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Resilient Cities 2019
10th Anniversary

The Applications of Taoyuan's Ponds in Climate Change Mitigation and Adaption

Director General
Li-Teh Lu

Outline

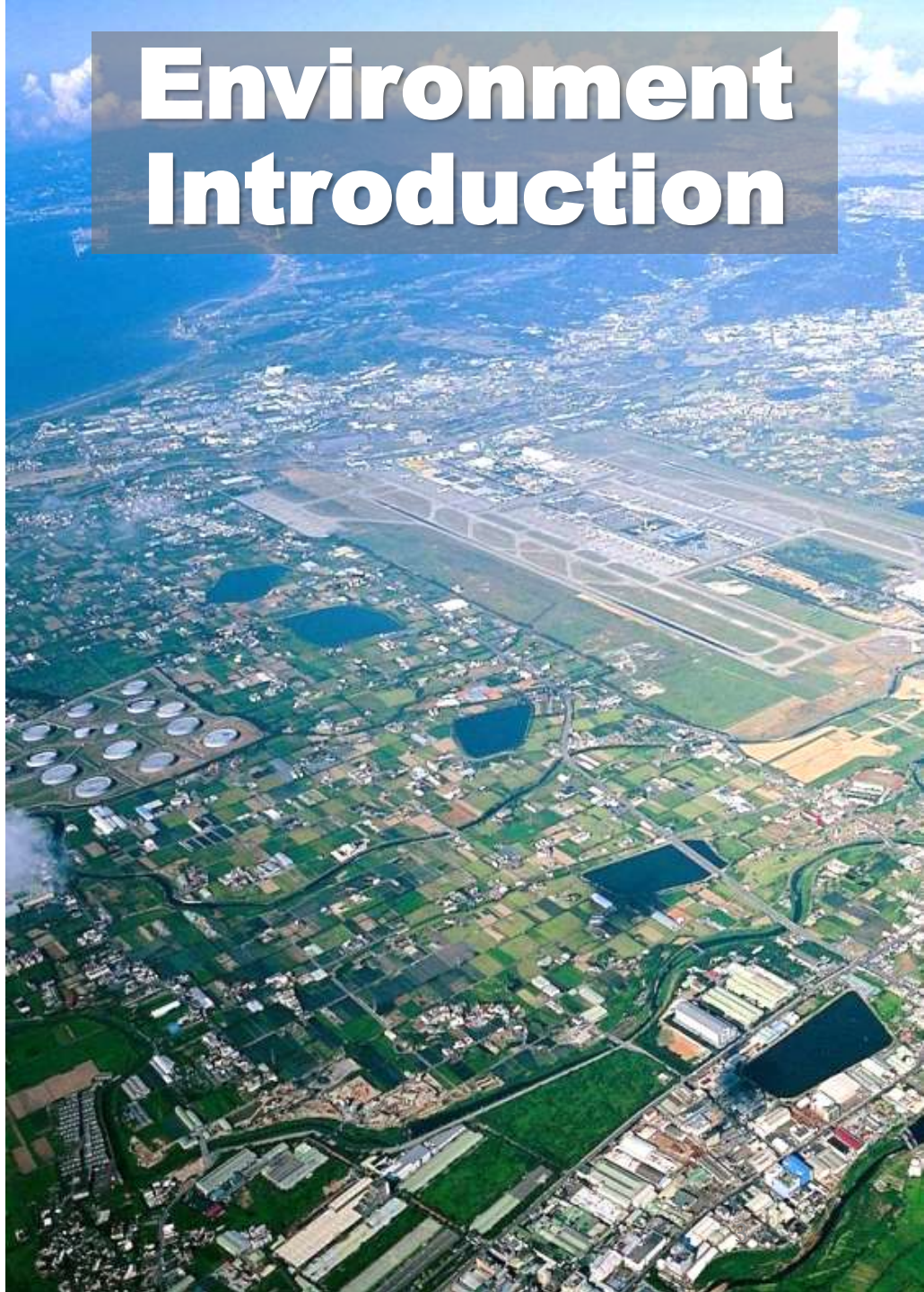
1. Environment Introduction
2. Cultural x Activation
3. Future Prospects

