

# **ICE BREAKERS**

SHARING BY COUNTRY DELEGATIONS ON URBAN HEAT CHALLENGES

# City Introductions

*Maximum of 7 mins, reminder will be given at 5-min mark.*

(in alphabetically order)

- 1. Cambodia**
- 2. China**
- 3. Indonesia**
- 4. Philippines**
- 5. Poland**
- 6. Thailand**
- 7. Uzbekistan**
- 8. Vietnam**



**CAMBODIA:**

**Urban Heat Introduction**

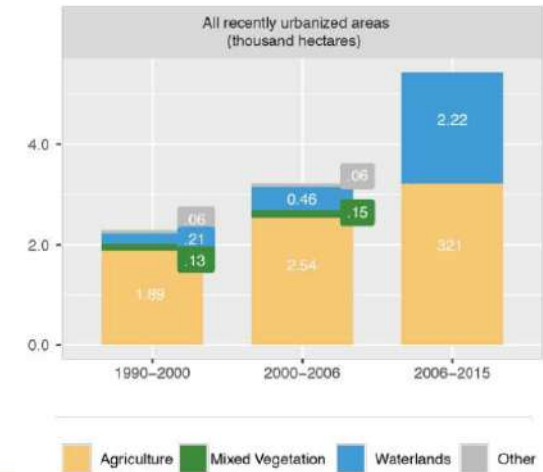
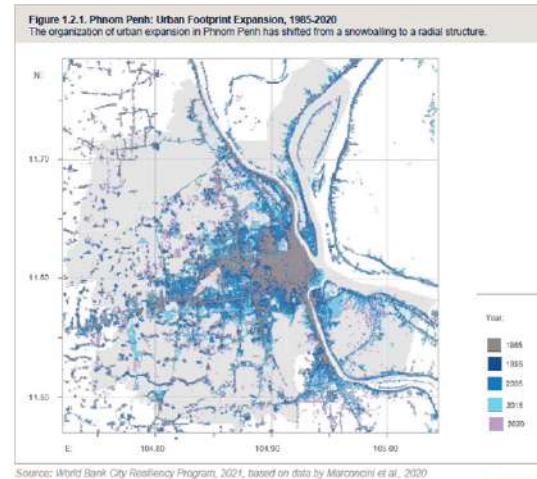
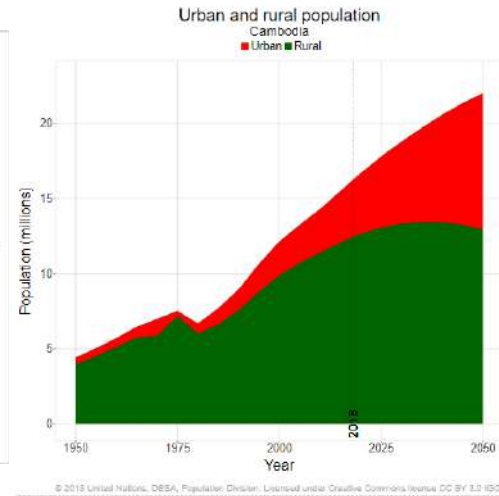
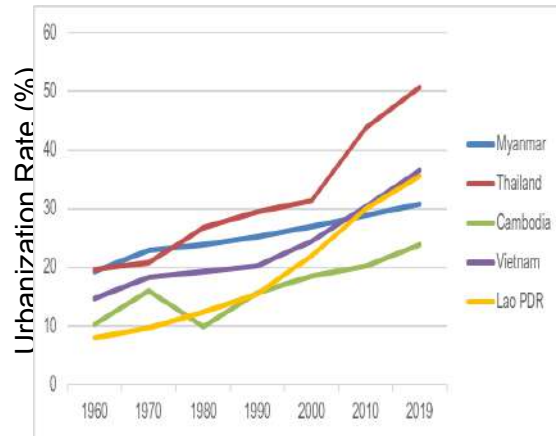
# Urban Sector Background

**Current low-level of urbanization relative the region – only 23 percent of the population live in cities**

**But urbanizing quickly, with 42 percent of the population, (adding 6 million more) urban dwellers by 2050**

**Phnom Penh’s footprint quadrupled between 1985 to 2020.**

**Phnom Penh’s Urban Expansion is Increasingly at the Loss of Natural Wetlands and Green Space**

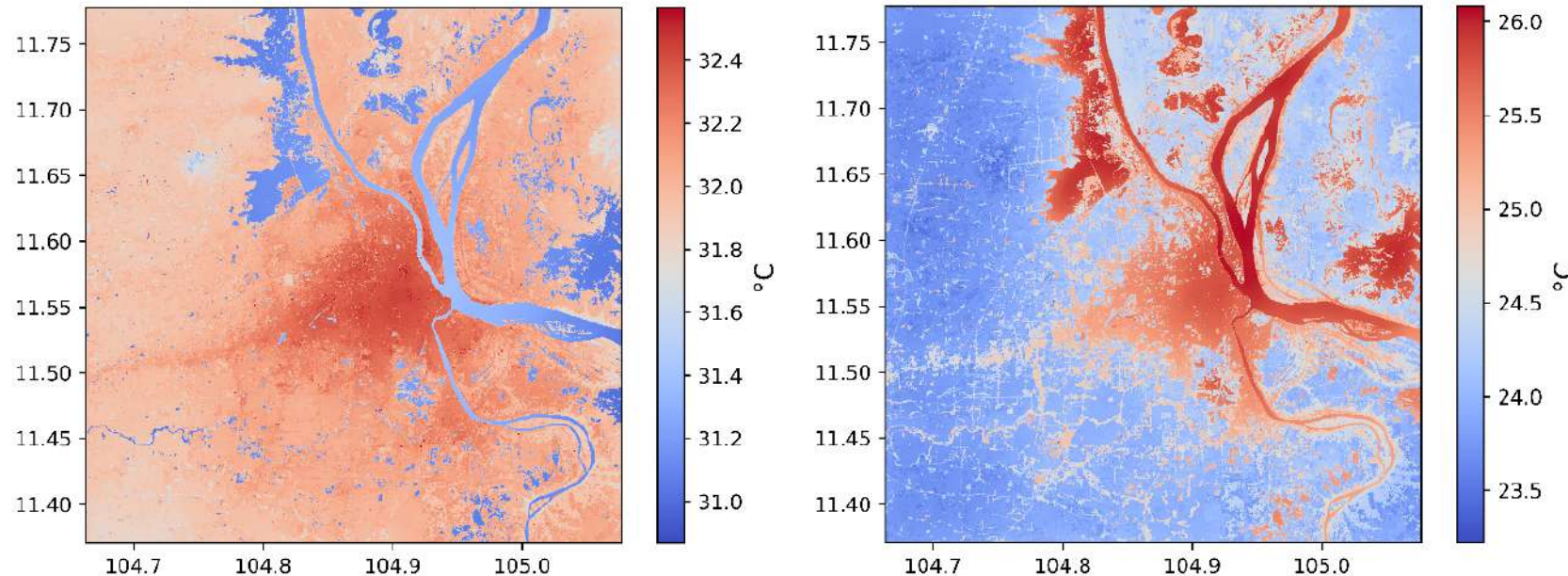




In Phnom Penh Climate Change has already caused a temperature change of 1 degree C. relative pre-industrial values

### Average Present Maximum (left) and Minimum (right) temperature for Phnom Penh

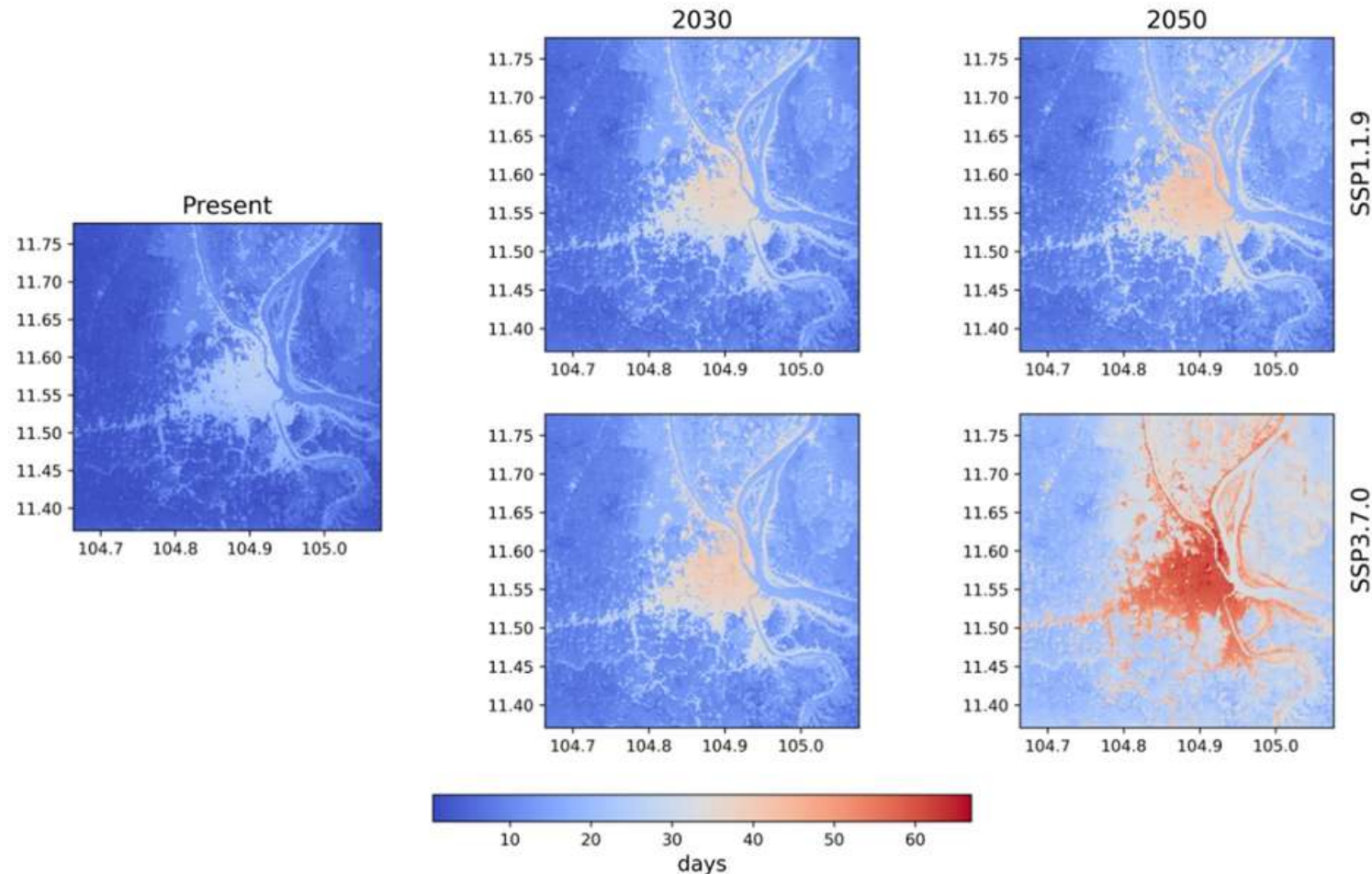
The urban extent pops up being warmer than the surrounding environment.



The /metropolitan region of Phnom Penh are/is experiencing higher temperatures than their/its rural counterparts, with urban neighborhoods warmer than nearby rural areas by 0.6°C during the day and 2-2.5°C at night (Figure 19). The highest temperatures are found in densely built areas.

## Number of Heat Waves Days for Phenom Penh will increase

At present, 25 heatwave days per year are observed in the city, while for future projects (2050) this escalates to 40 days under low-climate scenario and 60 under high-emissions climate change scenario.



