



# Targeted, Integrated, and Prepared Policy Packages to Address the Urban Heat in Korea

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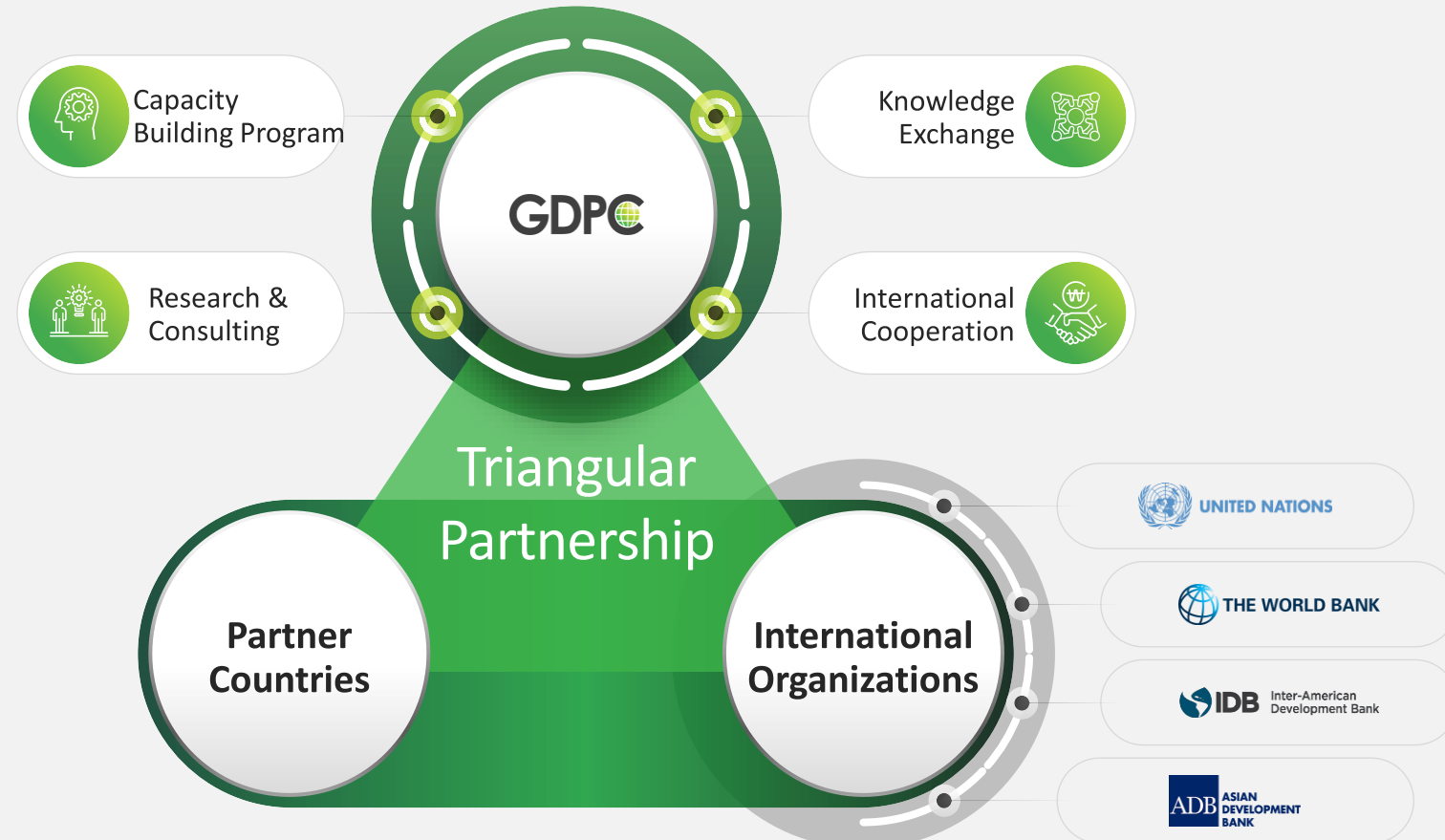
# About KRIHS