Gateway of Taiwan, and to Asia

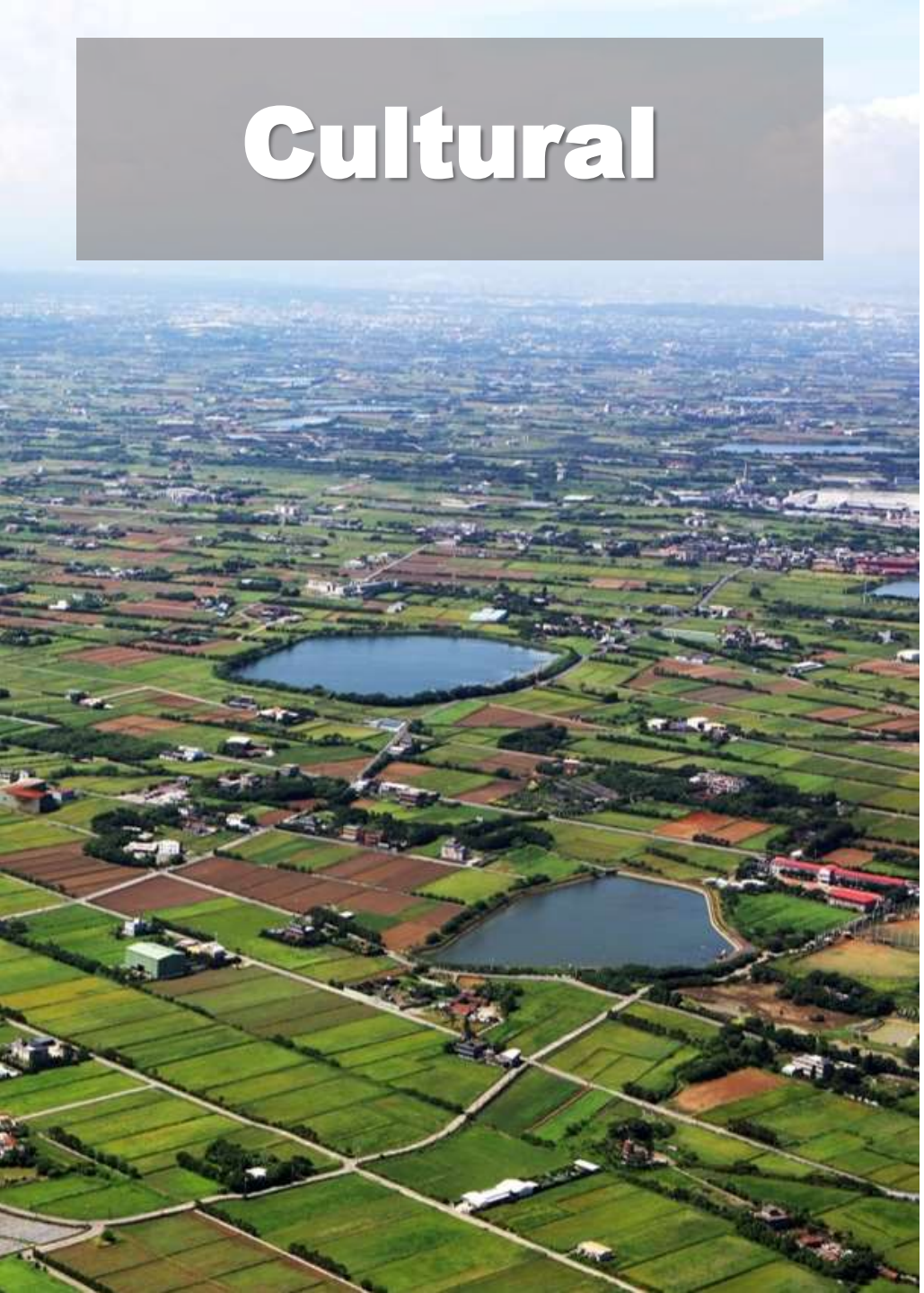
- Total area reaches **1,180** square kilometers
- Renowned as “Thousand Ponds Township”, Currently there are **2,851** ponds

- Nearly **2.2 million** people, continuing to grow
- The average age is **38.6** years old, youngest among the 6 main cities

- GDP is nearly **3** trillion NTD dollars, which ranks **No. 1 in Taiwan**
- The world’s major manufacturing center (Electronic/ Automotive Parts/ Communications)



