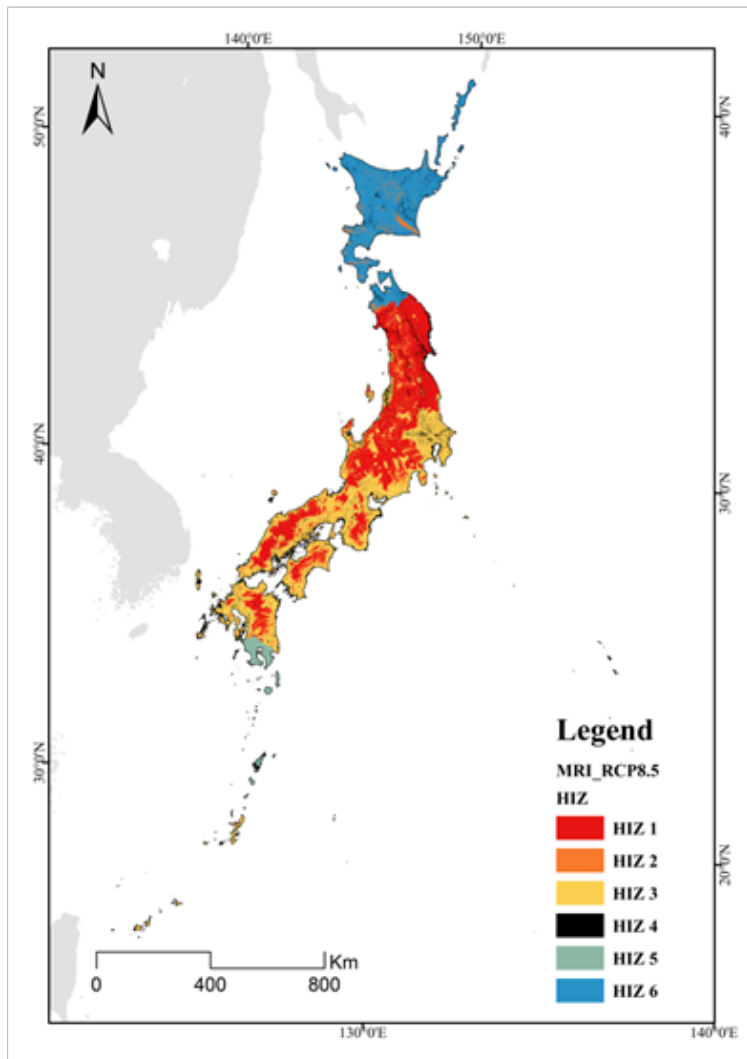


Status and challenges of local climate change adaptation in Japan

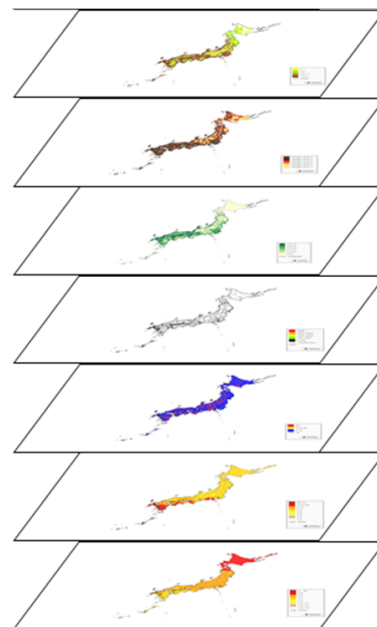
Yoshifumi Masago, Tomohiro Fujita, Fei Liu (CCCA, NIES)

Yoko Makita (CCCA, NIES and GLEC, Ibaraki Univ.)