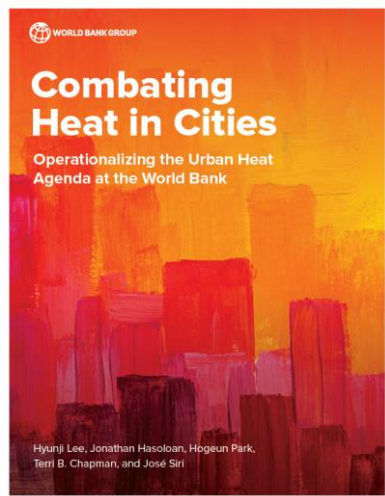
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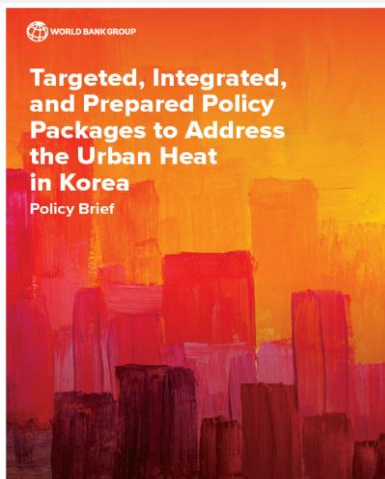
## WB – KRIHS GDPC Joint Research :

- Cities, Climate and Health (2022-2024)
- Cultural Heritage and Sustainable Urban Development: Learning from Korea’s Experience (2021-2022)
- Cities, Culture, and Creativity: Learning from the ROK’s Experience (2020-2021)
- Global Program on Public Spaces: Transforming Cities through Public Space (2016-2017)
- Development of an Incremental and Affordable Housing Policy Toolkit and Pilot City Case Studies (2014)





<https://hdl.handle.net/10986/42303>



<http://documents.worldbank.org/curated/en/099102424152589786/P177977193e37c0f11b821147554715>

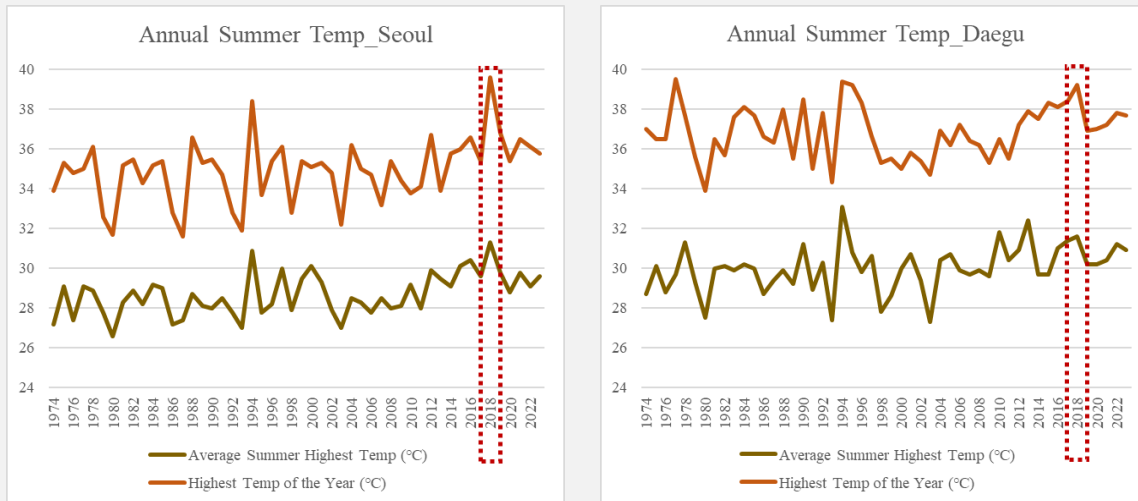
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- **Combating Heat in Cities: Operationalizing the Urban Heat Agenda at the World Bank**
  - A joint study between the World Bank's Global Practice for Urban, Disaster Risk Management, Resilience and Land (GPURL) and the Korea Research Institute for Human Settlements (KRIHS)
  - Gathered city responses and investigate existing World Bank initiatives to gain an understanding of what had already been done and the potential for future action.
  - The report will be officially launched in December 2024.