## Data, Plans, and Institutions

### Urban heat is a relatively new challenge

- Preliminary data and modeling (study still on-going) of urban heat has been carried out by the World Bank
- Urban Heat considerations are not yet mainstreamed into current planning instruments at national and city-level, or in existing policy
- Additional efforts to optimize the institutional arrangements are a priority

## Top Three Challenges to Reduce and Mitigate Urban Heat Effects

- **Data and awareness**
- **Strengthening and developing an enabling planning, policy, and institutional environment**
- **Financing and planning enforcement for mitigation actions**



## What are the opportunities for implementing cooling strategies

- **Preserve urban greenspaces and protect wetlands**
- **Examine building codes, strengthening green building practices**
- **Protect and target interventions in low-income areas where impacts are felt most**

# Introduction to Guangzhou City and its Climate Challenges

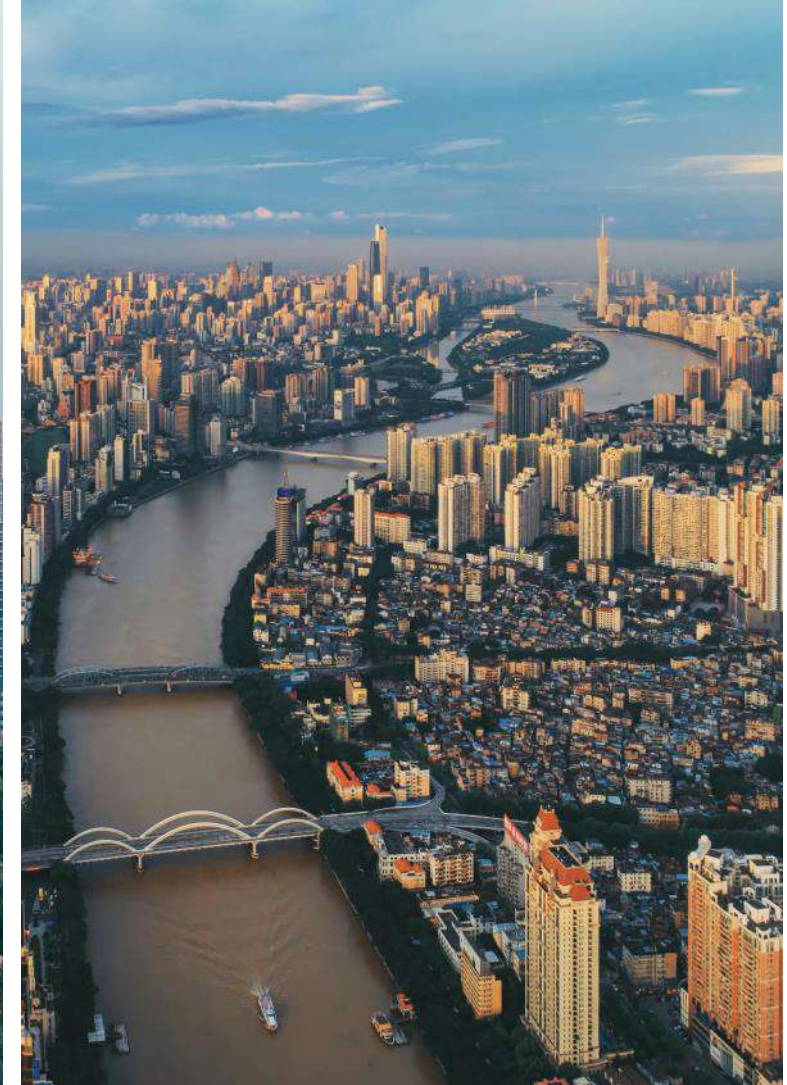
Guangzhou Urban Planning Research Center  
April, 2023





# Guangzhou Context

- Population: 18+ million in 2022
- GDP: US\$ 400+ billion in 2022





# Diverse Landscape: mountains, rivers, cities, farmlands, and seas



7434km<sup>2</sup>

- North by the mountains, central by the riverside, and southern by the coastal

Mountains and hills **50%**

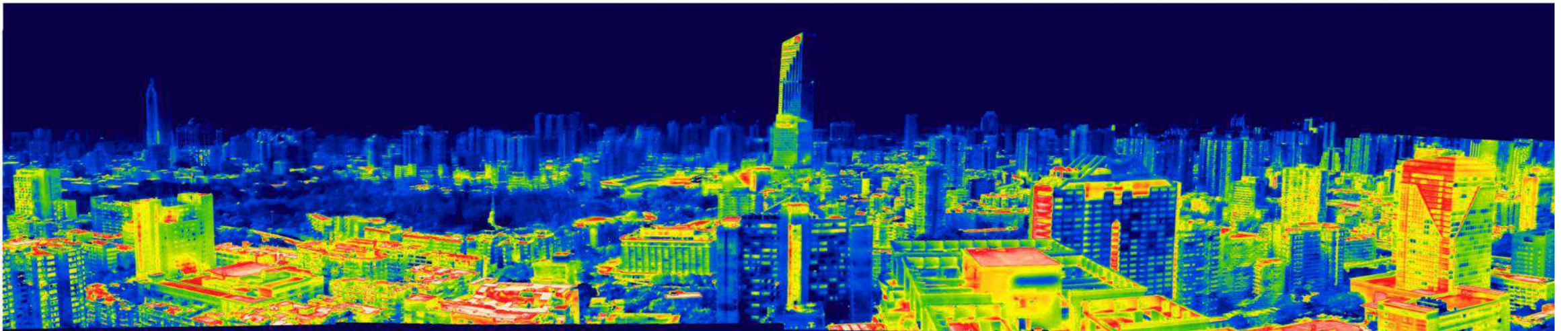
Plain **30%**

Water body **10%**



# Hot and humid climate

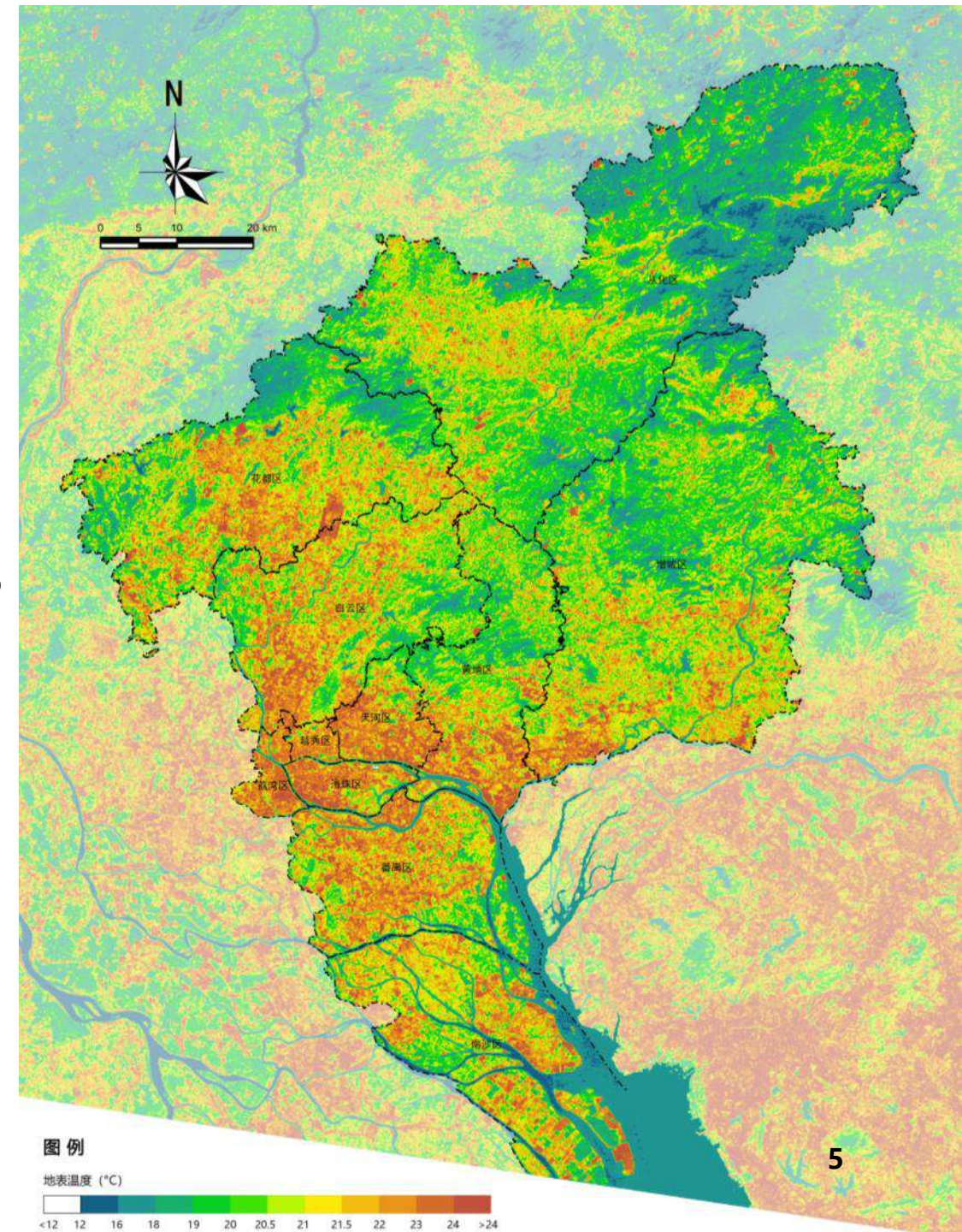
Subtropical monsoon humid climate, average temperature of 22°C  
Average annual rainfall exceeds 1900mm





# Challenge1: A warmer climate

- Hot summer and warm winter
- The heat island effect
- High temperatures
- Rainstorms and other extreme weathers



图例

地表温度 (°C)





## Challenge2: Cooperate with other cities in the bay area

Guangzhou and surrounding cities are integrated and developed to form Guangzhou metropolitan area



Night-light remote sensing image of Guangdong-Hong Kong-Macao Bay Area



# Challenge3: The balance between development and cooling

The population has increased by about 600,000 annually in the past 10 years





# Opportunities

- Carbon Peaking and Carbon Neutrality Policy
- Sustainable cooling pilot projects
- The Green Guangzhou Initiative



**Thank You!**





# Tackling Urban Heat Challenges: The Capture of Indonesian Urban Heat Island (UHI) Condition

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## Indonesia's Delegations

Technical Deep Dive  
Urban Heat Island (UHI)

Singapore, April 24<sup>th</sup> 2023





Photo by Refhad on Unsplash

# Indonesia's Profile

## Population



- Population (Sensus 2020) **270.20 mill**
- By 2045, **more than 70%** of population will **live in urban area** (around 220 mill)

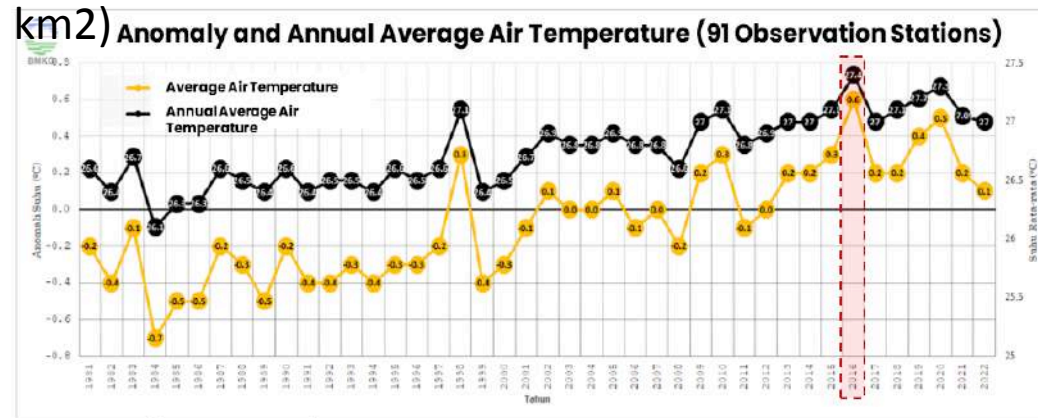
### Largest Cities In Indonesia Population (Sensus 2020):