Diverse impacts of climate change in Japan



Impact indicator

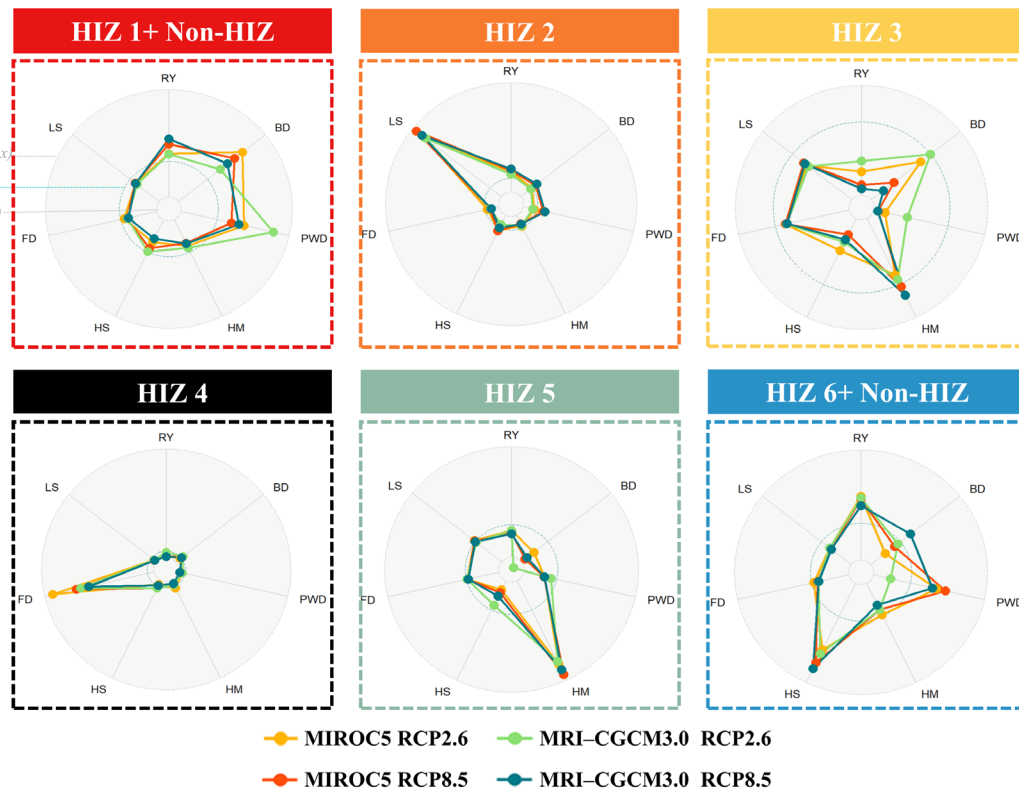
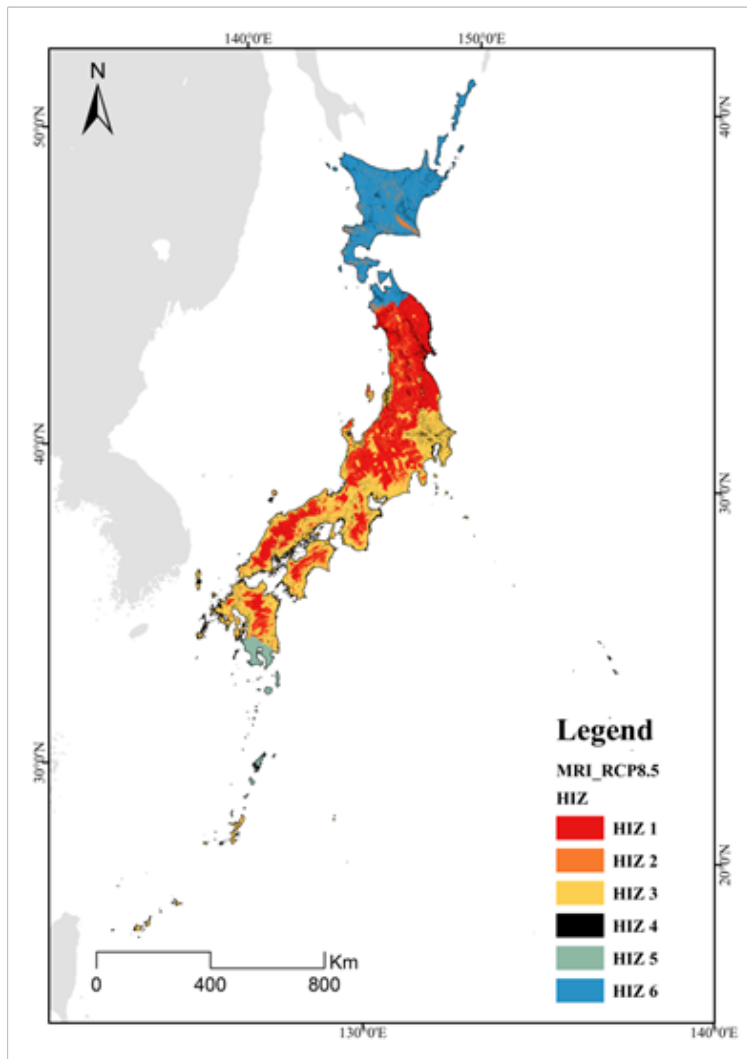