## Korea's National Context

Average Summer Highest Temperatures and Annual Highest Temperatures from 1974 to 2023



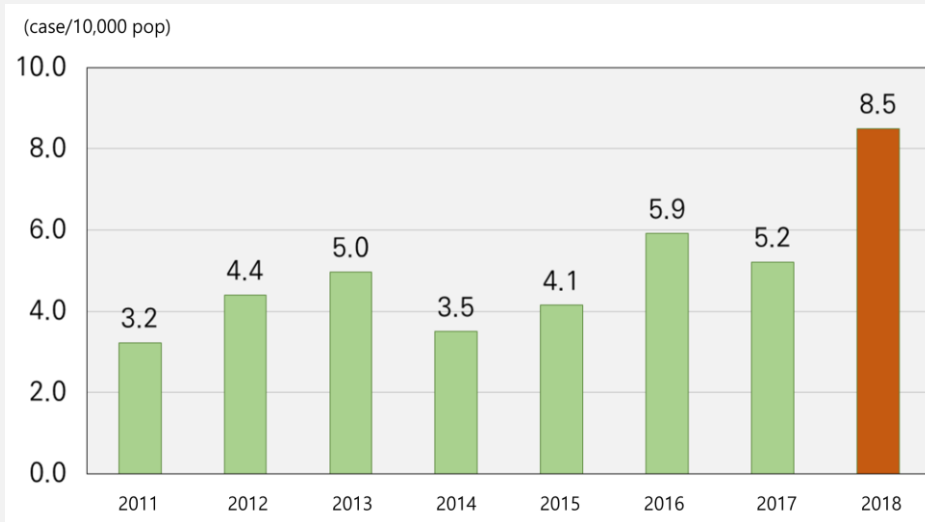
Source: Korea Meteorological Administration.

- A noticeable upward trend in both the highest daily temperatures and the frequency of heatwave occurrences.
- The number of days with heatwaves (i.e. max. temperature of 33 °C or higher) increased by an average of 9.0 days in the 2010s.
- Unprecedented heatwaves in **summer of 2018**, with temperatures reaching 39.6°C in Seoul, 39.2 °C in Daegu, and 36.4 °C in Busan, resulting in significant human casualties.



## Korea's National Context

The Annual Change in the Incidence Rate of Heat-related Illnesses by Year



Source: J. Park and Y. Chae 2020.

- The incidence rate of heat-related illnesses in 2018 stood 8.5 cases per 10,000 people, marking a 1.4 to 2.7 times increase compared to the preceding period (2011-2017).
  - The impact of heatwaves disproportionately affected vulnerable groups, particularly those continuously exposed to high temperatures or lacking access to cooling facilities.
  - A growing demand for long-term measures to mitigate the damage caused by heatwaves in urban areas.
- In 2018, **designated heatwaves as natural disasters** through an amendment of the *Framework Act on the Management of Disasters and Safety*.



## I Institutional Frameworks

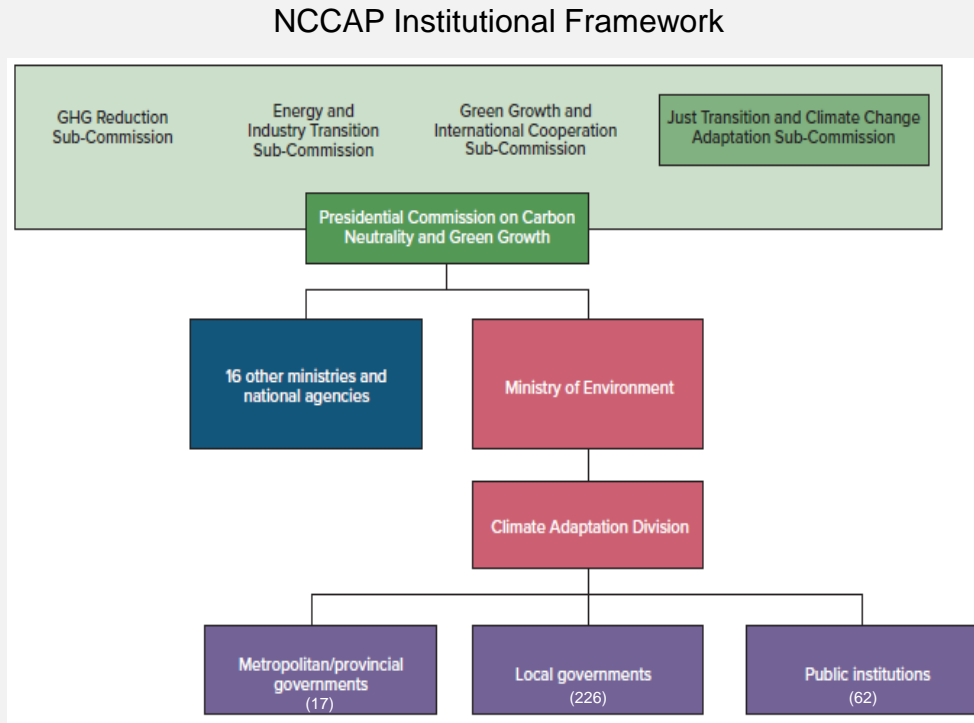
Institutional Frameworks for the National Response to Heatwaves