- Jakarta** : 10.56 million ppl (~15,900 ppl / km<sup>2</sup>)
- Surabaya** : 2.87 million ppl (~ 9,100 ppl / km<sup>2</sup>)
- Bandung** : 2.57 million ppl (~16,600 ppl / km<sup>2</sup>)
- Medan** : 2.00 million ppl (~9,000 ppl / km<sup>2</sup>)

## Average Air Temperature

Average Air Temperature (1991-2020) **26.8 °C**

Annual Air Temperature (2022) **27.00 °C**

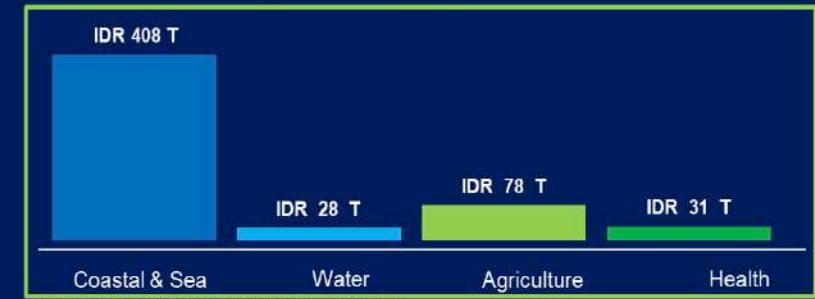


Source: <https://www.bmkg.go.id/>

## Potential Economic Loses

(2020-2024)

Indonesia has the potential to experience accumulated economic losses of IDR 544 trillion during 2020–2024 due to the impact of the climate crisis and loss & damage, if there is no policy intervention (business as usual)



Source: Ministry of National Development Planning (Bappenas), 2021

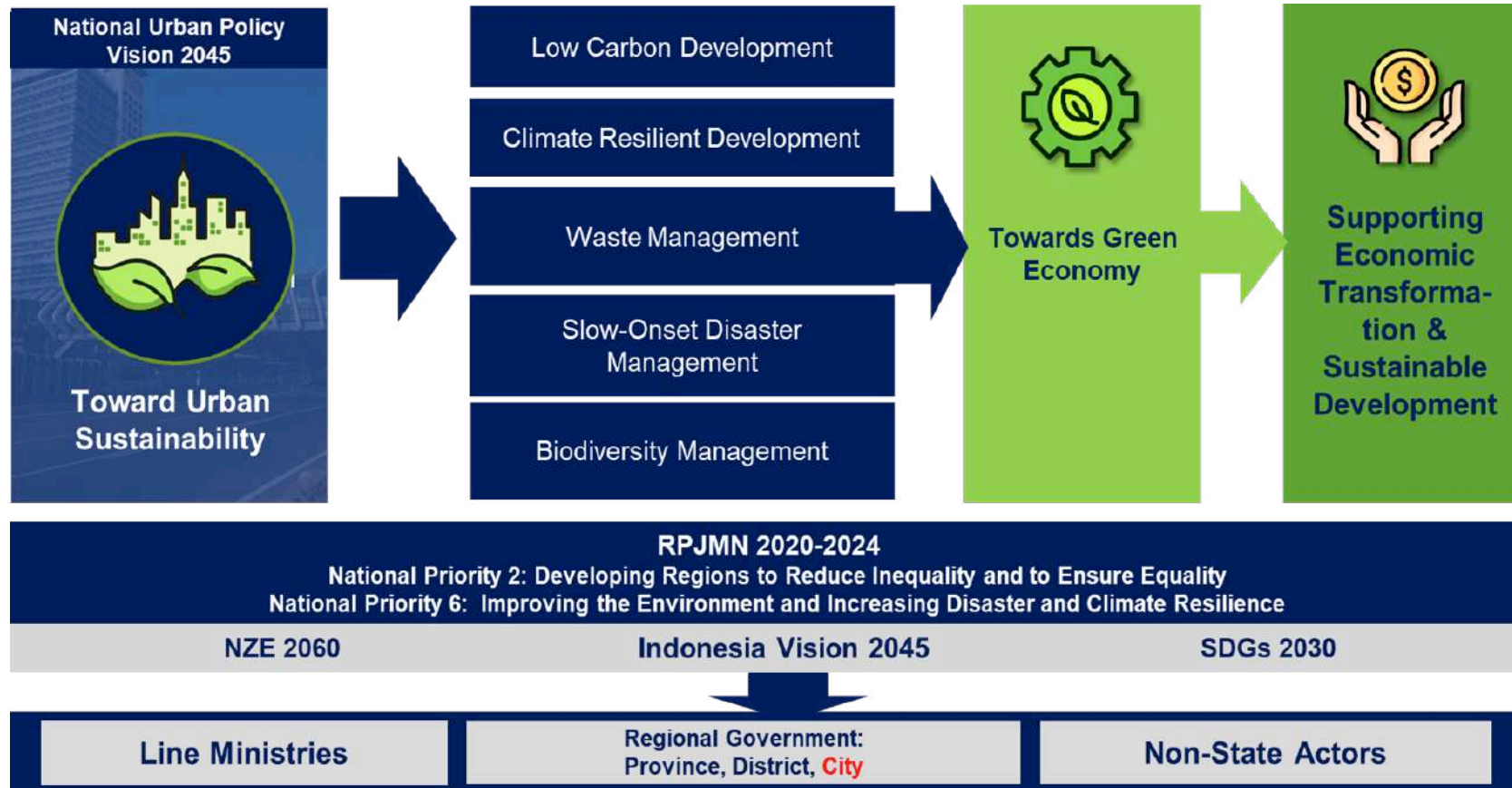


## of Indonesia Condition

- Indonesia is made up of **16,056 islands**
- Indonesia has **two third area of water**
- Indonesia got the **second longest coastline** in the world, after Canada.
- As an archipelagic country, Indonesia has **514 districts/cities** coping with potential **hydrometeorological disaster from climate change** such as flood and drought.

# Indonesia's Climate Resilience Policy

Indonesia has integrated low carbon development and **climate resilience policy** in the **national planning**, that is also consider the issues of rising temperatures



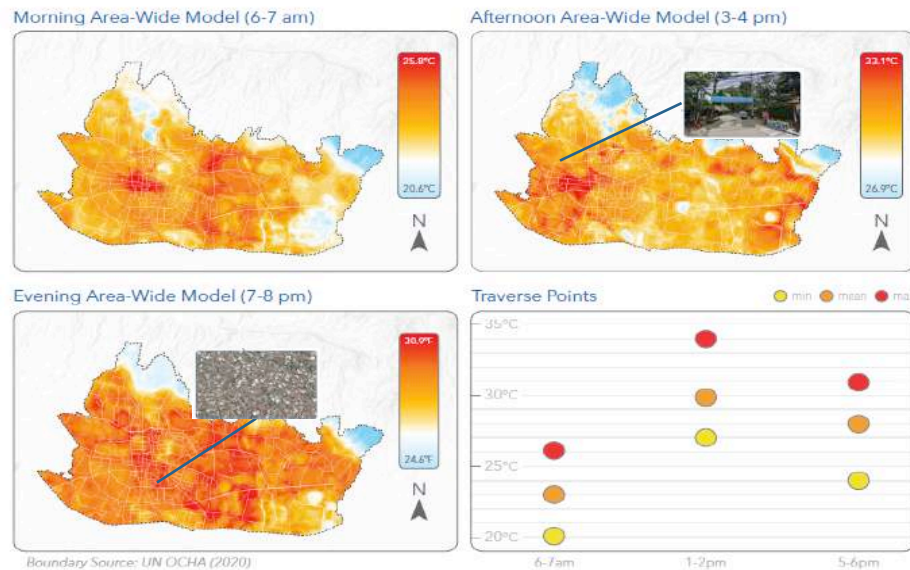


# Indonesia's Urban Heat Context

## Current Status on UHI Policy

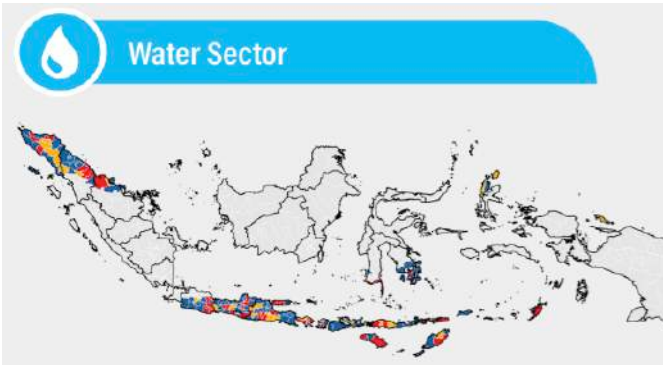
- There is no specific study or measurement in nation level to address UHI issue yet.
- National Government has planned to start the study as a continuation of climate resiliency policy in 2023.
- Several studies has been conducted by non-government.

## Study Case: Bandung City (July, 31st 2022)



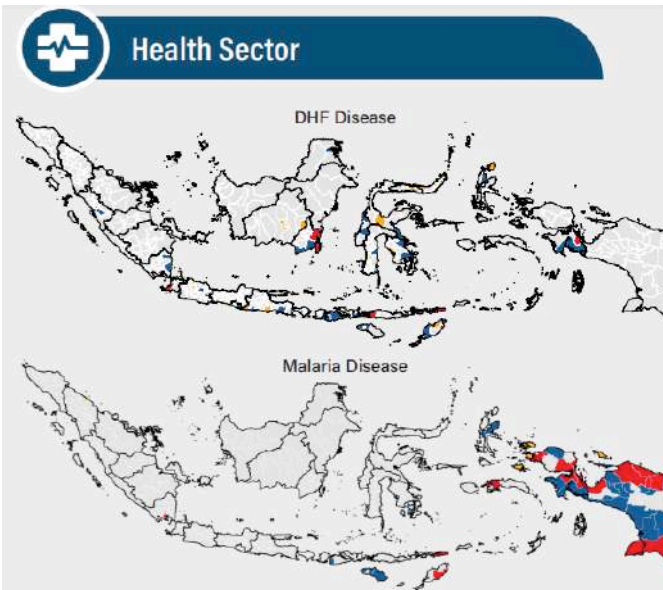
Source: Heat Watch Bandung project. It was conducted by CAPA Strategies in partnership with the World Bank Group and the Institut Teknologi Bandung

## Climate Resilience Priority Locations based on Priority Sectors



Potential Hazard:

- Potential drought
- Potential decrease in water availability



Potential Hazard:

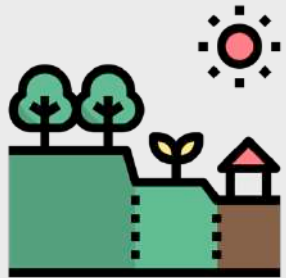
- Potential increase in DHF
- Potential increase in Malaria,

Note:

- Super Priority** (Red): the location in which has high potential hazard, high vulnerability, and high risk
- Top Priority** (Blue): the location in which has high potential hazard and high vulnerability or and high risk
- Priority** (Yellow): the location in which has high potential hazard

# Key Challenges

## 1. Policy and Regulation



- Awareness of UHI effects that would inform policies development
- Availability and alignment of specific UHI policy in national and sub-national level

## 2. Data Availability



- Measurement (technology and sustainability) and standardization for UHI at sub-national level

## 3. Stakeholders Arrangement



- Engagement of sub-national government
- Engagement of communities and private sectors

## 4. Funding and Resources



- Funding priority of national and sub-national budget
- Development of alternative financing



# Opportunities for Implementation

- Climate resilience policy as the umbrella of national climate resilience strategy has been established.
- Demand for climate resilience initiatives at sub-national level could stimulate further strategy development on UHI.
- Partnership with non-government parties (university, community, private sector, global city partnership)
- Existing special budget for environmental funds shall be allocated proportionally to address UHI
- Integration of UHI mitigation strategies into city-level policies, i.e Spatial and urban planning:
  - Green infrastructure development
  - Building code
  - Nature Based Solutions

Existing urban cooling solutions: Eco Park, Jakarta



Existing urban cooling solutions: Green Wall, Jakarta



**Thank You**

The Philippines ranks among the most rapidly urbanizing countries in the world. In 2019, **more than 60 %** of its population lives in cities.<sup>1</sup>

## BACKGROUND

**Urbanization has been a significant phenomenon globally.**

This trend is expected to continue, with **75 %** of today's world population projected to be living in urban areas **in the next 35 years**<sup>2</sup>.





