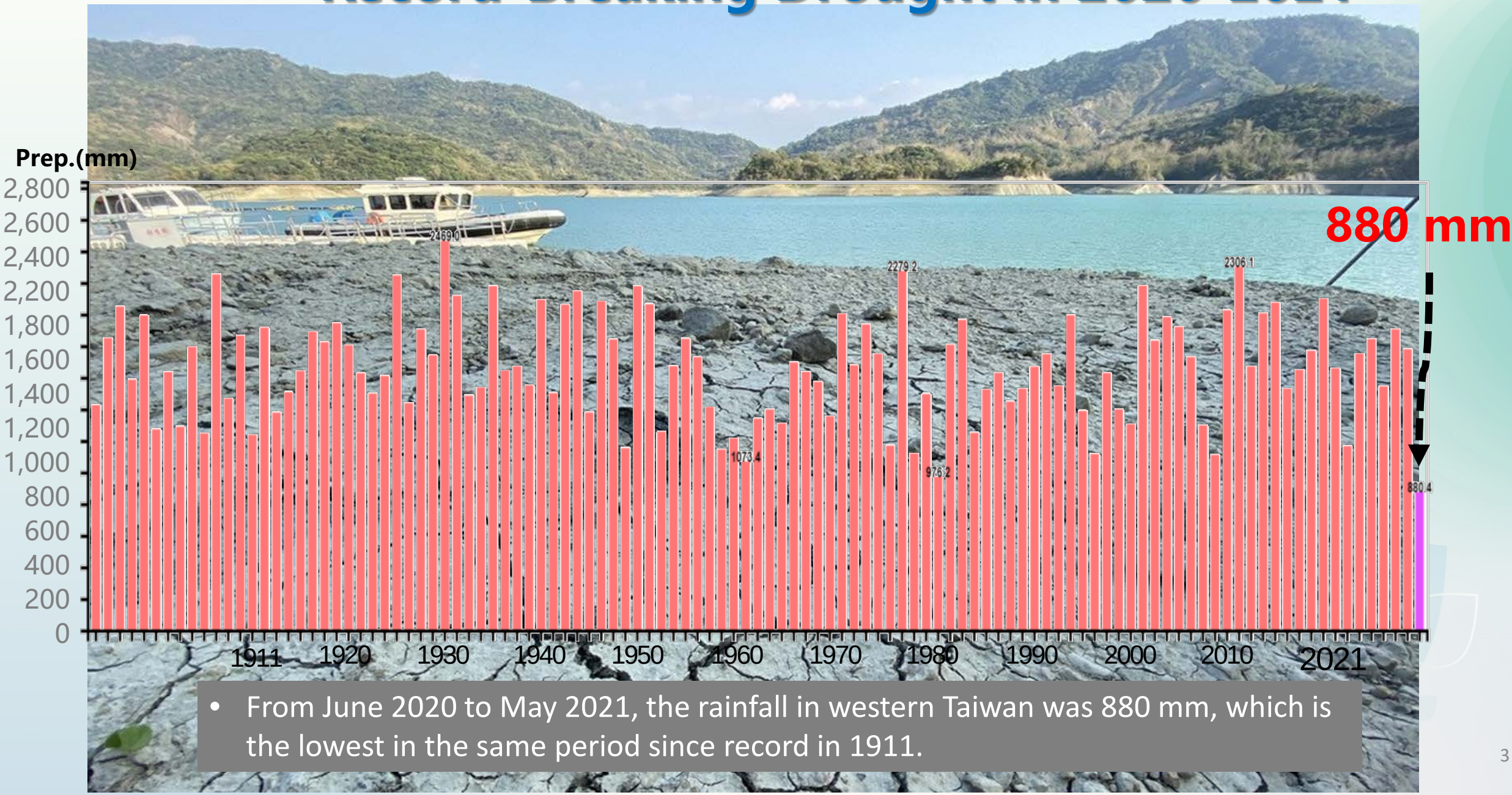
Content

01

Climate Change Effects Taiwan

Record-Breaking Drought in 2020-2021



- From June 2020 to May 2021, the rainfall in western Taiwan was 880 mm, which is the lowest in the same period since record in 1911.