- **Rice yield (RY)**
- **Pine wilt disease (PWD)**
- **Bamboo distribution (BD)**
- **Flood damage(FD)**
- **Landslide (LS)**
- **Heat mortality (HM)**
- **Heat stroke (HS)**

K-means multivariate clustering and similarity search approaches for seven impact indicators in Japan

Liu and Masago, 2023

Diverse impacts of climate change in Japan



Climate change impacts (and thus adaptation measures) are different among regions

Liu and Masago, 2023

Structures for promoting national and local adaptation under the Climate Change Adaptation Act

Impact Assessment Report
National Adaptation Plan



National Institute for
Environmental Studies

cCcA
Center for Climate Change Adaptation



A-PLAT

Technical support
Information sharing

Technical support
Information sharing

Local Adaptation Plan



Universities



Cooperation
with
regional
institutions

Local Climate
Change Adaptation
Centers (LCCACs)



National research
institutes



Cooperation with
research institutions



Universities



Local Adaptation Plans under the Act

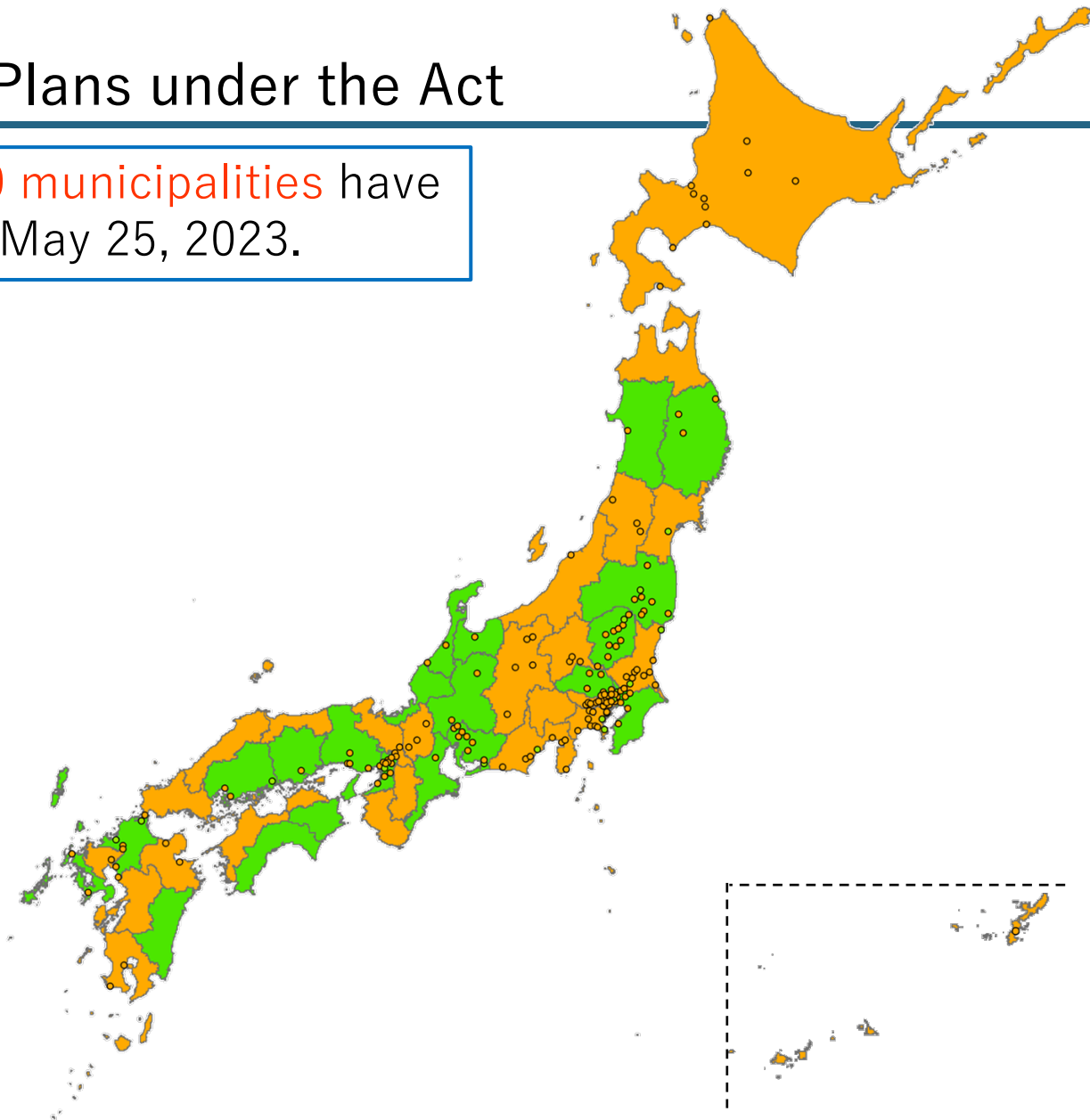
47 Prefectures and 170 municipalities have formulated LAPs as of May 25, 2023.