Cultural



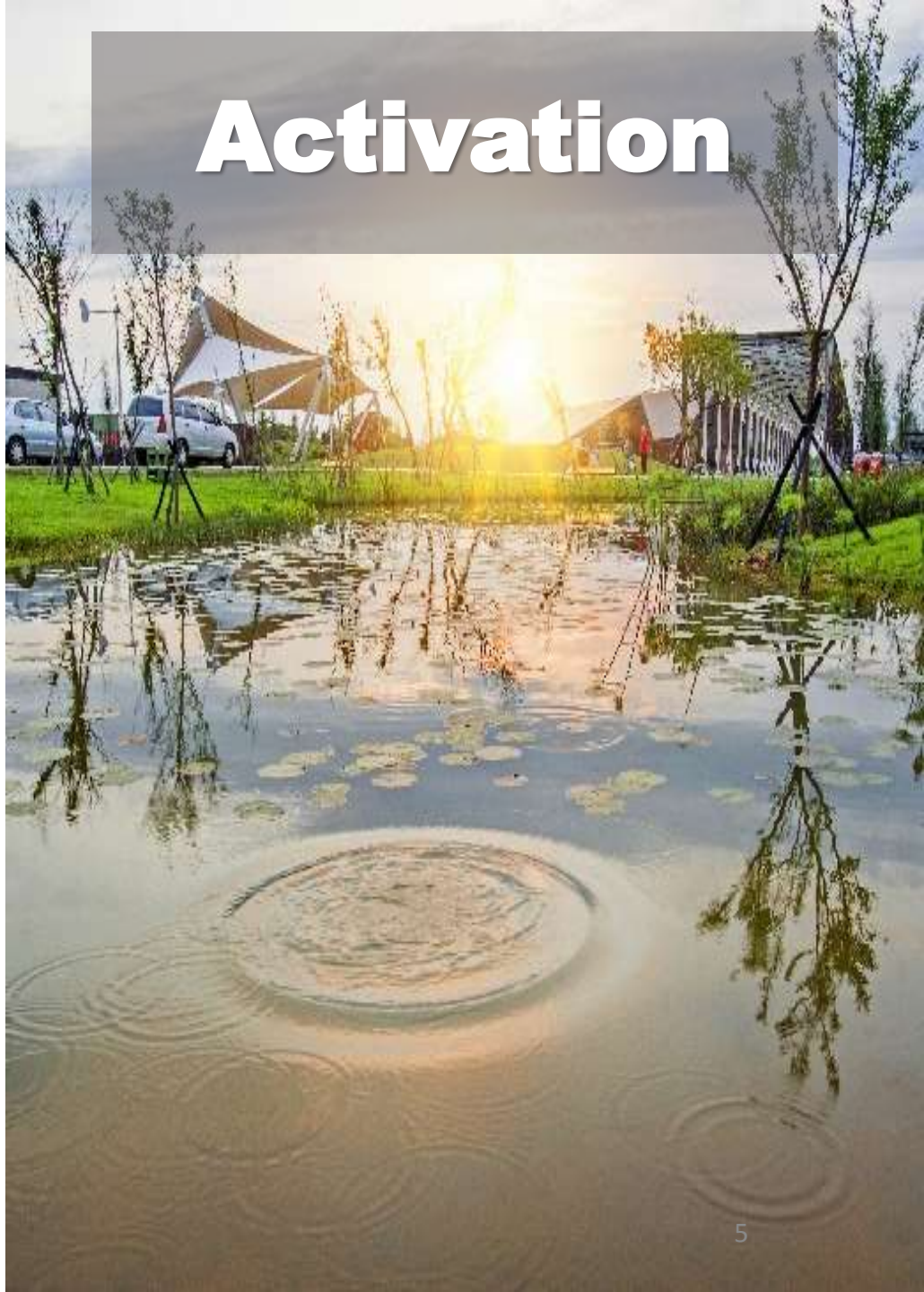
In the past there was no obvious or stable flow of rivers in the early Taoyuan area. For the sake of living and agricultural irrigation, a large number of water storage facilities such as these ponds were opened up.

In 1913, there were 10,000 ponds, reaching the highest peak.

With the completion of the Shimen Reservoir, Taoyuan and Shimen canals, the ponds were replaced as a source of irrigation water. Though most of the ponds have lost their original irrigation functions, they still retain historical cultural values. There are about 2,851 ponds now in Taoyuan according to the recently survey.

Activation

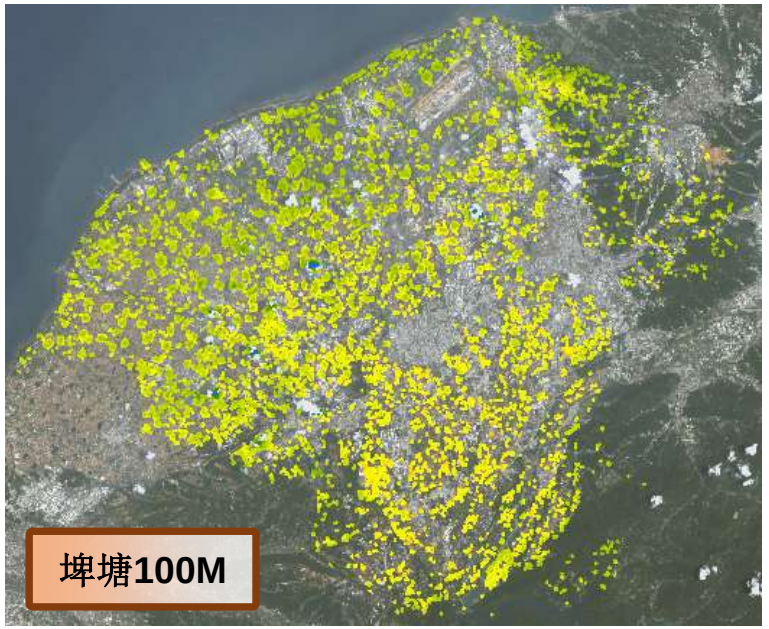
- Micro-climate survey of the ponds
- Landscape renovation of pond surrounding areas
- Development of photovoltaic ponds