Lowest Water Level Ever in Reservoirs

2021.5.29

Shihmen Reservoir

Lyiutan Reservoir

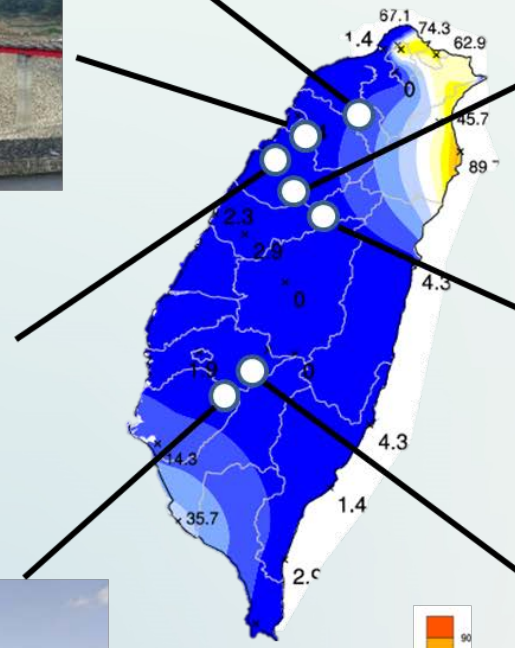
Baoshan 2nd Reservoir

Yongheshan Reservoir

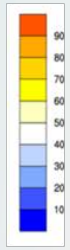
Techi Reservoir

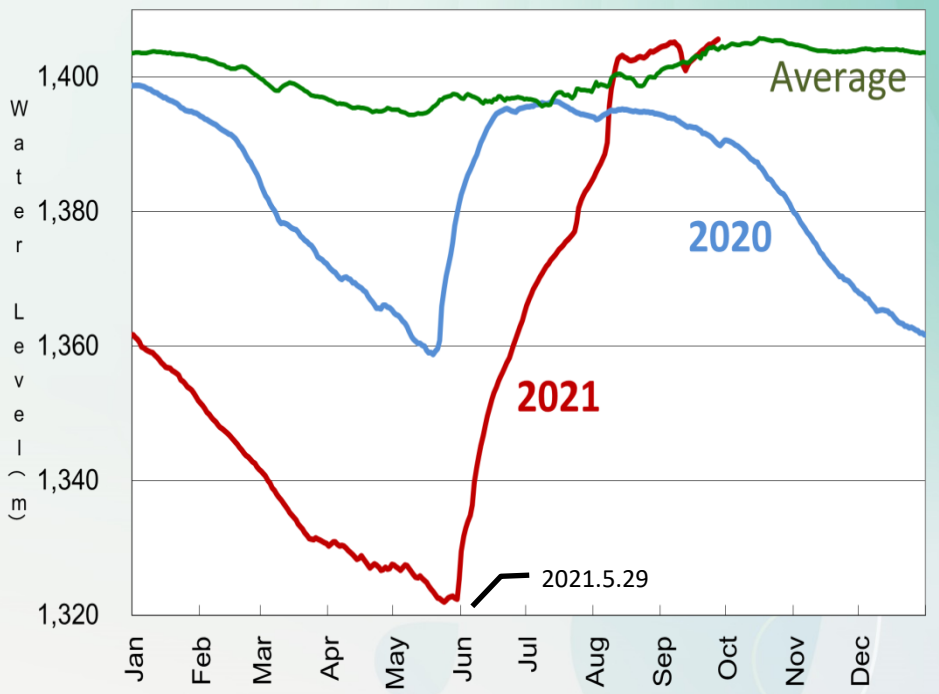
Nanhwa Reservoir

Tsengwen Reservoir



Precipitation (Percentile)
2020.6.1~2021.5.19





In Just 2 Months After the Drought...