PERCENTAGE OF FILIPINOS LIVING IN CITIES AND URBAN AREAS

60% IN 2019 → 84% BY 2050

75% PERCENTAGE OF THE COUNTRY'S ECONOMIC OUTPUT ATTRIBUTED TO URBAN AREAS, 2.3 TIMES THAN THAT OF RURAL AREAS

**Metro Manila or the National Capital Region**

2020 Population (PSA)	13,484,462
Land Area (PSA)	619.54 km <sup>2</sup>
2020 Population Density (PSA)	21,765 per km <sup>2</sup>
Composition	16 cities and 1 municipality
Population Projection	14,521,657 (based on 2015-POPCEN)
Average Temperature (PAGASA)	<ul style="list-style-type: none"> <li>● mean annual temperature = 26.6<sup>o</sup>C.</li> <li>● January (coolest month) = mean temperature of 25.5<sup>o</sup>C</li> <li>● May (warmest month) = mean temperature of 28.3<sup>o</sup>C</li> </ul>



**Metro Manila, Philippines**



**Sunset at Manila Bay**

## URBAN HEAT IN THE PHILIPPINES: METRO MANILA

- The cities at high or very high risk are found in Metro Manila, where levels of heat hazard and exposure are high.
- The most vulnerable cities are, however, found mainly outside the National Capital Region, where sensitivity is higher and capacity to cope and adapt is lower.
- According to PAGASA, the heat index in five areas in the country hit the “danger level” after reaching at least 48 degrees Celsius (°C)

## Impacts and concerns of urban heat

- Replacement of natural/agricultural surface with impervious, built areas
  - Reduction of natural-landscape in urban areas
  - Insufficient Greenspace
- Increasing surface runoff volume
- Absence of systematic study or monitoring tool on UHI status
- Lack of nature and science-based initiatives and policies on UHI



*High Rise Buildings in Makati City, Metro Manila*



*BASECO Compound, Manila*



## Key challenges in reducing and mitigating urban heat effect in Metro Manila

- Urbanization/Rapid Development
- Poor air quality
- Lack/ Limited database – specifically, spatial information
- Gap in UH knowledge and application of mitigating measures



Vertical Garden along EDSA, Metro Manila



EDSA, Metro Manila

Taguig City, Metro Manila

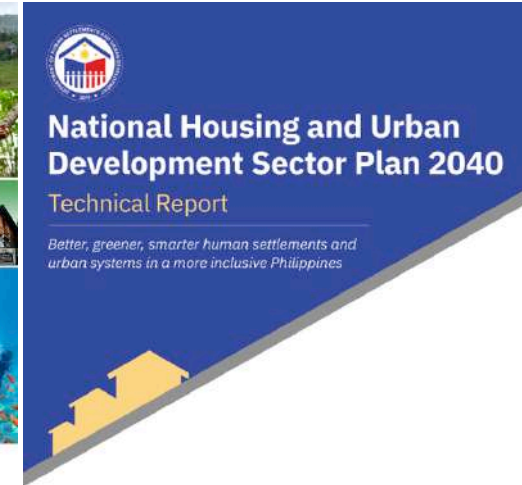
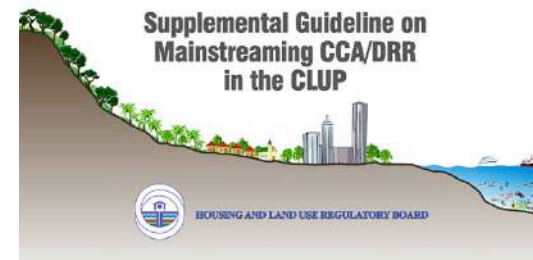
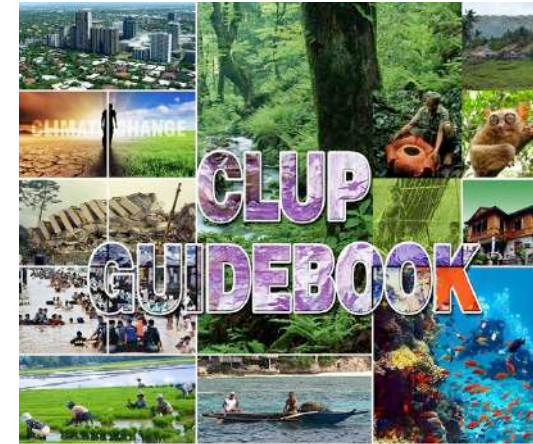


## Opportunities for implementing cooling strategies

- Reintroduction of vegetation
- Establishment and allocation of green spaces
- Mainstreaming CCA and DRR in land-use plans of Metro Manila LGUs
- Density control regulations
- Strict implementation of the National Building Code
- Green Building Standards and Certification Systems
- Monitoring and Evaluation
- Capacity building/Technical Assistance

***“Man created the UHI effect, man must undo it in order to survive and achieve a more livable and energy efficient metropolis”***

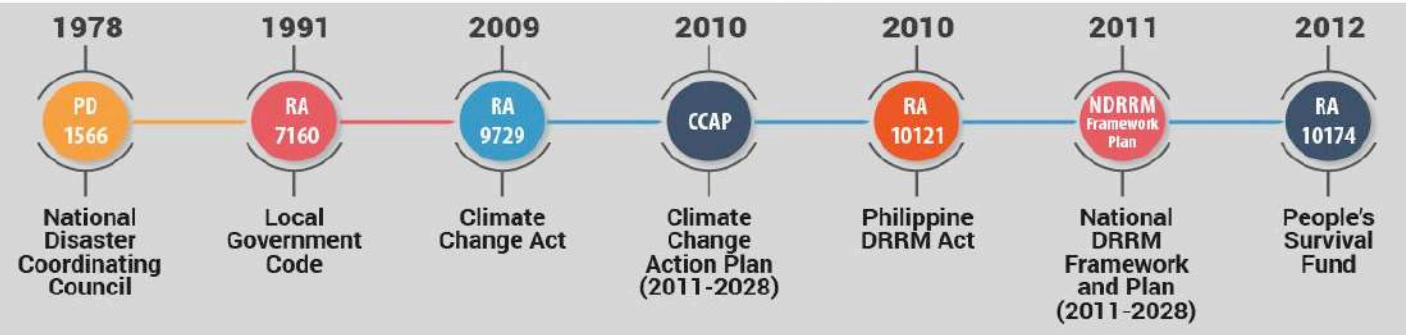
- Urban Heat Island Phenomenon: A Look into the Metro Manila Setting



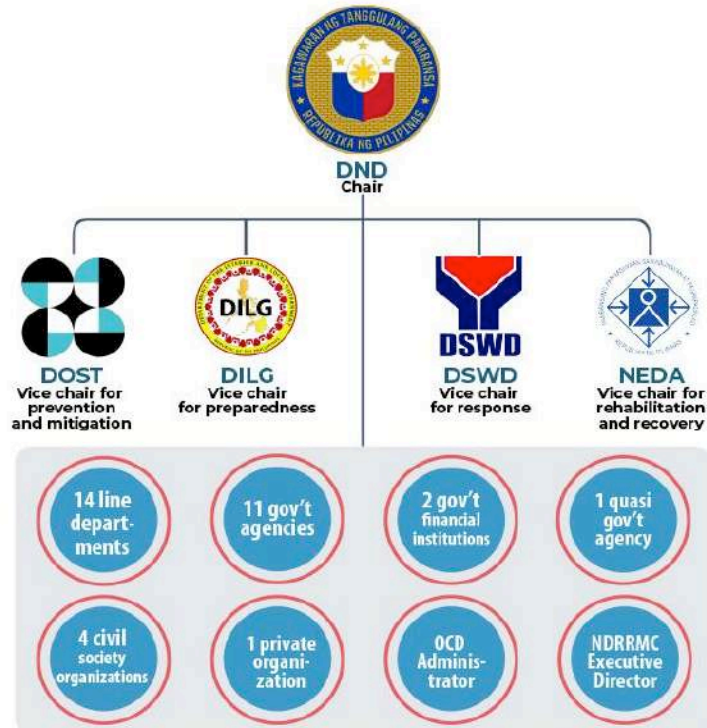


# MANAGING THE IMPACT OF DISASTERS

## Evolution of DRRM Policies in the Philippines



## NDRRMC Organizational Structure



SOURCE: Office of Civil Defense (2016)

## DRRM Network in the Philippines

Republic Act 10121 also mandated the establishment of DRRM offices in every province, city, and municipality, and DRRM committees in every barangay.

1	National DRRMC
17	Regional DRRMC
81	Provincial DRRMC
122	City DRRMC
1,512	Municipal DRRMC
42,046	Barangay DRRM Committees

## MEMBERS:

- Office of the President (OP) National Anti-Poverty Commission (NAPC)
- Office of the Vice President (OVP)
- Department of National Defense (DND)
- Department of Science and Technology (DOST)
- Department of Information and Communications Technology (DICT)
- Department of Interior and Local Government (DILG)
- Department of Social Welfare and Development (DSWD)
- National Economic and Development Authority (NEDA)
- Department of Public Works and Highways (DPWH)
- Department of Health (DOH)
- Department of Budget and Management (DBM)
- Department of Labor and Employment (DOLE)
- Department of Finance (DOF)
- Department of Trade and Industry (DTI)
- Department of Transportation (DOTr)
- Department of Environment and Natural Resources (DENR)
- Department of Agriculture (DA)
- Department of Education (DepEd)
- Department of Energy (DOE)
- Department of Foreign Affairs (DFA)
- Department of Justice (DOJ)
- Department of Tourism (DOT)
- Philippine Red Cross (PRC)
- Department of Human Settlements and Urban Development (DHSUD)
- Government Service Insurance System (GSIS)
- Union of Local Authorities of the Philippines (ULAP)
- League of Provinces of the Philippines (LPP)
- League of Cities of the Philippines (LCP)
- League of Municipalities of the Philippines (LMP)
- Liga ng mga Barangay sa Pilipinas (LBP)
- Philippine Social Security System (SSS)
- Philippine Space Agency (PhilSA)