Prefectures

- First LAP
- Revised LAP

Municipalities

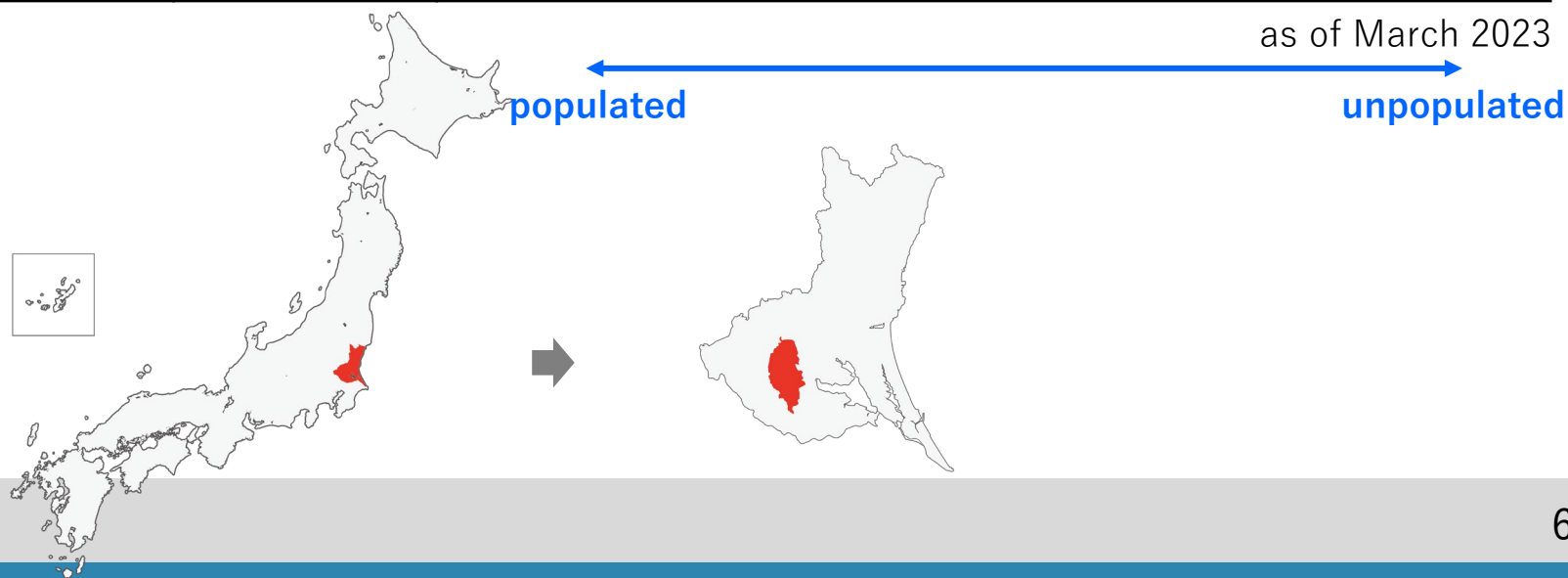
- New LAP
- Revised LAP



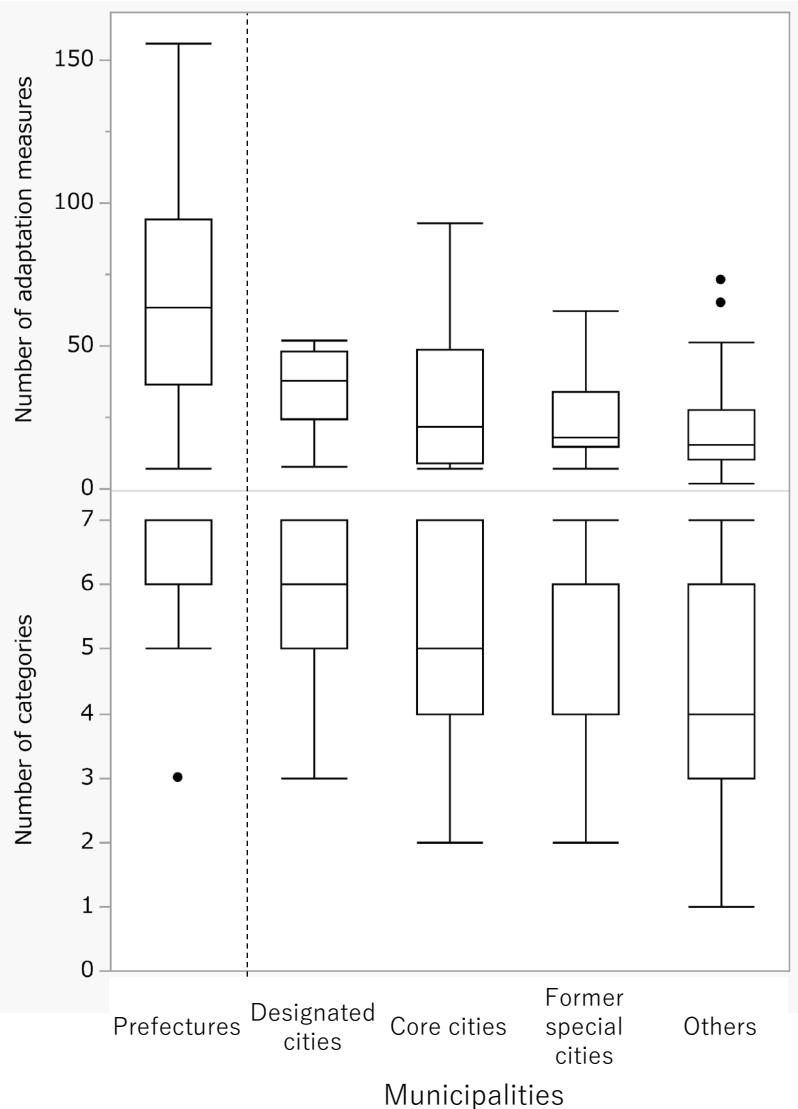
Status of Local Climate Change Adaptation Plans

Population	Prefectures	Municipalities			
		Designated cities	Core cities	Former special cities	Others
> 1 million	37	11	-	-	-
0.3 – 1 million	10	7	25	1	11
0.1 – 0.3 million	-	-	7	13	28
< 0.1 million	-	-	-	-	47
Total	47 (100%)	18 (90.0%)	32 (51.6%)	14 (60.9%)	86 (5.2%)

as of March 2023



Status of Local Climate Change Adaptation Plans



- Small municipalities have difficulty in formulating local adaptation plans
 - Less human and financial resources (Hiraoka et al., 2009, Fujita et al., 2023)
 - Similar to the formulation of Basic Environmental Plans and local mitigation plans (Baba et al., 2006)
- Their plans cover less climate change impact categories and show less adaptation measures
 - Number of adaptation measures
 Populated municipalities > Unpopulated municipalities
 Prefectures > Municipalities
 - Categories of impacts
 Prefectures > Municipalities