2021.7.30-8.8

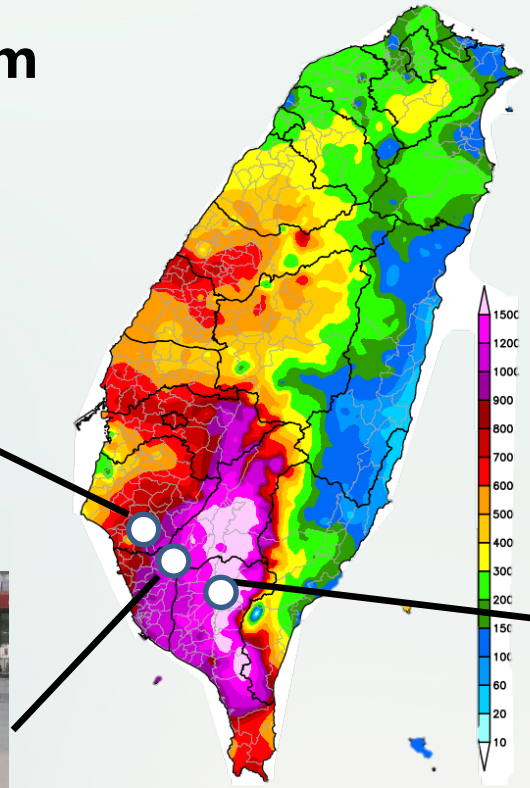
Flooding Area: 774 ha

Tainan

Total Prep. 1,411mm

Kaohsiung

Total Prep. 2,313mm



Pingtung

Total Prep. 2,427mm

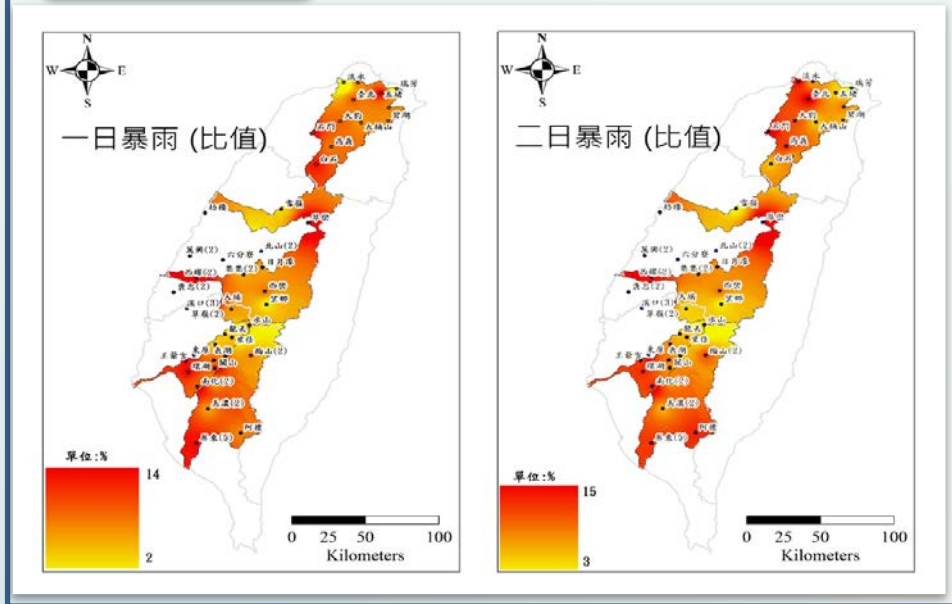
No Reason to be Optimistic

IPCC AR5

Rainfall trend in 2021~2040

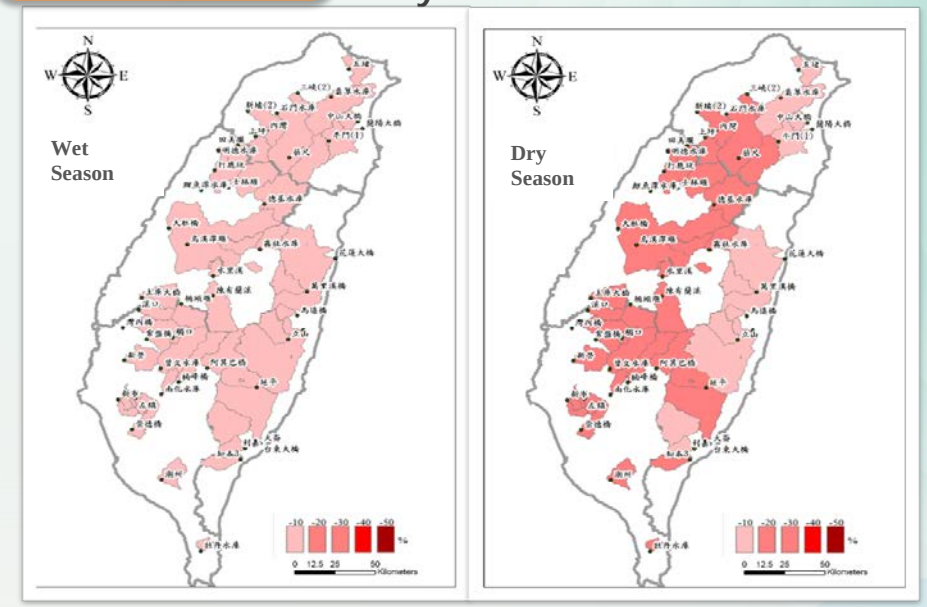
Flood

Rainfall Intensity:
1-D(+14%)、2-D(+15%)