| Item            | NCCAP<br>(National Climate Change Adaptation Plan)  | NCHRP<br>(National Comprehensive Heatwave Response Plan)   |
|-----------------|---|--|
| Legal basis     | Framework Act on Carbon Neutrality and Green Growth for Coping with Climate Crisis  | Basic Act on Disaster and Safety Management  |
| Period          | 5 Years   | 1 Year   |
| Contents        | <ul style="list-style-type: none"> <li>Climate change adaptation plan by sector and region including mid- to long-term heatwave preparedness</li> </ul>   | <ul style="list-style-type: none"> <li>Summer outreach program</li> <li>Prevention activities, home health care, material support, and operation of heat shelters</li> <li>Information delivery</li> </ul> |
| Common Contents | <ul style="list-style-type: none"> <li>Information sharing system</li> <li>Support for vulnerable people and vulnerable areas</li> <li>Early warning and health surveillance systems, etc.</li> </ul> |  |

Source: Chae et al. 2020.



### I The National Climate Change Adaptation Plan (NCCAP)



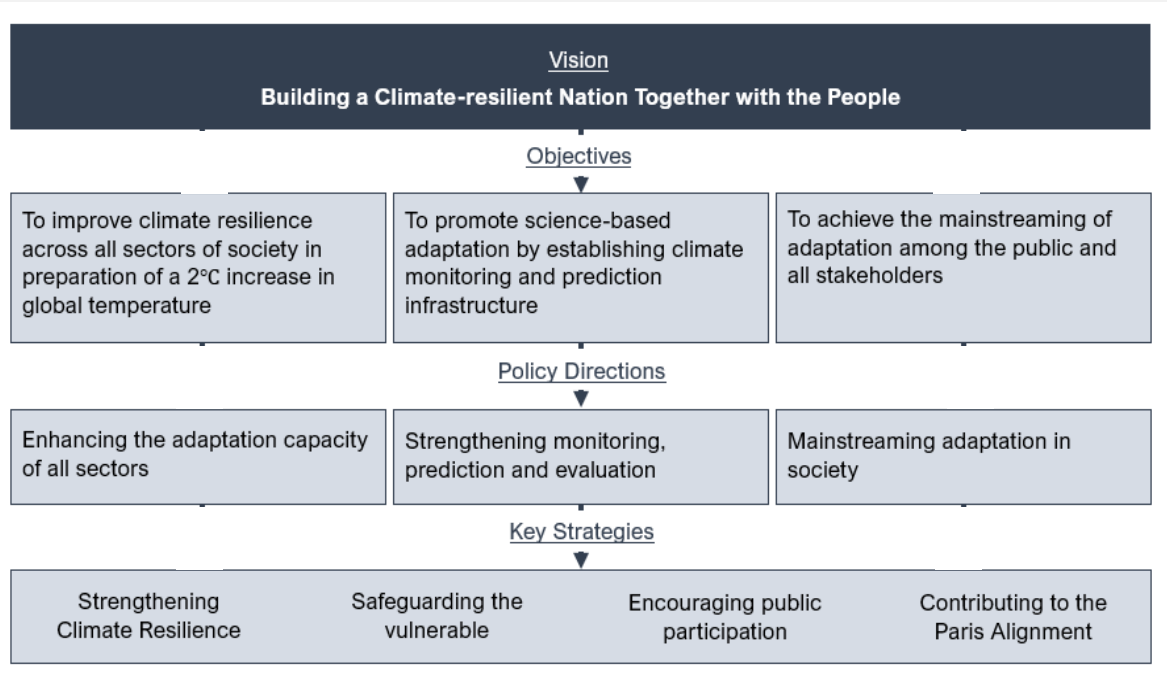
Source: Modified from ROK 2022.