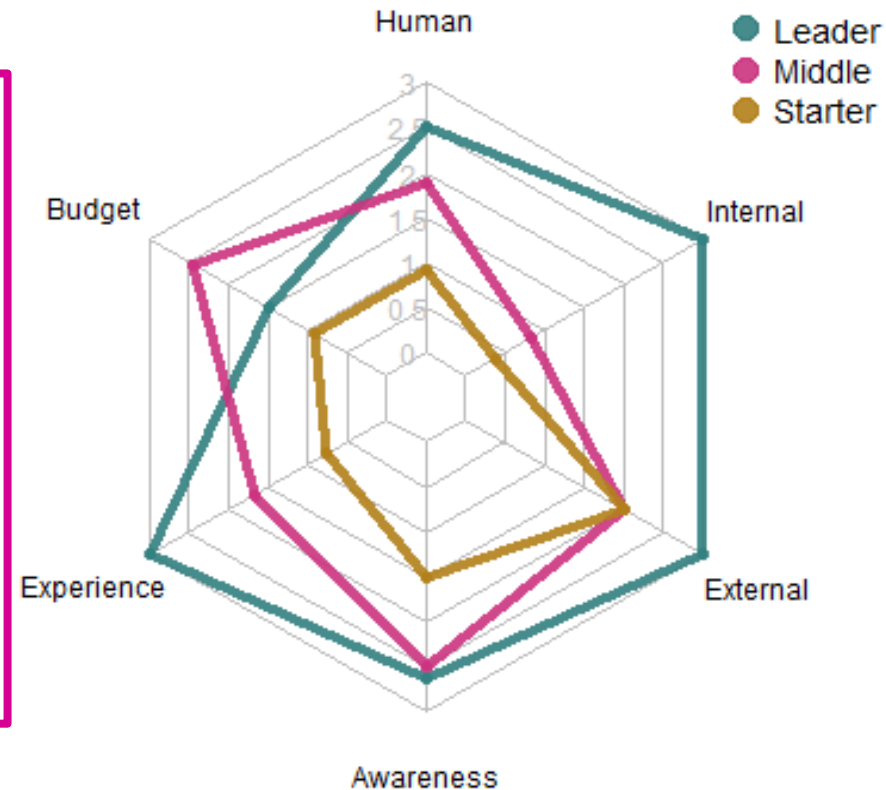
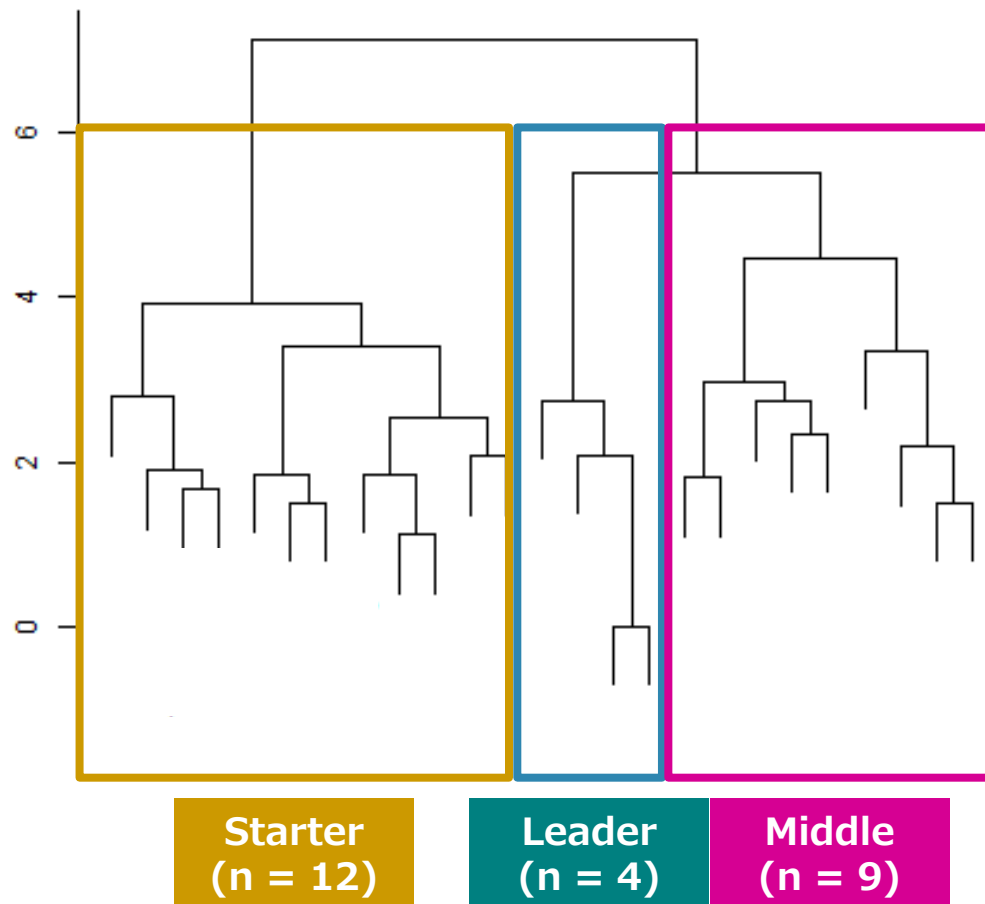
Masago *et al.*, under review