Drought

Rainfall Volume:
Wet Season：-5~-7%
Dry Season：-9~-14%



IPCC Final Draft of WGI AR6

The worst scenario by the end of 21th century

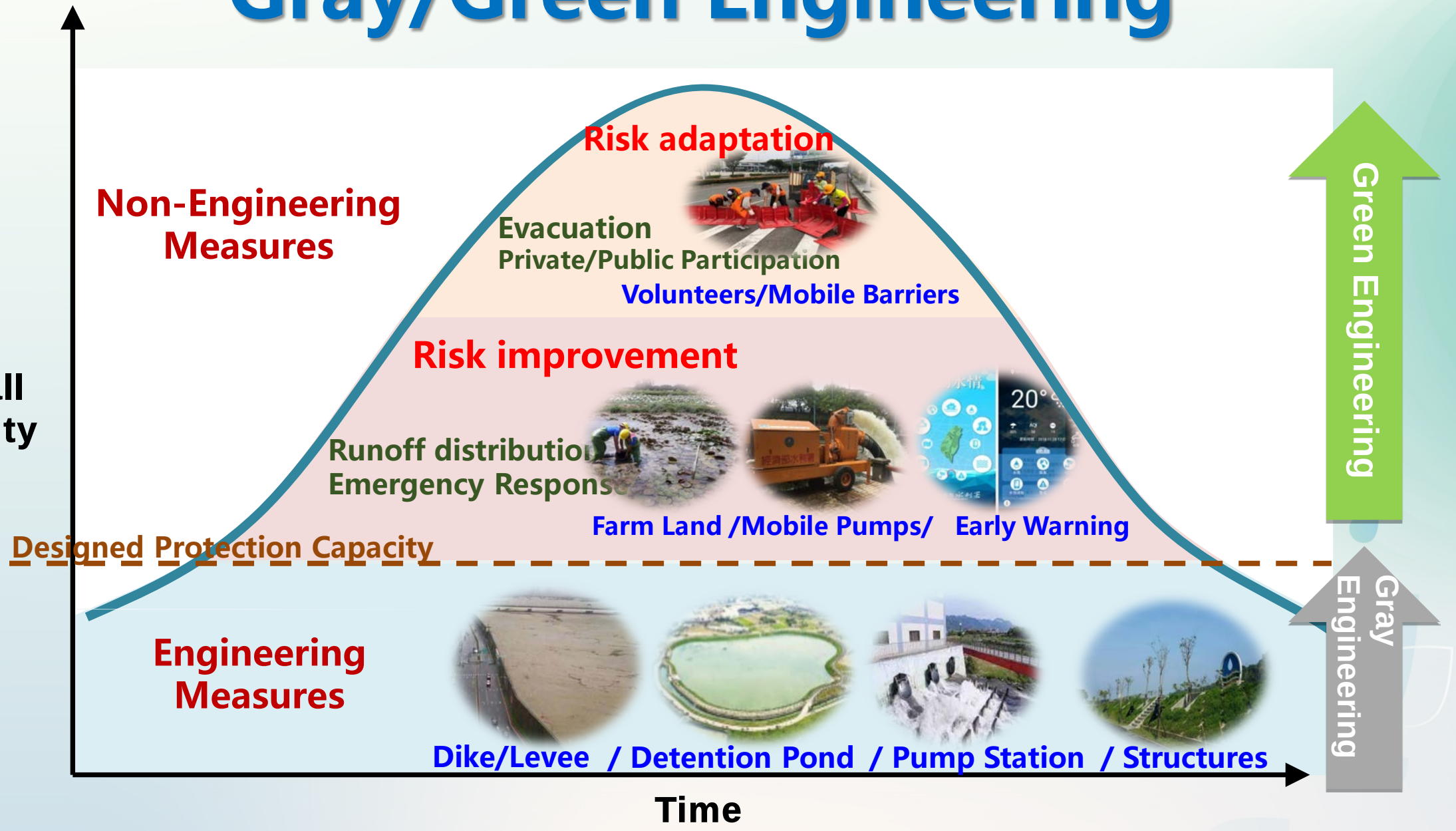
Flood 1-D Rainfall Intensity +41.3%

Drought Days without rainfall +12.4%

02

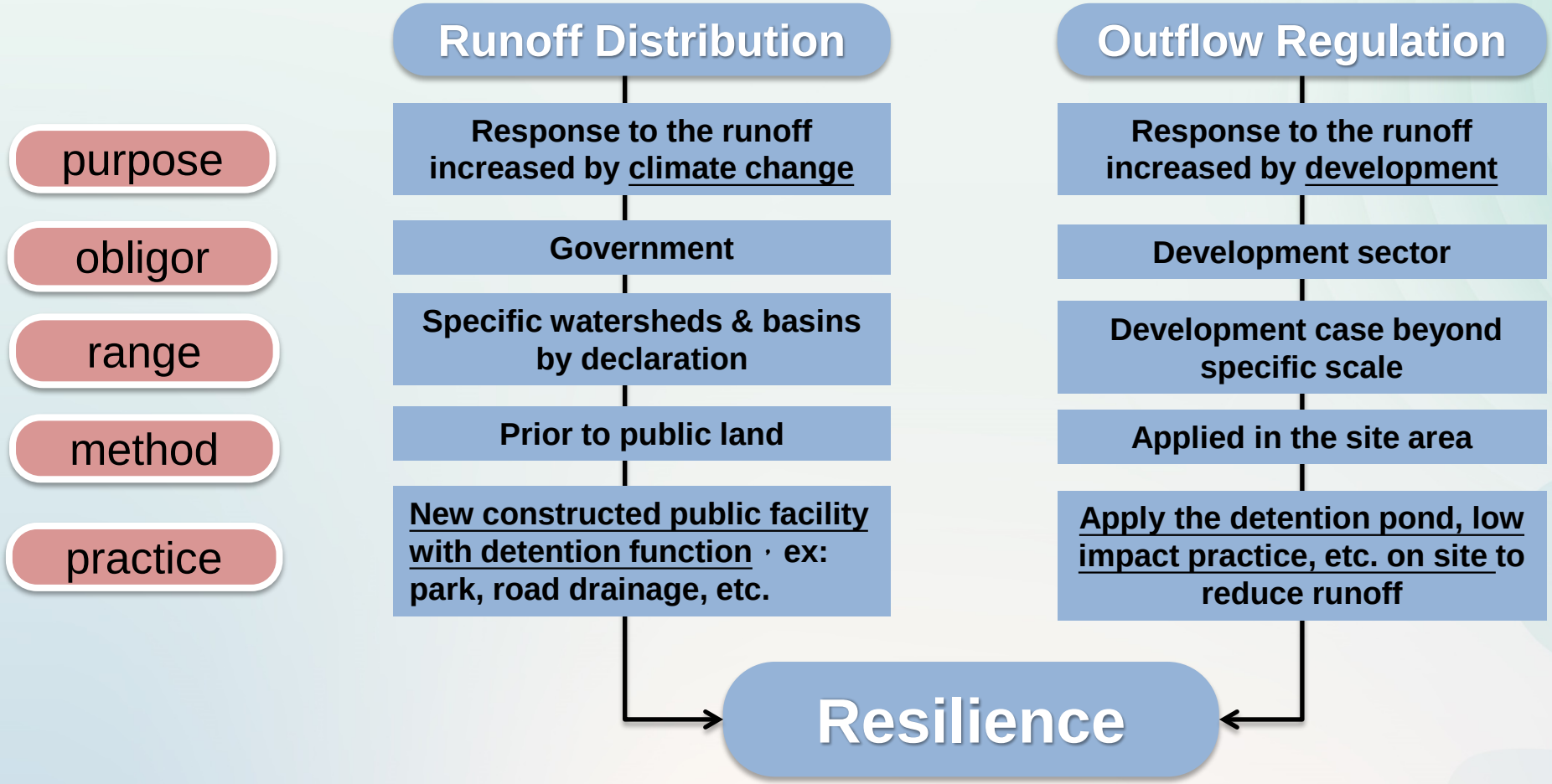
Strength Flood Resilience

Gray/Green Engineering



Runoff Distribution / Outflow Regulation

✓ The amendment of the Water Act has affected on February 1, 2019.

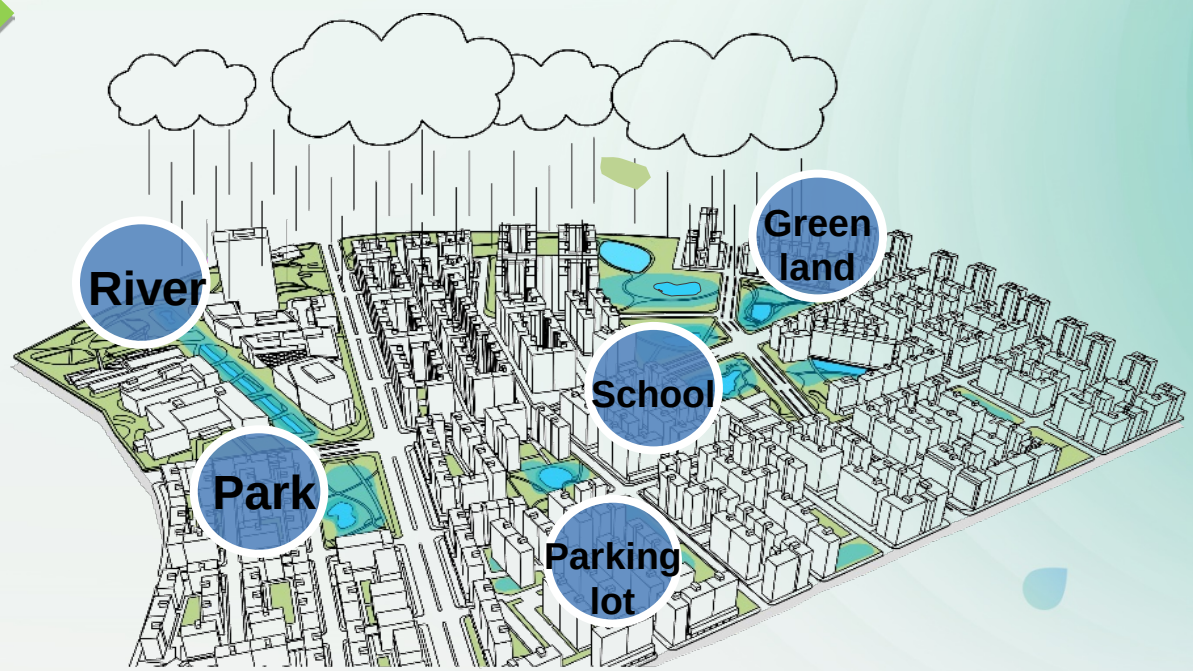


Runoff Distribution

Before

An **Extreme Precipitation** will exceed the capacity of rainwater drainage systems and cause flooding.