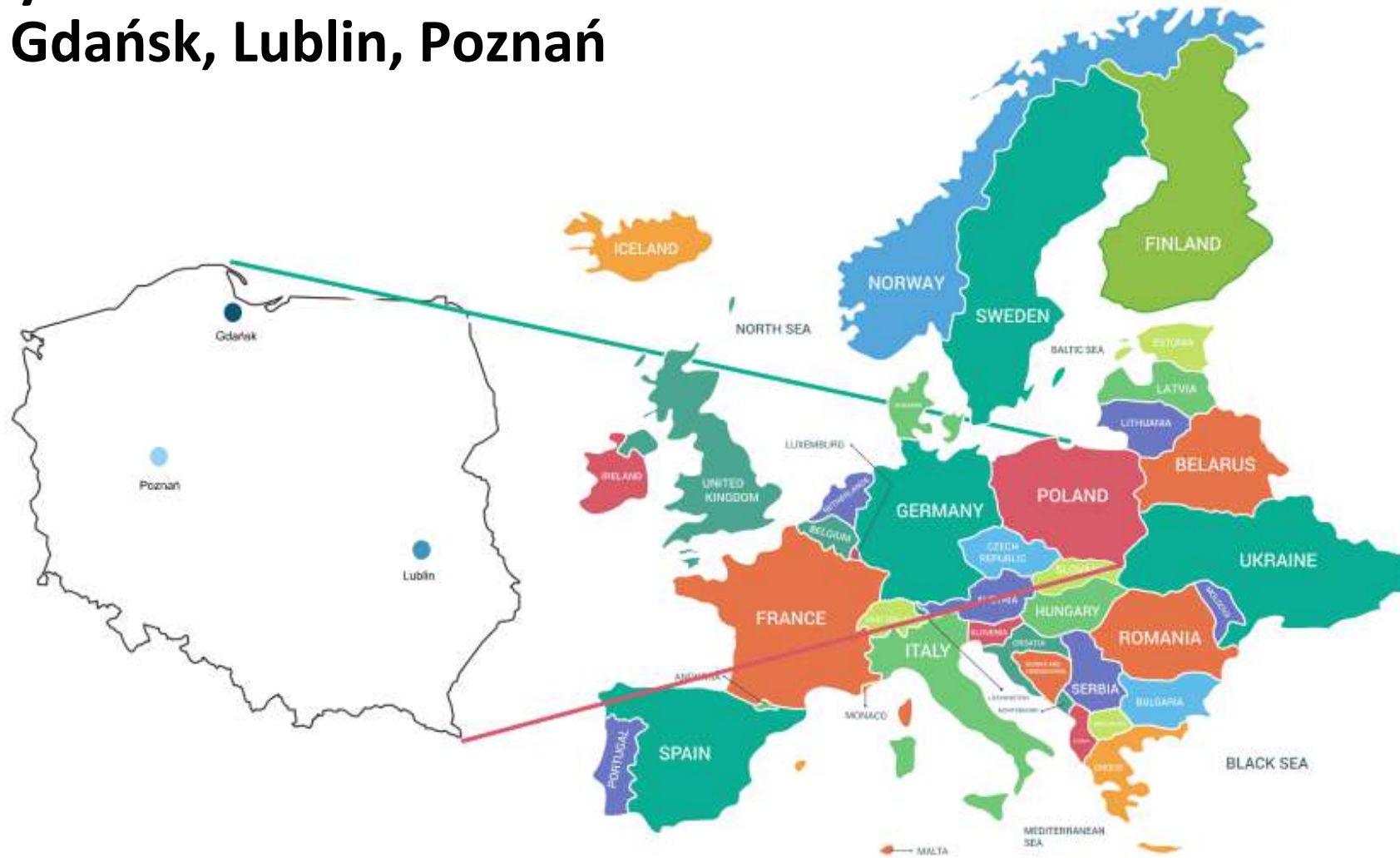


**Map of Urban Green Spaces (UGS) in Metro Manila (DENR-FMB, 2022). UGS are highlighted in green.**



**Country: POLAND**

**Cities: Gdańsk, Lublin, Poznań**



# CITY OF GDANSK



**Located on the Baltic Sea, Gdansk has rich and diverse natural resources**

**The dynamic development of Gdansk is carried out in accordance with the principles of sustainable development**



**Gdańsk's forests, lakes and rivers are protected by various forms of nature protection, e.g. Natura 2000 areas, areas of protected landscape, reserves, nature and landscape complexes, ecological grounds, nature monuments**



**Our main goal is to preserve valuable natural resources in the best possible condition**

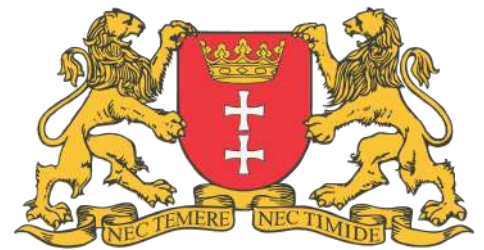


**We are currently looking for new methods of protecting nature resources, with regard to climate change**



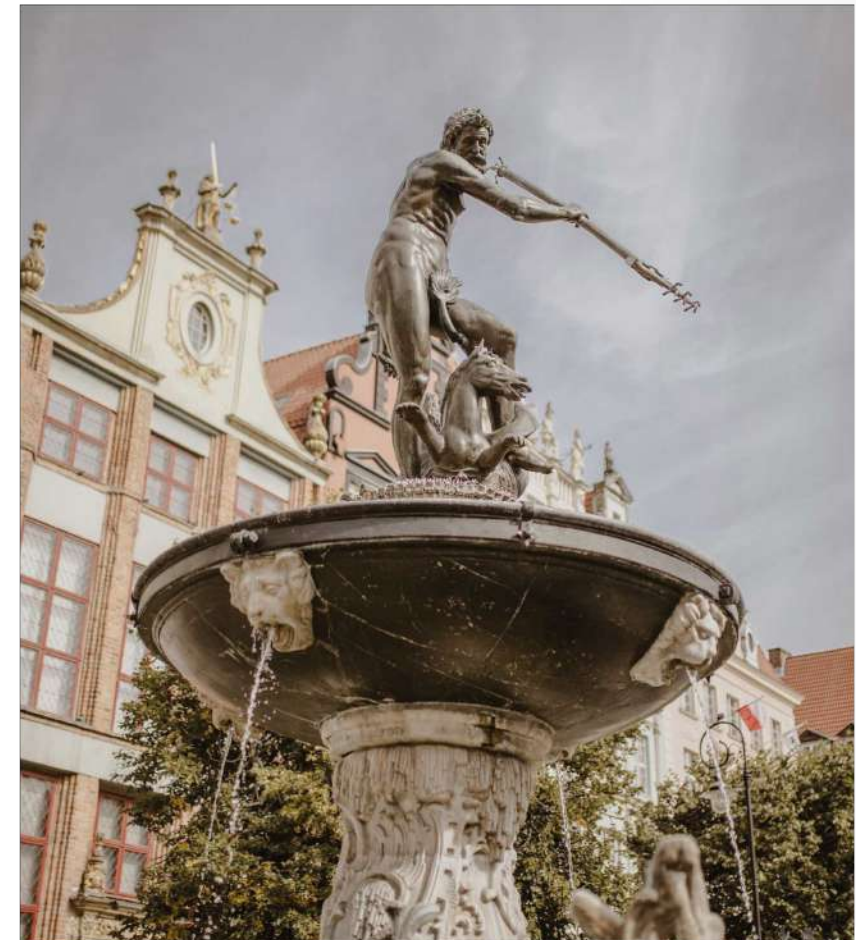


Indicators should also help in determining directions for building strategies and harmonious development of the city



**GDAŃSK**

[WWW.GDANSK.PL](http://WWW.GDANSK.PL)



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NEC TEMERE NEC TIMIDE  
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# INNOVATIVE LUBLIN IN THE CONTEXT OF URBAN GREEN SPACES

## „PLACES FOR YOU”

SMALL SPACES SUGGESTED BY RESIDENTS,  
WHO DECIDED ON THEIR ARRANGEMENT IN SOCIAL CONSULTATIONS

EACH OF THESE SPACES HAS ITS OWN INDIVIDUAL CHARACTER AND  
UNIQUENESS

THE FURNITURE ELEMENTS ARE DERIVED FROM RESIDENTS' NEEDS AND  
ARE ADAPTED TO THE CONTEXT OF THE PLACE

AT THE SAME TIME, AN ECO-FRIENDLY ATTITUDE IS PROMOTED INSECT  
HOUSES HAVE BEEN INTRODUCED IN THE AREA

## RAIN GARDENS

THE AIM OF THE PROJECT WAS TO PROMOTE KNOWLEDGE AMONG  
RESIDENTS REGARDING CLIMATE CHANGE, URBAN GREEN SPACE, AND  
WATER MANAGEMENT

THE PROJECT WAS DESIGNED TO SHOW WAYS TO INCREASE RETENTION  
IN THE CITY AND INSPIRE THE BUILDING OF FURTHER RAIN GARDENS

THIS IS ONE OF THE ACTIONS THROUGH WHICH WE IMPROVE THE  
QUALITY OF LIFE IN OUR IMMEDIATE SURROUNDINGS





# FLOWER MEADOWS

SUPPORTING BIORETENTION, IMPROVING MICROCLIMATE, INCREASING BIODIVERSITY, COMBATING AIR POLLUTION, SUPPORTING WILD POLLINATOR POPULATIONS



## POCKET PARKS

AN AREA OVERGROWN WITH GRASS THAT WAS UNUSED HAS GAINED A NEW CHARACTER: A PERGOLA MADE OF CORRODED STEEL HAS BEEN PLANNED REFERENCING THE WORKING-CLASS CHARACTER OF THE DISTRICT, ALONG WITH A PLAQUE DESCRIBING THE HISTORY OF THE NEIGHBORHOOD, THE ROAD STRIP OF THE INDUSTRIAL WORKING-CLASS STREET HAS GAINED A NEW CHARACTER



# UNSEALING OF CONCRETE PAVEMENTS

THE GOAL OF THE PROJECT IS TO INCREASE GREEN AREAS IN THE IMMEDIATE SURROUNDINGS. THIS INVOLVES IMPROVING THE CONDITIONS FOR THE DEVELOPMENT OF OLD-GROWTH FORESTS AND OTHER EXISTING PLANTINGS, BY DEPAVING THE AREAS AROUND THE TREE TRUNKS, CREATING SPACE FOR WATER ABSORPTION

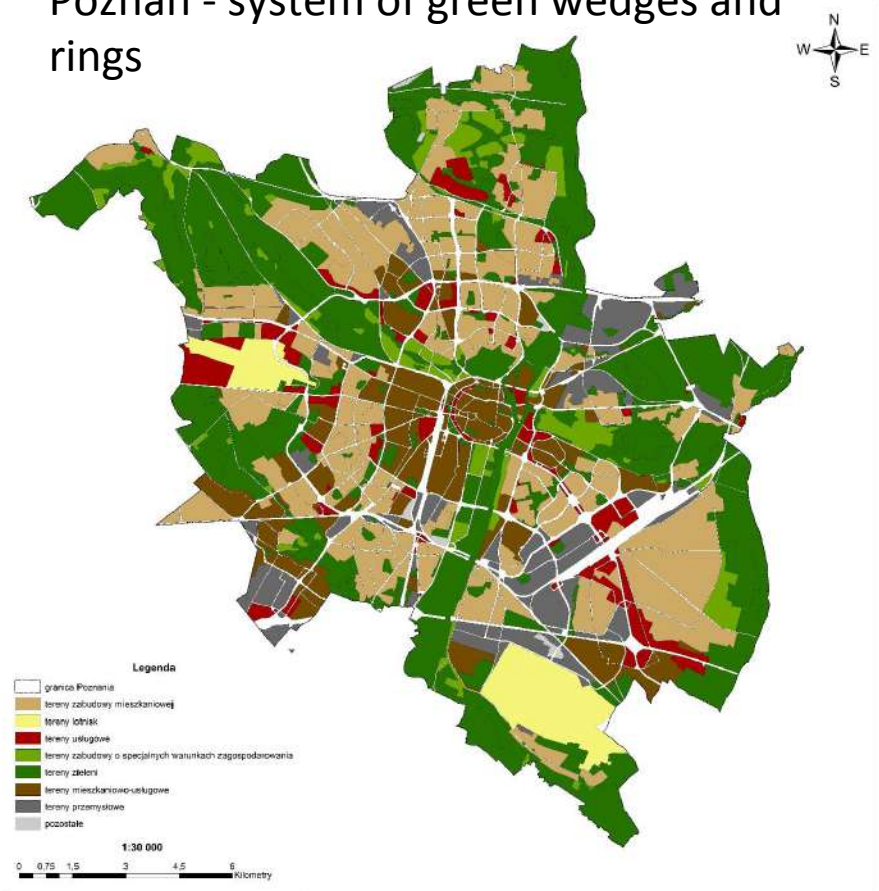




## POZNAŃ, POLAND



Poznań - system of green wedges and rings



Poznań - a municipality with over half-a-million residents, situated in the West of Poland, is a historical and one of the oldest Polish cities. We have a lot of green areas but they are not equally distributed. Beautiful old districts are densely build-up and they do not have sufficient access to these areas.