Adaptive capacity of Local Climate Change Adaptation Centers

Determinant of AC	Indicator of determinant	Response
Human resource	Dedicated staff (Yes / No)	32%
	No. of concurrent staff (人)	7.2 ± 7.7
Budget	Budget by LA (¥)	2151760.0 ± 2863929.3
	National project (Yes / No)	36%
Experience	Research (Yes / No)	24%
	Dissemination (Yes / No)	48%
	Support for LA (Yes / No)	72%
Awareness	Monitoring (Yes / No)	80%
	Perception (Yes / No)	56%
External factor	Collaboration (Yes / No)	44%
	Training (Yes / No)	100%
Internal factor	Meeting (Yes / No)	44%
	Experienced researcher	20%

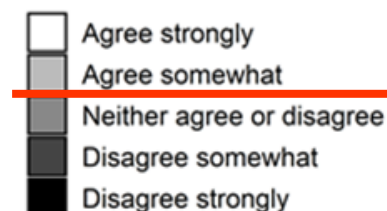
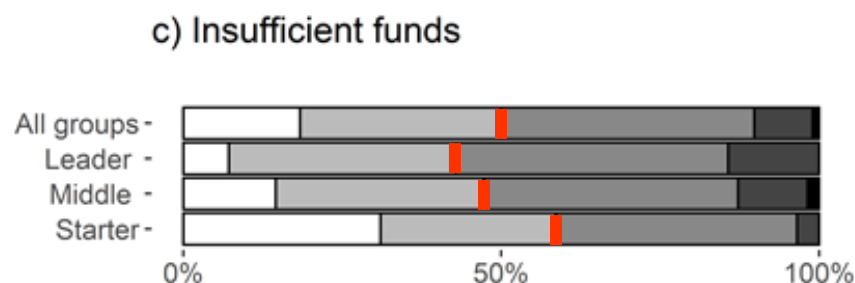
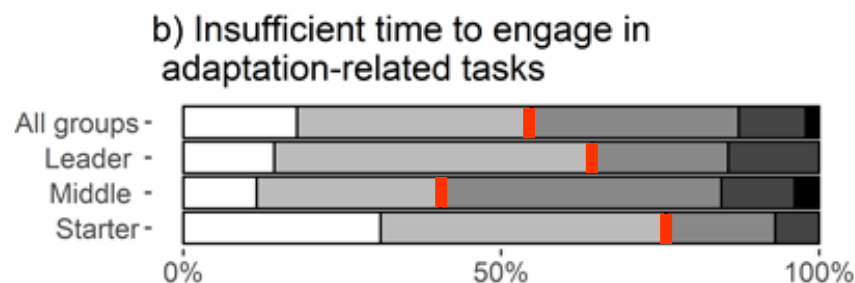
Fujita *et al.*, 2023