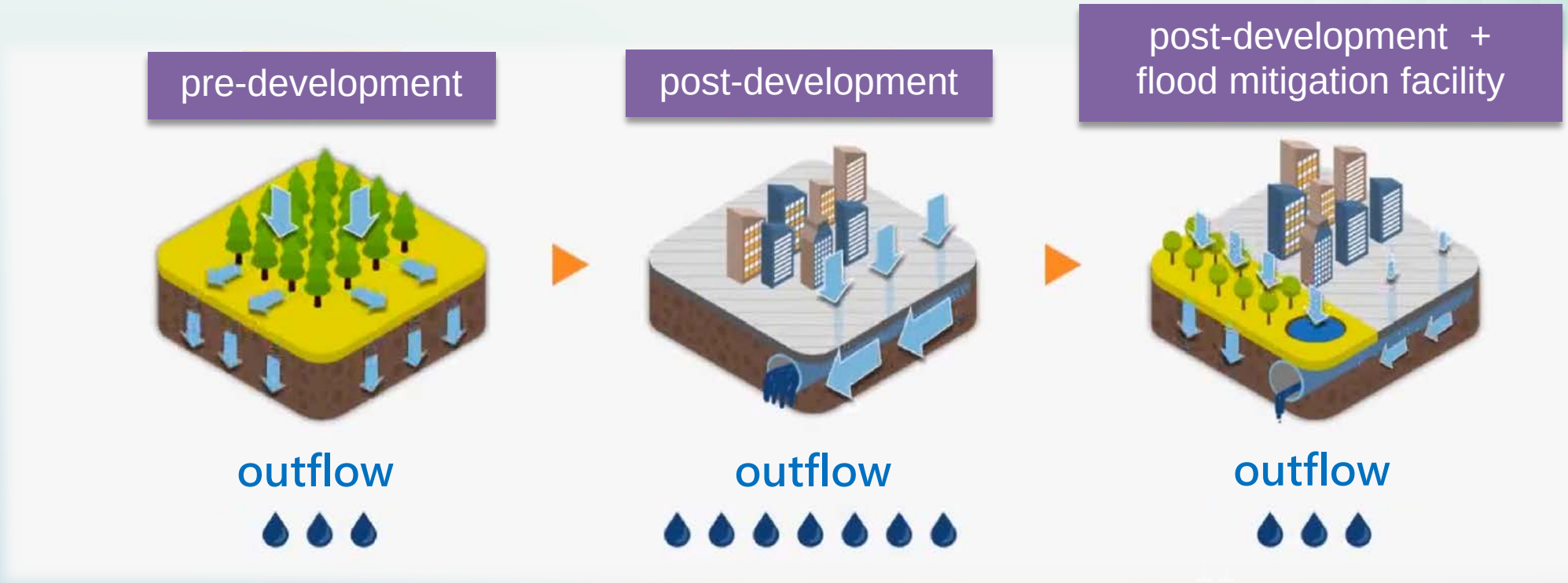
After



The runoff can be distributed over the public spaces, such as rivers, parks, parking lots, schools, and green spaces.

Outflow Regulation

- ✓ The land developers construct the detention basins and Low Impact Development (L.I.D.) facilities.