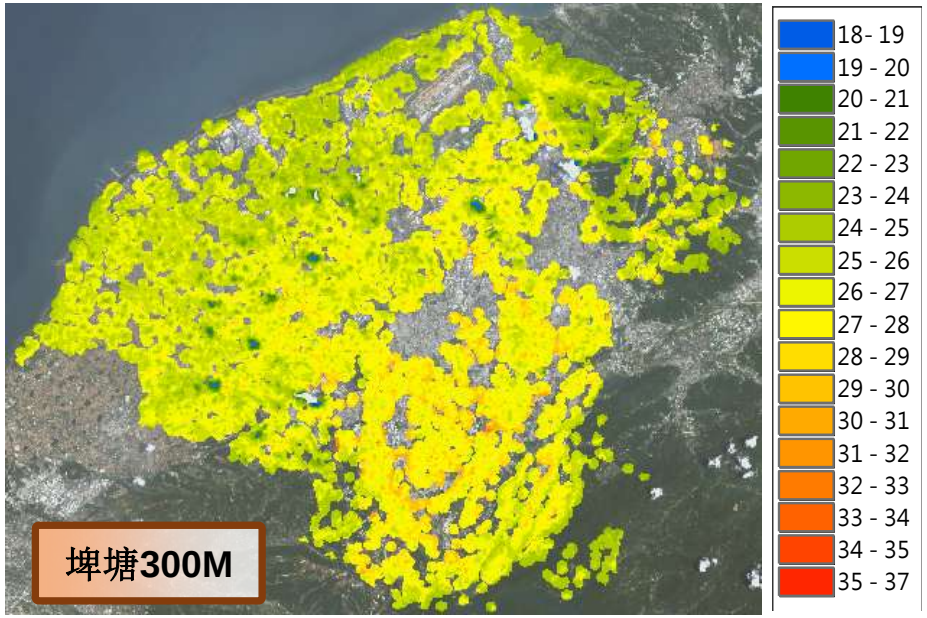


Activation

- **Micro-climate survey of the ponds:**

  Analyze whether the ponds in Taoyuan City have the climate change adaptation functions, such as decreasing the temperature, using the satellite remote sensing technology.





Under high (average) temperature conditions, the pond temperature is lower than those of all areas (cooling).
Under low temperature conditions, the pond temperature is higher than those of all areas (heat preserving).

Temperature Scope / Temperature category	Imagery temperature in all areas	Pond temperature	Pond temperature within 10M	Pond temperature within 20M	Temperature difference between all areas and the pond	Temperature difference between all areas and the pond Within 10M	Temperature difference between all areas and the pond within 20M
1995_Average temperature	28.32	27.95	28.00	28.04	0.37	0.32	0.28
1995_The highest temperature	36.78	32.90	33.34	33.34	3.88	3.44	3.44
1995_The lowest temperature	21.02	22.45	22.45	21.97	-1.43	-1.43	-0.95
2016_Average temperature	26.18	25.14	25.30	25.44	1.04	0.88	0.74
2016_The highest temperature	33.01	30.32	30.32	30.61	2.69	2.69	2.4
2016_The lowest temperature	18.25	19.25	19.21	19.20	-1	-0.96	-0.95

Activation

- **Landscape renovation of pond surrounding areas:**

  Activate the surrounding spaces and use the ponds without irrigation functions to improve the environmental quality of the ponds, create green spaces and enhance the living quality of local residents. Improvement projects include: trails, landscapes, energy-saving lighting, and trees planting.

Development of photovoltaic ponds:

The Taoyuan City Government has developed on the basis of ecological landscape, environment and energy creation. The power generation efficiency of the photovoltaic pond is increased by more than 10% compared with the ground type. After the first demonstration photoelectric pond was set up, it led the establishment of 7 more photoelectric ponds, one after another. The pond setting has a total capacity of 26.9MW.

This demonstration photoelectric pond also made its manufacturer become the winner of the top solar award in Taiwan's optoelectronic industry.
(winner of the Excellent Medium and Large System Award)

Future Prospects

Continue to combine urban culture to create more activation possibilities.

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Thank you ！

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