- The NCCAP is a detailed implementation plan nested within the *Framework Act on Carbon Neutrality and Green Growth for Coping with Climate Crisis*.
- It is revised and implemented every five years.
- **The Ministry of Environment (ME)** coordinates the NCCAP, to which 17 ministries in all contribute by designing and implementing action plans and submitting progress reports.
- At the local level, the sub-national governments and public institutions develop their own climate change adaptation action plans according to the NCCAP.



## I The National Climate Change Adaptation Plan (NCCAP)

The Third NCCAP Framework



- The NCCAP presents objectives, policy directions, and key strategies.
- Accordingly, climate action plans at local level articulate target groups and specific programs to be implemented in line with the policy direction presented in the NCCAP.

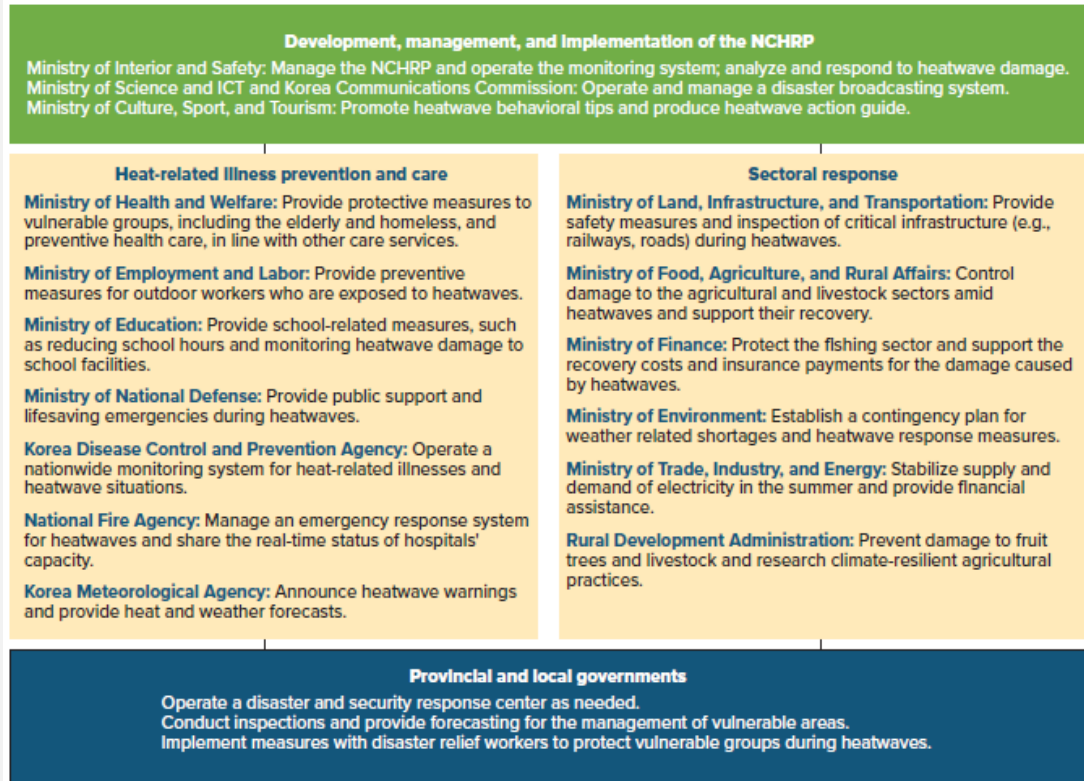
Source: Modified from ROK 2022.