Waterfront Suture

Reconnect urban space and waterfront

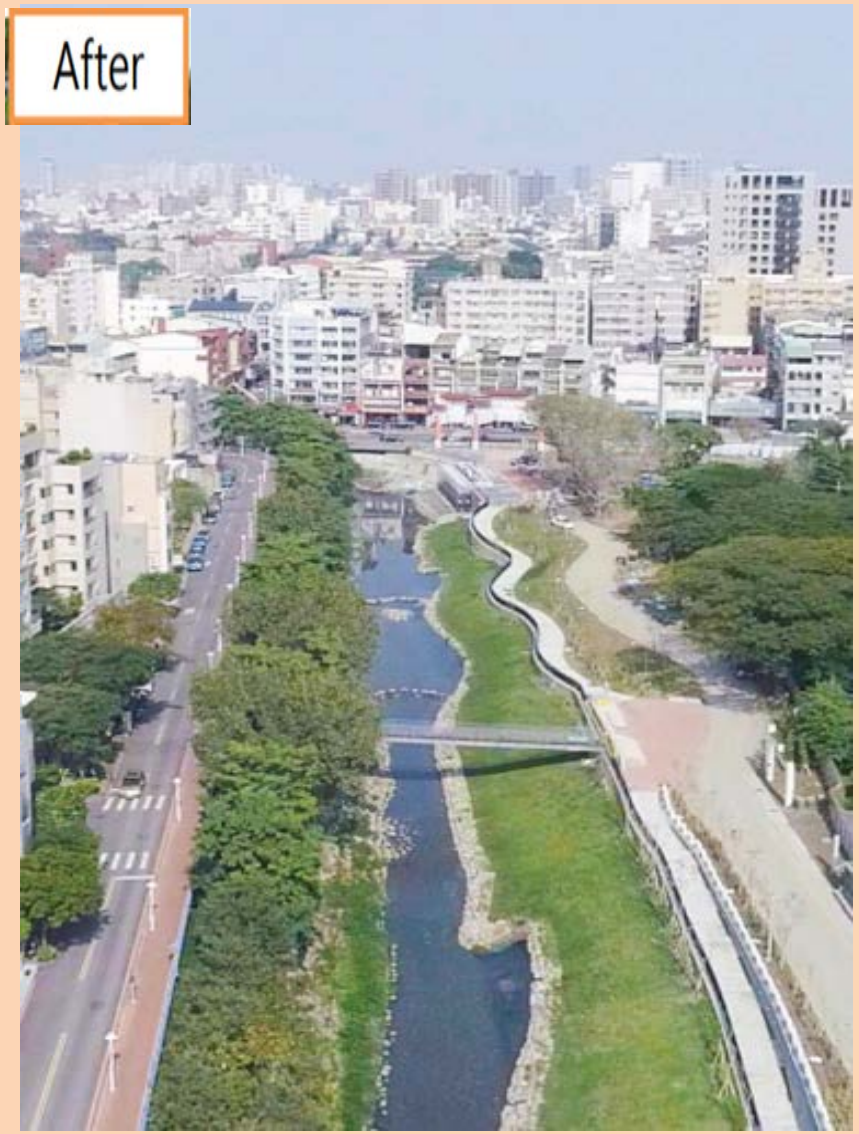
/設計與在地環境融合
/生態維持

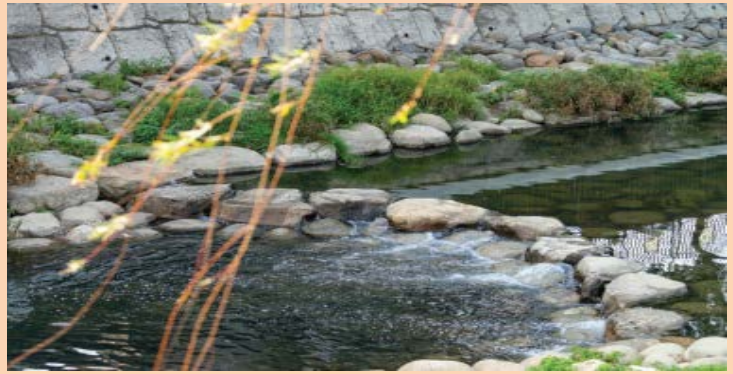
/產業共生
/觀光導入

地景藝術節

TAIWAN INT'L WATER WEEK

Waterfront Suture Case: Zhu Creek, Tainan, 2017-2021





03

Strengthen Drought Resilience

TAIWAN INT'L WATER WEEK

The Drought in 2020-2021 caught World’s Eyeball

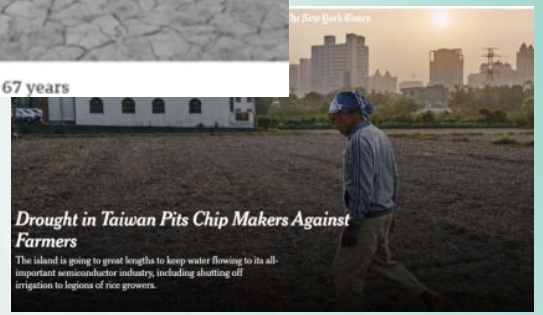
How island's historic drought could threaten the global economy

Taiwan has experienced one of its worst droughts in decades, with authorities limiting water supply as some reservoirs reported alarmingly low levels. The drough has threatened the island's valuable semiconductor industry, which could have global ramifications in the production of smartphones, cars and other electronic devices. CNN's Will Ripley talks to major companies like the TSMC on the challenge.

Source: CNN

TOP BUSINESS NEWS (15 VIDEOS)

Taiwan's worst drought in 67 years



Drought in Taiwan Pits Chip Makers Against Farmers

The island is going to great lengths to keep water flowing to its all-important semiconductor industry, including shutting off irrigation to legions of rice growers.

Taiwan, the global chip manufacturing plant and home of TSMC, battles Covid and the climate crisis

Meteorologist lists 5 factors behind severe drought in Taiwan

Weather expert worries droughts will occur more frequently due to climate change

6079 Tweet 分享 分享 321

By Huang Tzu-ti, Taiwan News, Staff Writer
2021/05/24 10:33

AUTOS FEBRUARY 24, 2021 / 1:41 PM / UPDATED 4 MONTHS AGO

Chipmakers in drought-hit Taiwan order water trucks to prepare for 'the worst'

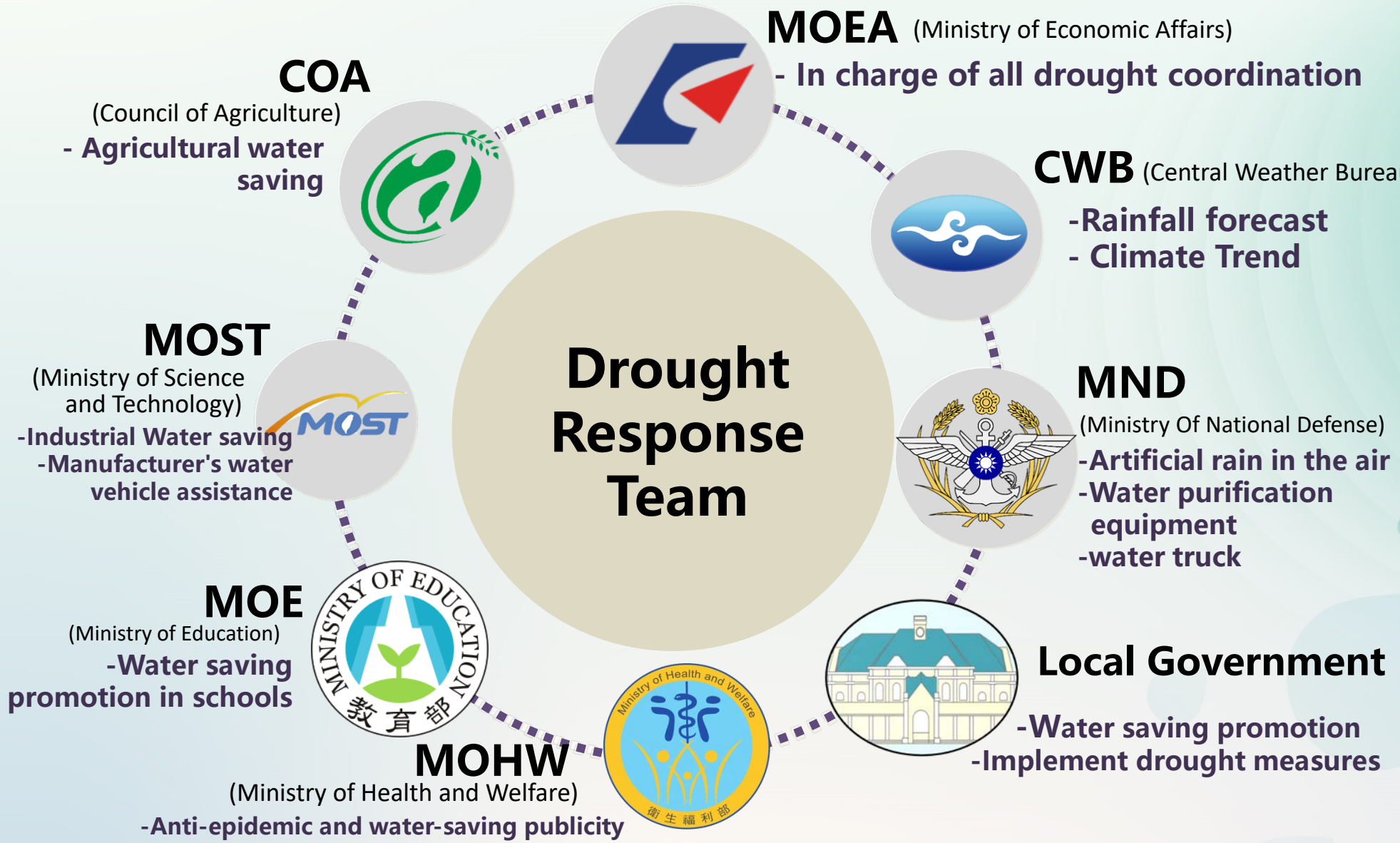
By Reuters Staff 2 MIN READ

TAIPEI (Reuters) - Taiwan chipmakers are buying water by the truckload for some of their foundries as the island widens restrictions on water supply amid a drought that could exacerbate a chip supply crunch for the global auto industry.