Characterization of LCCACs based on adaptive capacity



Source: Fujita et al., under review

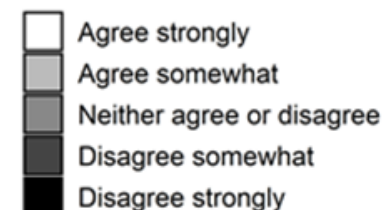
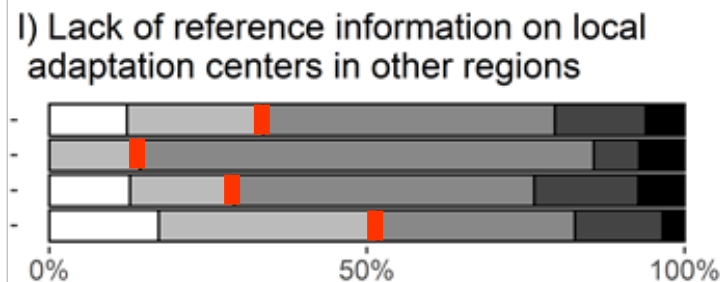
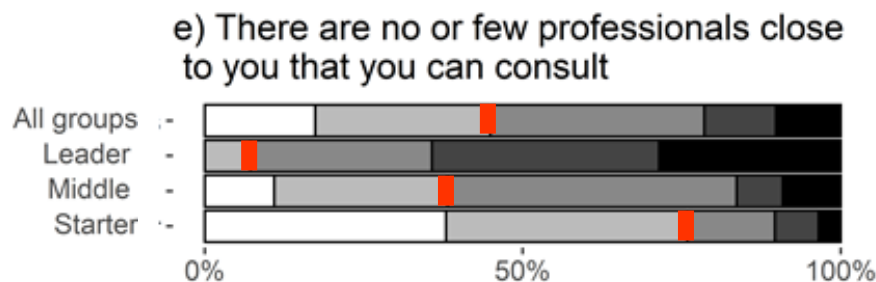
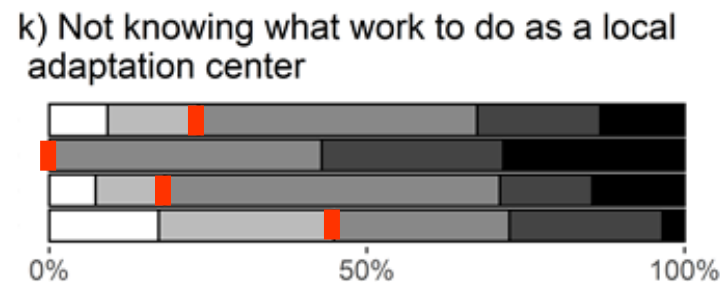
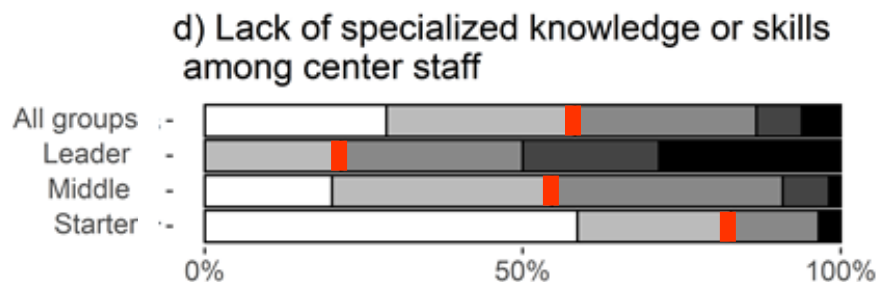
Shared challenges among the three groups (>50% yes)



Lack of human and financial resources are commonly recognized.

Fujita *et al.*, 2023

Challenges for the less-experienced LCCACs



Lack of knowledge, expertise and information are challenges for the less-experienced LCCACs.

Fujita *et al.*, 2023

Summary

- Climate change impacts show high regional diversity. Local adaptation plans should consider the characteristics of the impacts in the region.
- Formulation of local adaptation plans are ongoing, but small municipalities have difficulty in formulating their plans
 - Less human and financial resources
 - Less information and data specific to the municipalities
- Lack of human and financial resources are also recognized by Local Climate Change Adaptation Centers. Less-experienced centers are also suffering from lack of knowledge, expertise and information.
- It could be a more effective solution for small municipalities to focus on how to mainstream adaptation in local policy development, rather than listing available (or ongoing) measures in local adaptation plans.