## The National Comprehensive Heatwave Response Plan (NCHRP)

### Division of Responsibilities with Regard to NCHRP



- The NCHRP represents a whole-of-government approach that provides the basis for implementing specific projects to address extreme heat.
- The NCHRP is established every summer to prepare for short-term responses.
- **The Ministry of Interior and Safety (MOIS)** is responsible for preparing the NCHRP annually and leading a government-wide heatwave response task force (17 ministries and local governments).
- Under the NCHRP, heatwave response activities are divided into : (1) heat-related illness prevention and care, and (2) sectoral responses.

Source: ROK 2023.

## 2 Coordinating Efforts at the National Level



### ■ The National Comprehensive Heatwave Response Plan (NCHRP)

- The primary objectives of the recent plans are focused on minimizing casualties through intensive management of the **three most heat-vulnerable groups** of population – outdoor construction workers, elderly single-person households, and farm workers.
- The provision of intensive care for groups that are prone to heat has been introduced from 2022, which shows that response measures have gradually improved from focusing on establishing a warning and first aid system to prevent through provision of real-time information, education, and welfare to heat-prone groups.

Heat Reduction Structures and Facilities





## Heatwave Response Measures by Individual Ministries

- Individual ministries promote various policies based on their specific targets and objectives.

Heatwave Response Initiatives by Individual Ministries

|  | 2016  | 2020  | 2023   |
|--|---|---|--|
| Ministry of Environment                        |   | <ul style="list-style-type: none"> <li>Implementation of heatwave response projects, such as road sprinkler systems</li> </ul>  | <ul style="list-style-type: none"> <li>Increase financial investment to mitigate inequality in adaptation among vulnerable populations affected by abnormal climates</li> <li>Support to vulnerable organizations at the village level, including heat shelters, roof improvements, and window upgrades</li> </ul> |
| Ministry of Interior and Safety                | <ul style="list-style-type: none"> <li>Overall coordination in development of the integrated heatwave response plans and the dissemination of heatwave warnings and action guidelines</li> <li>Operation of an on-site heat emergency medical system and sharing of hospital occupancy information</li> </ul> | <ul style="list-style-type: none"> <li>Comprehensive management of heat wave information using GIS</li> <li>Implementation of citizen-centric support projects such as installing shade structures</li> <li>Creation and distribution of maps showing heat sensitive areas</li> </ul> | <ul style="list-style-type: none"> <li>Provision of financial assistance to vulnerable groups with low incomes to cool their homes (electricity bills for air conditioning)</li> <li>Operation of an official heat wave warning system based on wind chill temperature</li> </ul>                                  |
| Ministry of Health and Welfare                 | <ul style="list-style-type: none"> <li>Protective measures promotion for vulnerable groups</li> <li>Nationwide operation of emergency rooms and a surveillance system for heat-related illnesses</li> </ul>   | <ul style="list-style-type: none"> <li>Intensive management of vulnerable populations such as elderly individuals living alone, homeless individuals, and residents in slum areas.</li> </ul>   |  |
| Ministry of Land, Infrastructure and Transport | <ul style="list-style-type: none"> <li>Safety measures development for facilities such as trains, subways, and high-speed railways</li> </ul>   | <ul style="list-style-type: none"> <li>Promotion of preventive measures against heatwave damage for highways and railways</li> <li>Recommendation for the suspension of outdoor construction work during extreme heat periods on construction sites</li> </ul>                        | <ul style="list-style-type: none"> <li>Enhancing disaster resilience in buildings and urban areas</li> <li>Recommendation for the suspension of outdoor construction work during extreme heat periods on construction sites</li> </ul>   |