Central Emergency Operation Center

- ✓ - 7/13/2020：Countermeasures started
- ✓ - 9/16/2020：WRA Drought Emergency Response Team
- ✓ - 10/1/2020：MOEA Drought Emergency Response Team
- ✓ - 10/14/2020：The Central Emergency Operation Center

Authorities Involved



1 **Save Water**

2 **Find Water**

3 **Allocate Water**

Keep Water in Reservoirs

Groundwater Wells

Subsurface Water

Desalinated Seawater

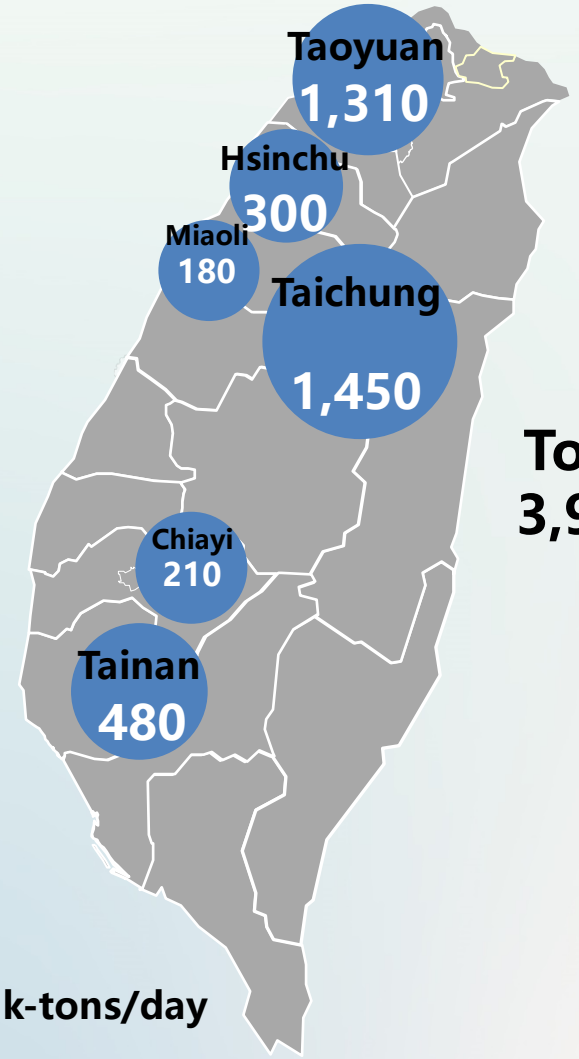
Construction Site Groundwater

River Water

ER. Pipelines

Keep Water in Reservoirs

2020/10



unit: k-tons/day

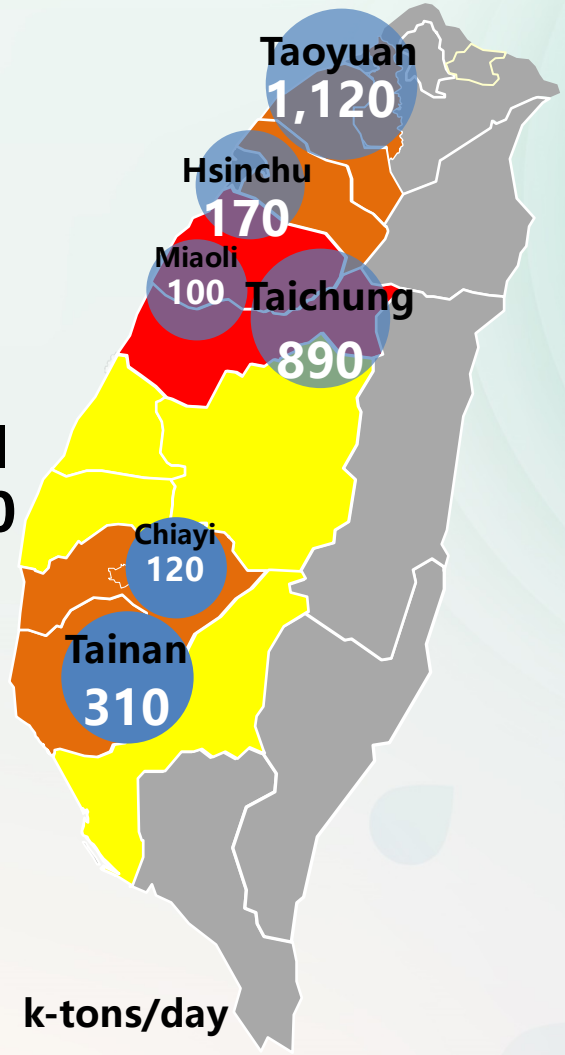
Water Demand from reservoirs

Total 3,930

31% Reduced

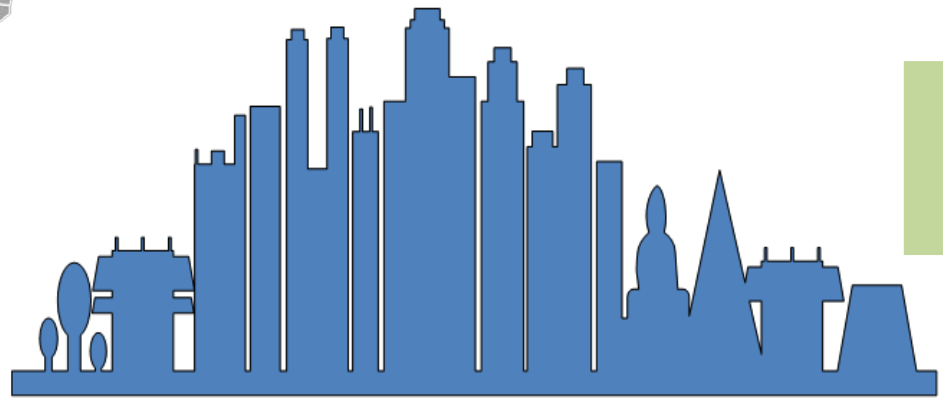
Total 2,710

2021/5



unit: k-tons/day

Before (2020/10)