## POZNAŃ, POLAND

CHALLENGES	COUNTERACTIONS
<p>Poznań green wedges system is endangered by the pressure of new investments/urbanisation and defragmented</p>	<p>Protect the existing network and restore connection and functionality of the network of wedges and rings.</p>
<p>Greenery is unevenly distributed in the city – unequal access to greenery causes different problems: ecological (air quality, biodiversity, heat stress, water retention etc.), social and economic, including health problems (physical and mental).</p>	<p>Creating network of small scale NBS including: natural playgrounds in pre-schools, eco-education (eco-demonstrators), floating gardens, opening of allotment gardens to the public.</p>
<p>Lack of legal framework for new residential districts to include sufficient blue and green infrastructure.</p>	<p>Make optimal use of existing green spaces and invest in their good quality, introduce nature- based small-scale solutions in these areas, provide a framework for cooperation with private investors.</p>



Natural playgrounds in Poznań  
pre-schools, Fot. H. Bugajny



Eco-demonstrators educational tools for  
children  
Poznań, Fot. P. Bedliński



POZNAŃ, POLAND – small-scale NBSs

Floating gardens in Poznań on Cybina River,  
Fot. M. Strokowski



Opening of Allotment gardens in Poznań to the wider  
public





## Chiang Mai

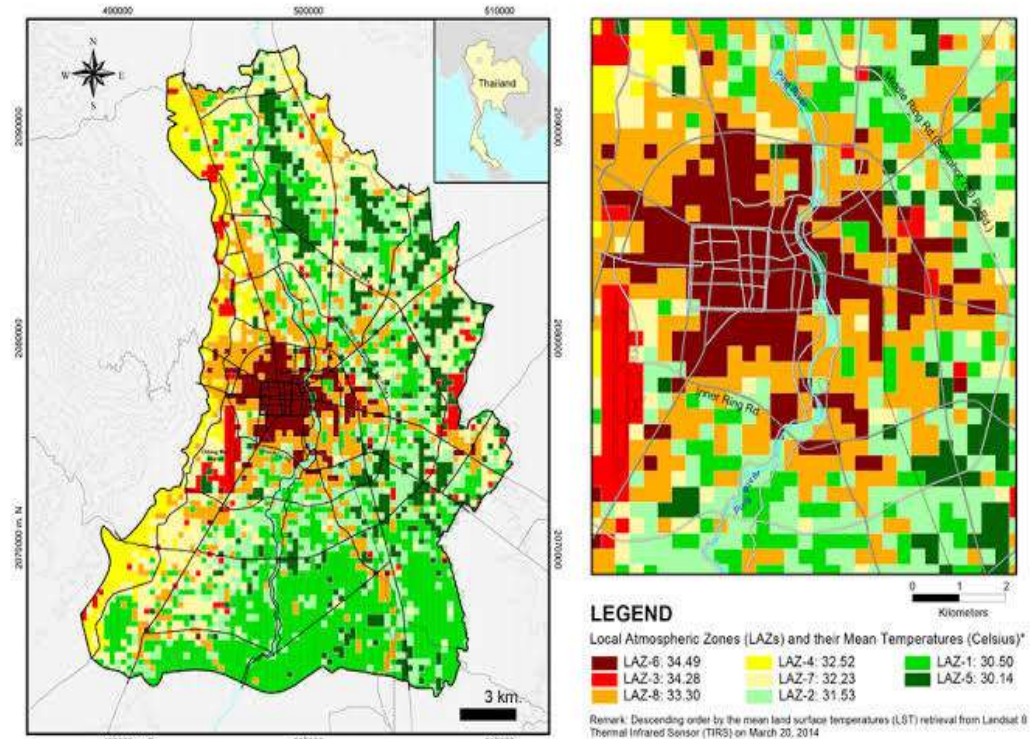
- Population: 1.7m and project to grow to 2m in 2030
- Average temperature in Chiang Mai varies between 21°C (69.8°F) a 34°C (93.2°F), depending on the season; Heat index 49 °C (April 21)
  - Hottest: March – May
  - Coolest: December – January
- Chiang Mai is the largest city in Northern Thailand and has experier rapid urbanization over the past several decades, leading to increas urban heat island effects.



## Chiang Mai Urban Heat Context

(Suwanprasit, C, 2017)

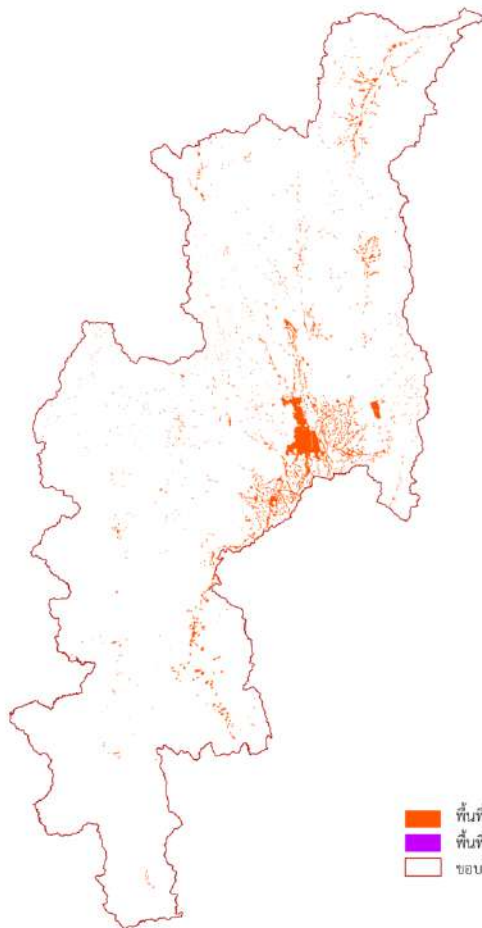
- Multi-temporal Landsat TM and ETM+ satellite images acquired in April in 1994, 2004 and 2014 were selected to analyze changes in land-use, land surface temperature (LST) and UHI using object-based image analysis method and thermal image processing
- During the 20-years (1994-2014), the city experienced a huge land-use changed.
- Maximum LST values were detected for bare land class in each study year while minimum LST values were detected for forest, agriculture, and water resource classes.
- The difference of temperature between city and suburb areas was range from 1 - 2 °C in 1994 and rapidly increased to 5-8 °C in 2014, which related to the land-use changes and UHI situation in the study area





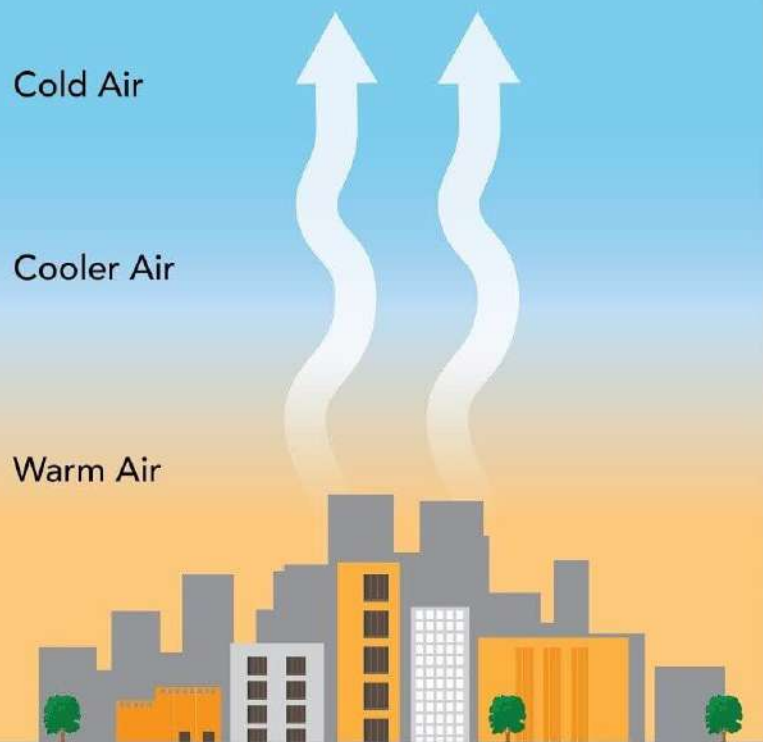


การเปลี่ยนแปลงพื้นที่เมือง จังหวัดเชียงใหม่ ระหว่าง ปี 2543 และ ปี 2563

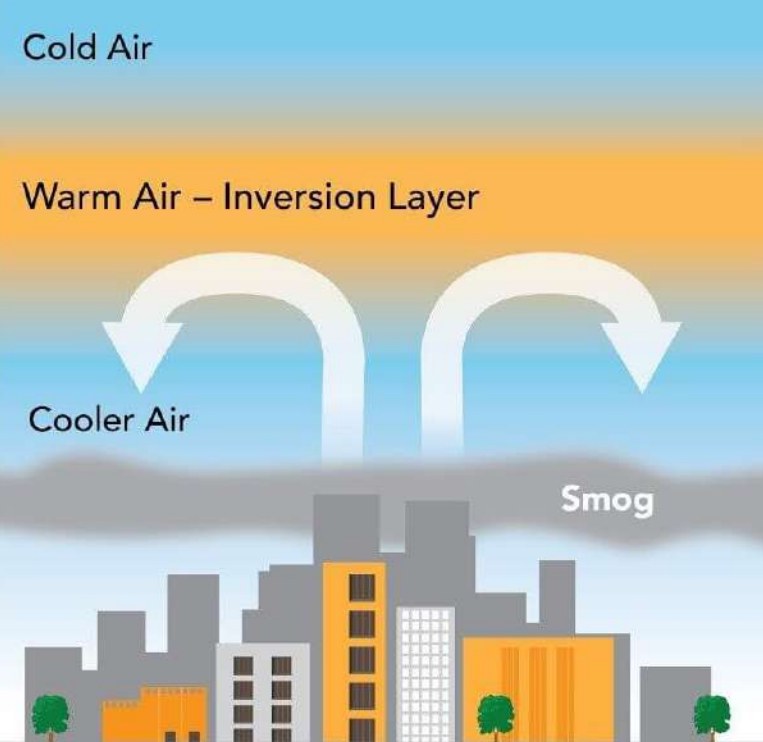


พื้นที่เมืองปี 2543  
พื้นที่เมืองปี 2563  
ขอบเขตจังหวัดเชียงใหม่

### Normal Conditions



### Temperature Inversion





# TEMPERATUR E INVERSION



## Top three key challenges in reducing and mitigating urban heat effect in Chiang Mai

- **Lack of green spaces and inadequate urban planning:** The city has limited green spaces. The existing green spaces also suffer from inadequate management and maintenance. Inadequate urban planning and zoning policies that fail to consider the impact of heat and the importance of green spaces.
- **Lack of awareness and limited research:** There is a lack of awareness among the general public, policymakers, and urban planners about the impact of urban heat and the benefits of reducing it. There is a lack of data and research on the specific causes and impacts of urban heat in Chiang Mai
- **Limited resources:** The city may face budget constraints and a shortage of resources, which hinders efforts to implement comprehensive strategies to mitigate urban heat.





## Opportunities for implementing cooling strategies

- Capitalizing on the issue and heightened awareness of air quality/pollution (PM2.5)
- Incorporate urban heat mitigation strategies that align with sustainable tourism practices
- Partnering and collaborating on urban heat mitigation efforts with many local organizations and non-profits that are already working on environmental issues in Chiang Mai
  - Green roofs and walls; urban forestry; building designs, water features in public spaces and buildings.