# 3 National Frameworks into Local Action

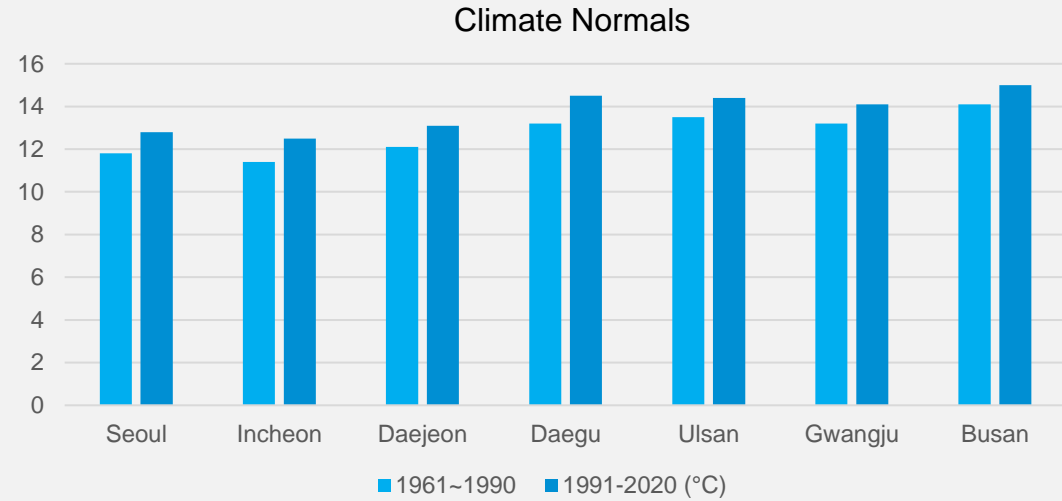


## NCCAP Action Plans at the Local Level

- While the NCCAP and NCHRP provide a general framework for undertaking urban heat and climate action, **local governments** are responsible for proposing target groups, application areas, and specific measures in line with the central government's policy direction.

## Cases of Busan and Daegu

- Busan and Daegu rank the highest for the number of tropical nights, and climate change is increasingly presenting serious health challenges.
- Busan Metropolitan City and Daegu Metropolitan City formulated their third NCCAP actions plans (2022-26).
- Both cities developed comprehensive heatwave response plans aligned with national frameworks and local ordinances.



Source: Korea Meteorological Administration.



## I Cases of Busan and Daegu

- **Targeted** measures to protect the most vulnerable from extreme heat risks
  - Various types of targeted support to populations disproportionately vulnerable to heat risk, such as older persons, children, and low-income households.
  - Allocation of water, cooling devices, and ice packs to community organizations and leaders for distribution, Operation of cooling buses to serve as heat shelters, Provision of care services to vulnerable individuals, etc.
- **Integrated**, place-based measures to address rising temperature
  - Urban greening and the installation of cooling materials (i.e. repaint roofs to white color, spray streets using groundwater)
- **Preparedness** measures pertaining to response and monitoring systems and institutions
  - Enactment of heat-focused ordinances at the city level and developed systems to monitor and respond to heat risk.
  - Ordinance for the *Prevention of Heatwave Damage and Mitigation of Urban Heat Island Phenomena* established an institutional framework in which various stakeholders can operate, and provide guidelines for heat mitigation projects and financing.



## I Significance

- Korea introduced a comprehensive heatwave response plan in 2005, which is updated annually and has evolved into an inter-ministerial effort led by the Ministry of the Interior and Safety.
- The NCCAP establishes the national framework for **long-term** heatwave responses, guiding local governments in setting policy directions, while **short-term** issues are addressed through the NCHRP.
- **Targeted, people-centered** interventions can reduce exposure to extreme heat, mitigate its effects, and help people cope with and respond to extreme heat events.
- In line with the national plans, **municipal governments** are combating urban heat using integrated, place-based approaches including urban planning guidelines (shade covers, green shelters, wind corridors, cool roofs, etc.)
- Responding to heatwaves requires flexibility in order to function as a cross-sectoral, comprehensive policy to achieve the ultimate goal of urban sustainability.



## Implications for Low- and Middle-Income Countries (LMICs)

- Designating **heat as a natural disaster** can mobilize resources and instigate action.
- **A whole-of-government approach** in Korea allowed heatwaves to be integrated into the planning and implementation of measures across ministries and at the national and local levels.
- **Citizen engagement** is essential for the effective curation, implementation, and monitoring of heat measures.
- **Heat data and analytics** are fundamental to developing evidence-based interventions and informing heat planning.
- Heat measures can be cost effective and tailored to **local needs**.
- Heat measures can be effectively targeted to **vulnerable groups**.



# Thank You

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