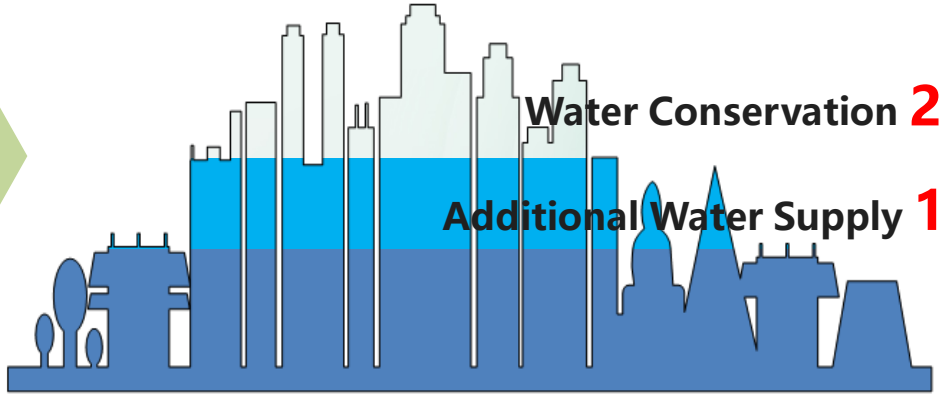


1,450,000

Water from reservoirs
-39%

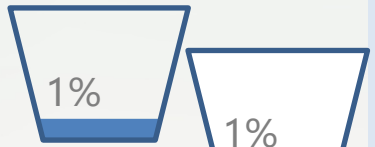
Liyutan Techi
Reservoirs
2020/10/7

After (2021/5)



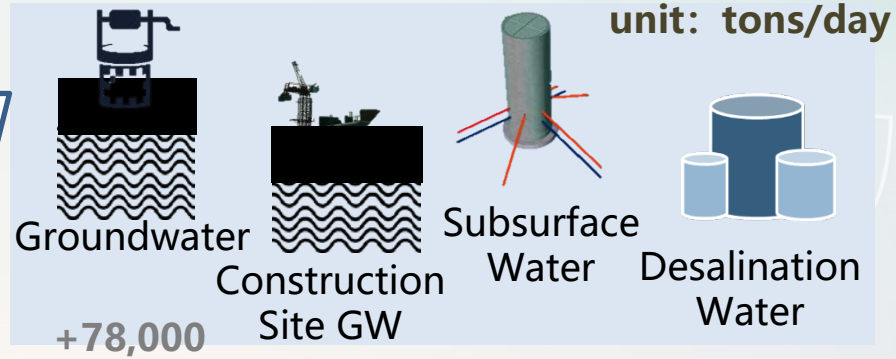
+ 890,000

196,000



Liyutan Techi
Reservoir
2021/5/29

unit: tons/day



Multiple Water Sources (Main + Backup)

1 Catchment Management

- Soil/Water Conservation
- Reservoir Dredging
- Artificial Lake
- Dam Heightening
- Subsurface Water
- Groundwater Wells

2 Western Water Supply Corridor

3 Water by Technology

- Reclaimed Water
- Desalination Water
- Brackish Water

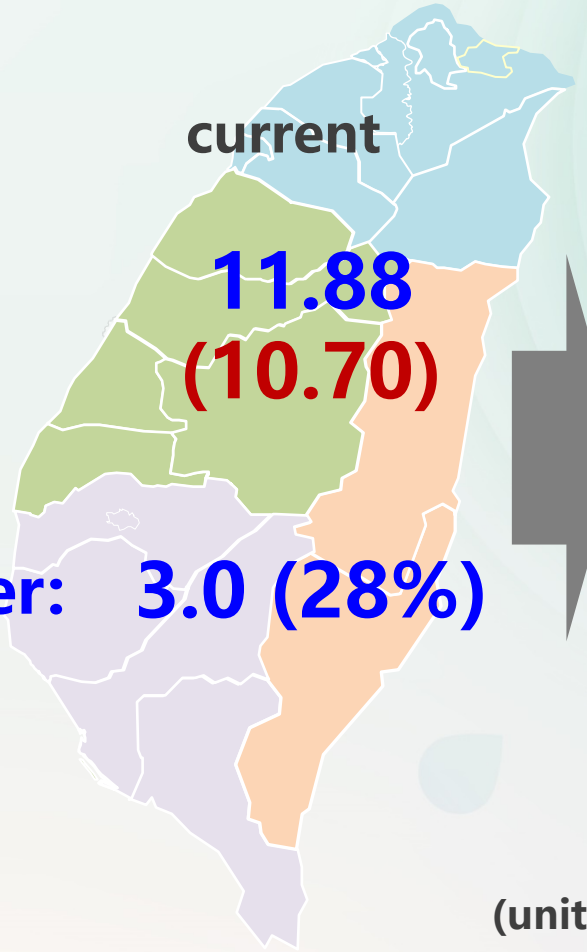
Increase Investment in Water Resources

Challenge

Climate Change

Water Demand Increase

Goals in 2036



	current	In 2036
Supply (Demand)	11.88 (10.70)	13.30 (11.49)
Backup Water:	3.0 (28%)	5.9 (51%)

(unit: mil. tons/day)

Challenge and Opportunity

- **Under climate change**, extreme rainfall will be unavoidable. While working hard to reduce impact from flooding, Taiwan also tries to connect the government, enterprises, civil organizations and the public to build a flood-resilient and water-friendly city.
- **After the hundred-year-record-breaking drought,** Taiwan has adjusted the master plan of water resources management accordingly. The goal includes the regular water supply meets the demand by the year 2036 and the emergency backup water supply capabilities is increased to +50%.

Thank You!

Bedankt voor het luisteren!