# Uzbekistan Day 1 Presentation



## Slide #1: Participating City Basic Information

- **Total population** of Uzbekistan is 36.5 million, including
  - Total urban – 18.4 million or ~ 50%
  - **Tashkent city** – capital city of 2.6 million, but unofficial estimate is 3.5-4.0 million, incl. day-time population
  - **Namangan city** – regional center with population around 1.0 million and large functional urban area
- **Tashkent is one of the greenest cities** in Uzbekistan, but the city is under pressure due to **high demand for land** for new developments (housing and commercial), **poorly managed traffic**, expansion of **grey spaces**
- **Namangan is fast growing/sprawling city** with obvious **lack of green spaces**, increasing **congestion and pollution** due to intense traffic, continuing **infill development**
- **Climate change impact**
  - Increased **number of hot days** (above 40 °C), more frequent heatwaves and droughts (25-40 days compared to 15-30 days before)
  - Melting glaciers and **reduction of water flow in rivers**

Summer temperature, 1972-2021

Tashkent, 1972-2021

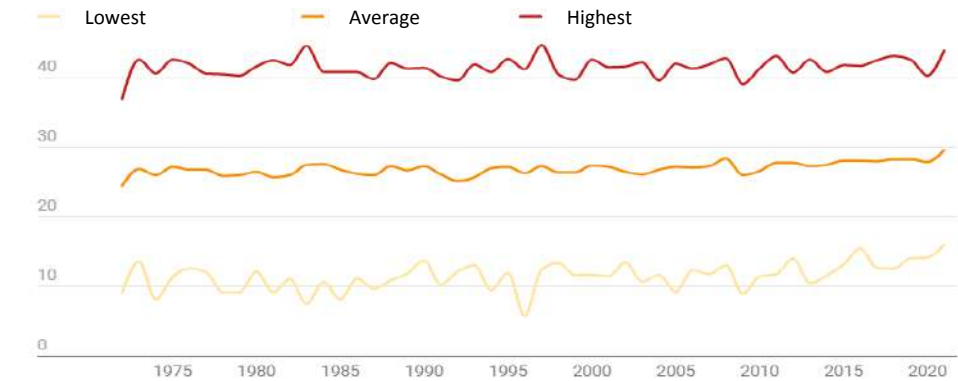


Диаграмма: «Газета.uz» • Источник: Узгидромет • Создано с помощью Datawrapper

Namangan, 1972-2021

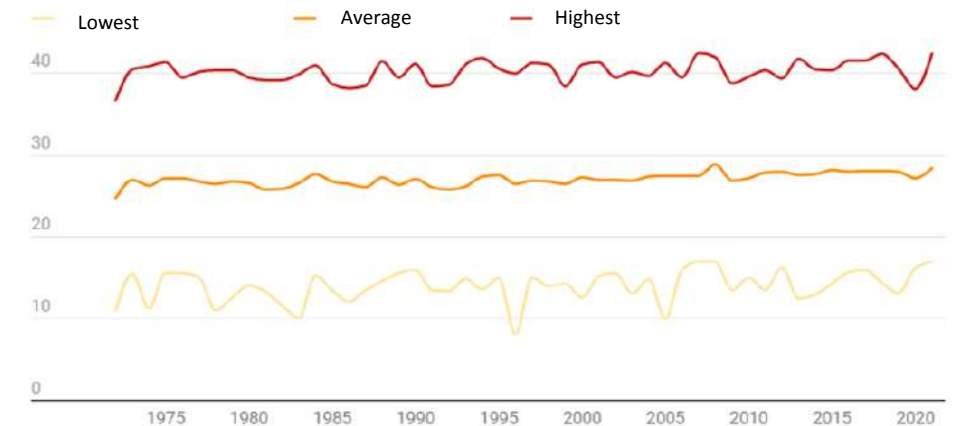
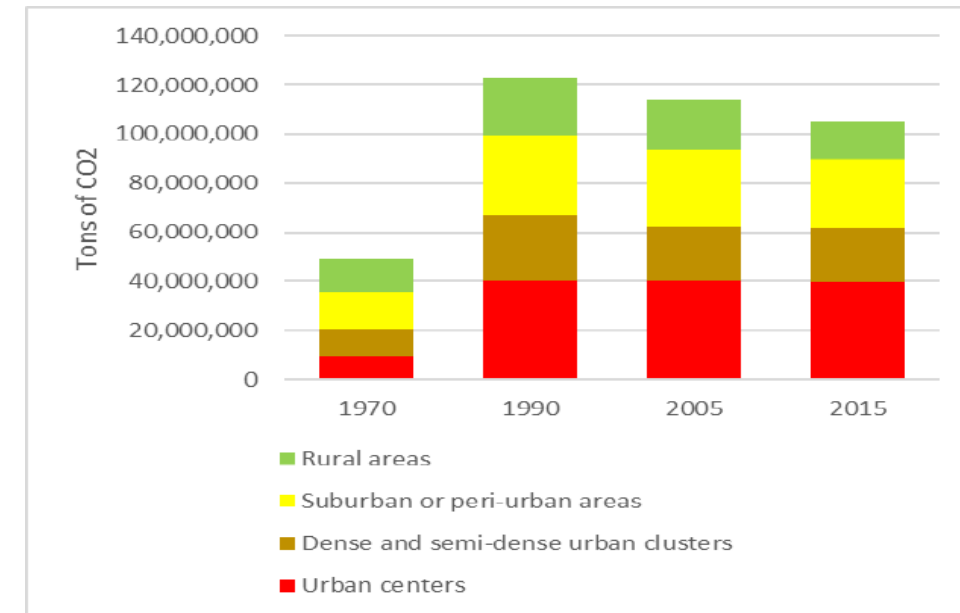
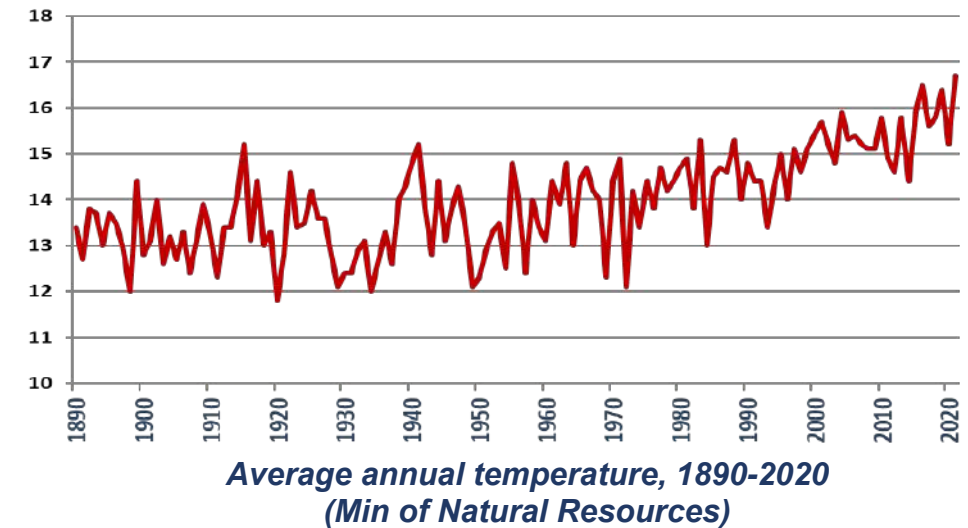


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## Slide #2. Summary of Urban Heat Context (1)

- **Climate targets in terms of temperature reduction**
  - Increase **green space** in cities **from 8% to 30%** in 2021-2026
  - **National SDGs**
    - NSDG 11 - Sustainable urbanization, green spaces in cities
    - NSDG 13 – Mainstream climate action in national policies
    - NSDG 15 – Protect and restore eco-systems, promote biodiversity
  - Obligations under Paris Agreement, including **reduction of GHG emission per GDP unit by 35%**
- **Plans to address urban heat island effect (UHI)**
  - Yashil Makon/Green Space – National 5-year program on **planting 1 billion trees and bushes**, particularly in urban areas
  - National **Biodiversity Strategy**
- **Data collected and tools utilized to visualize UHI**
  - General Hydromet data
  - Only **fragmented UHI related data** for cities are collected



### FUN FACT

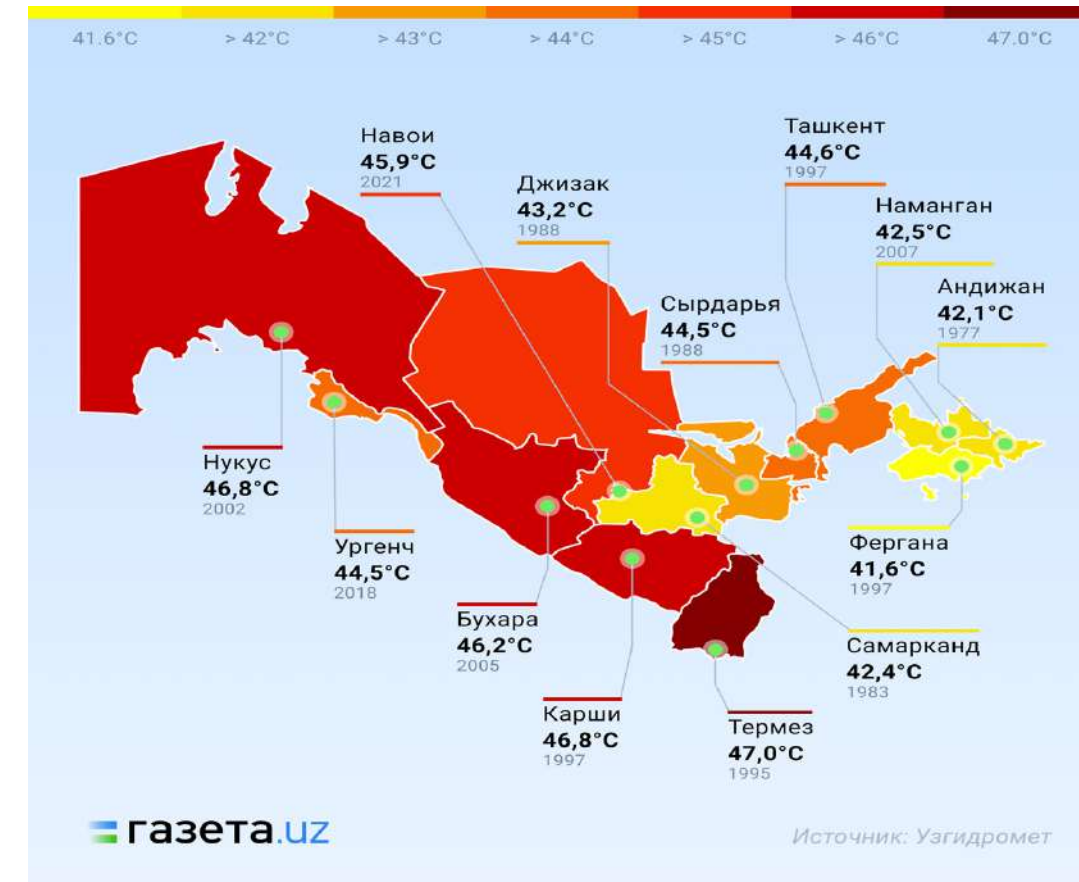
**PLOV** is the most popular Uzbek dish. **First it is fried, then boiled, then steamed.** But you should also know that it is done slightly differently in different parts of Uzbekistan. Anywhere you travel you will hear that local plov is the best. Try all types of plov and make your choice.





## Slide # 3. Summary of Urban Heat Context (2)

- **Agencies responsible for managing and monitoring UHI**
  - Monitoring – **Hydromet Agency**
  - Managing – **Ministry of Natural Resources** (green spaces and urban forestry protection), **Ministry of Construction, Housing and Communal Services** (urban planning and construction), **Municipalities** (maintenance).
- **Urban planning and UHI reduction**
  - Only general provisions in **construction and urban planning norms and standards** (i.e. min share of green space), but **no clear guidelines on how to apply** such norms and standards
  - Need to **improve enforcement**
  - Ongoing work with WB, UNDP and other partners to **upgrade planning and construction norms and standards and promote green solutions** (i.e. green roofs, green-blue-grey infra, new construction materials)



*Max summer temperature in key administrative centers, last 50 years (Gazeta.uz, based on Hydromet data)*

## Slide #4. What are the top three key challenges in reducing and mitigating urban heat effect?

- Urgent need to upgrade **urban planning and construction norms** and improve enforcement
  - Accommodate private sector development needs
  - Manage density and traffic in a smart way
  - Balance green, blue and gray infrastructure
- **Water scarcity** multiplied by climate change
  - Difficult to maintain green spaces
  - Increasing frequency of extreme weather events, particularly heatwaves and draughts
- **Build capacities** in public and private sector
  - Create demand and incentives to do things differently
  - Provide opportunities



*Tashkent traffic (gazeta.uz)*



*Trilliant Business Center in Tashkent  
Candidate on getting LEED Gold certification (gazeta.uz)*



## Slide #5. What are the opportunities for implementing cooling strategies?

- **Revision of master plans** for Tashkent and Namangan
- Ongoing **revision of urban planning and construction norms and standards**
- **Upgrade Yashil Makon** program to green-blue-grey infrastructure development program
- Promotion of **land market** and **redevelopment of core urban areas**
- **Energy sector reform** (tariffs) to stimulate energy saving behavior, including demand for cooling strategies



*Ready to plant: Yashil Makon – 2023 in Tashkent (gazeta.uz)*





# Ho Chi Minh City

**Ly Khanh Tam Thao**

HCMC Department of Planning and Architecture

**Vu Van Xuyen**

People's Committee of Thu Duc City - HCMC

**Pham Hoang Nam**

HCMC Department of Planning and Investment



# Ho Chi Minh City

**Area:** 2095.06 sq.km

**Population:**

- 9.2 mil. inhabitants (2021)
- 14 mil. inhabitants (2040)

**Savanna tropical climate:**

- hottest month: April (~35oC)
- coolest month: December (~22oC)

**Fun fact:**

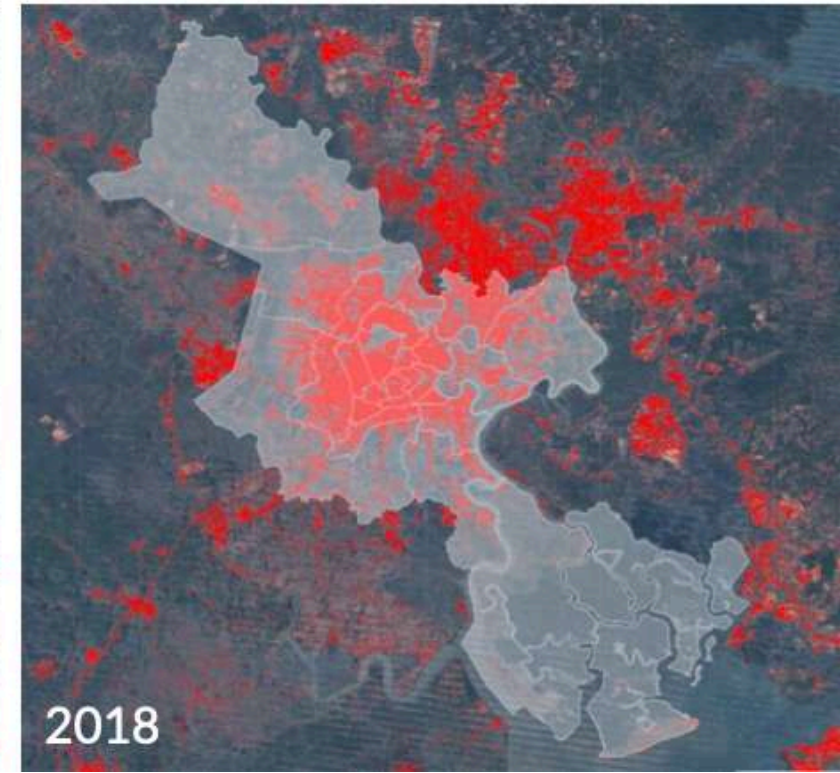
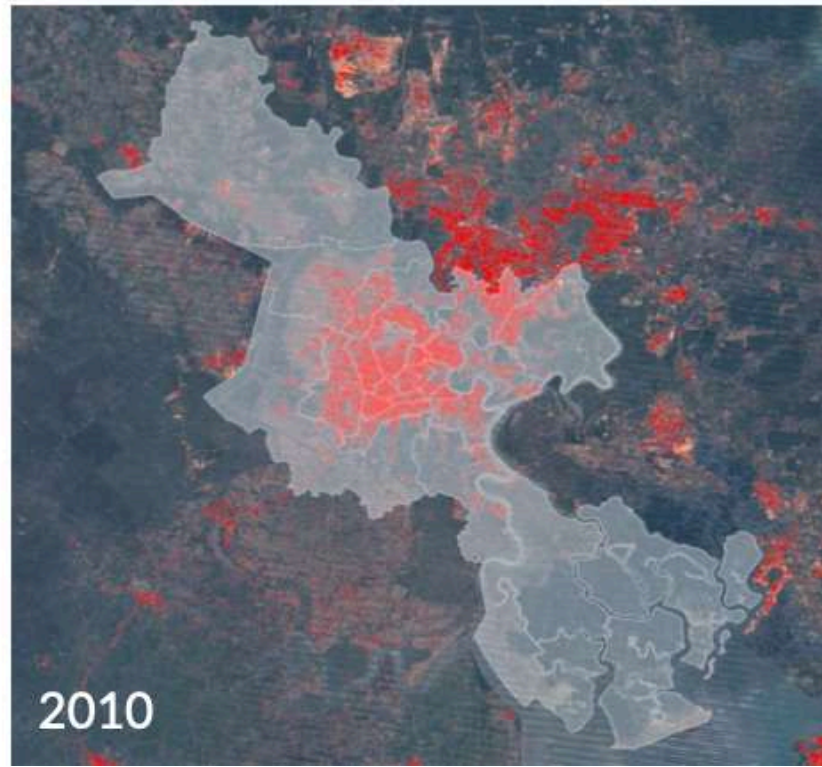
***“HCMC has 2 seasons: one hot season and one hotter season.”***



# Urban heat context



- Impact from climate change (heat rise, extreme weather & rain patterns, etc)
- Heat island effect
- Urban sprawl

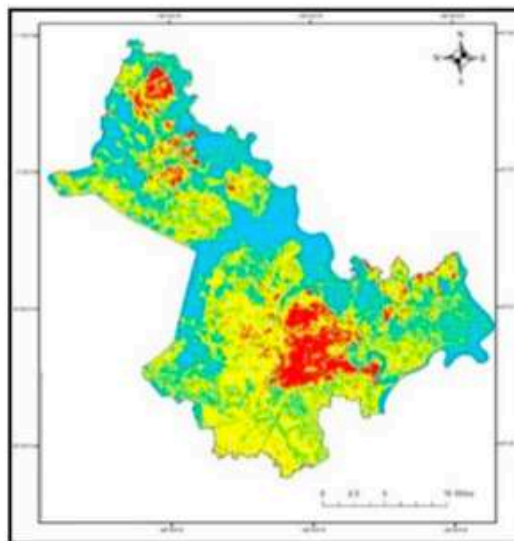




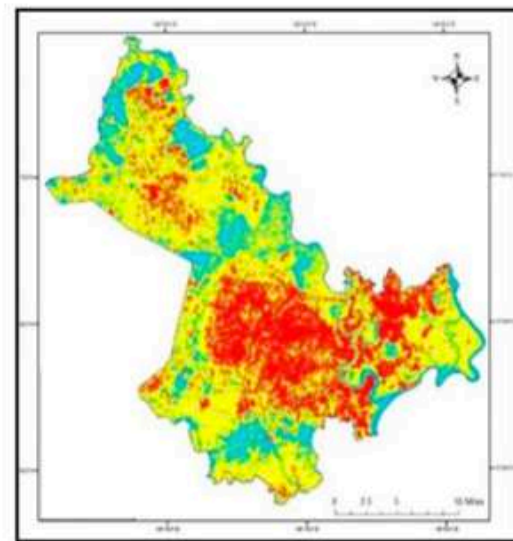
# Urban heat context



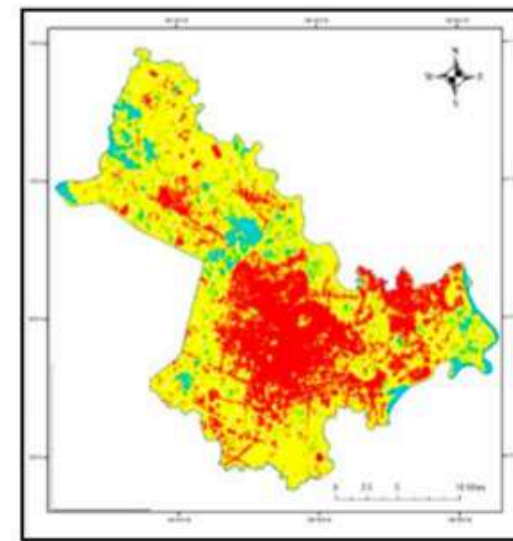
LST (land surface temperature) at the time of satellite images acquisition in period 1995-2015



02-02-1995

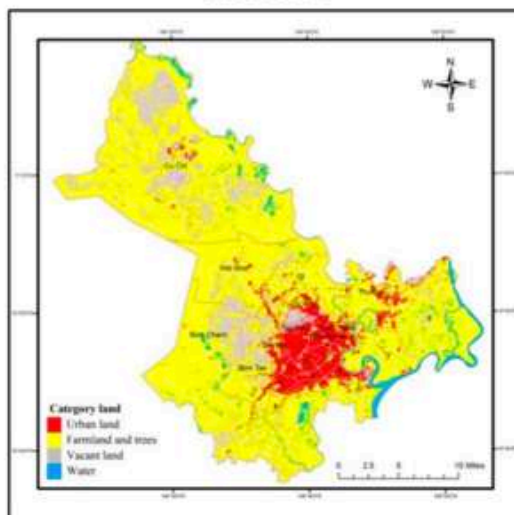


04-01-2005

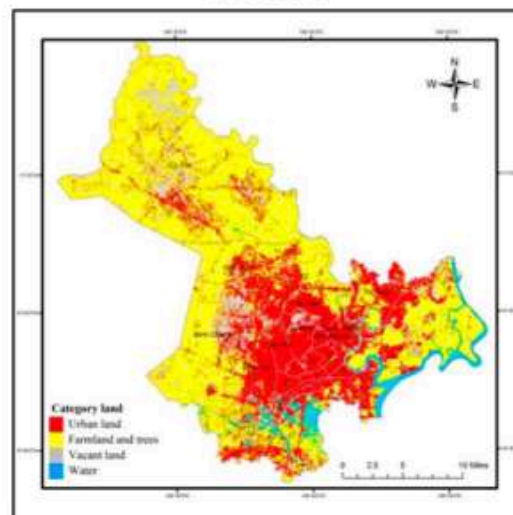


24-01-2015

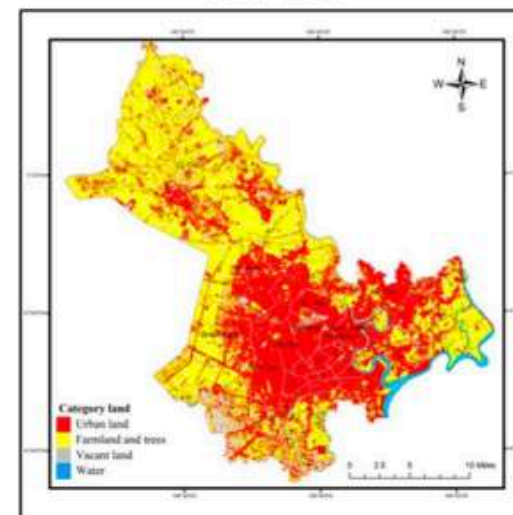
Land cover at the time of satellite images acquisition in period 1995-2015



02-02-1995



04-01-2005



24-01-2015

# Key challenges



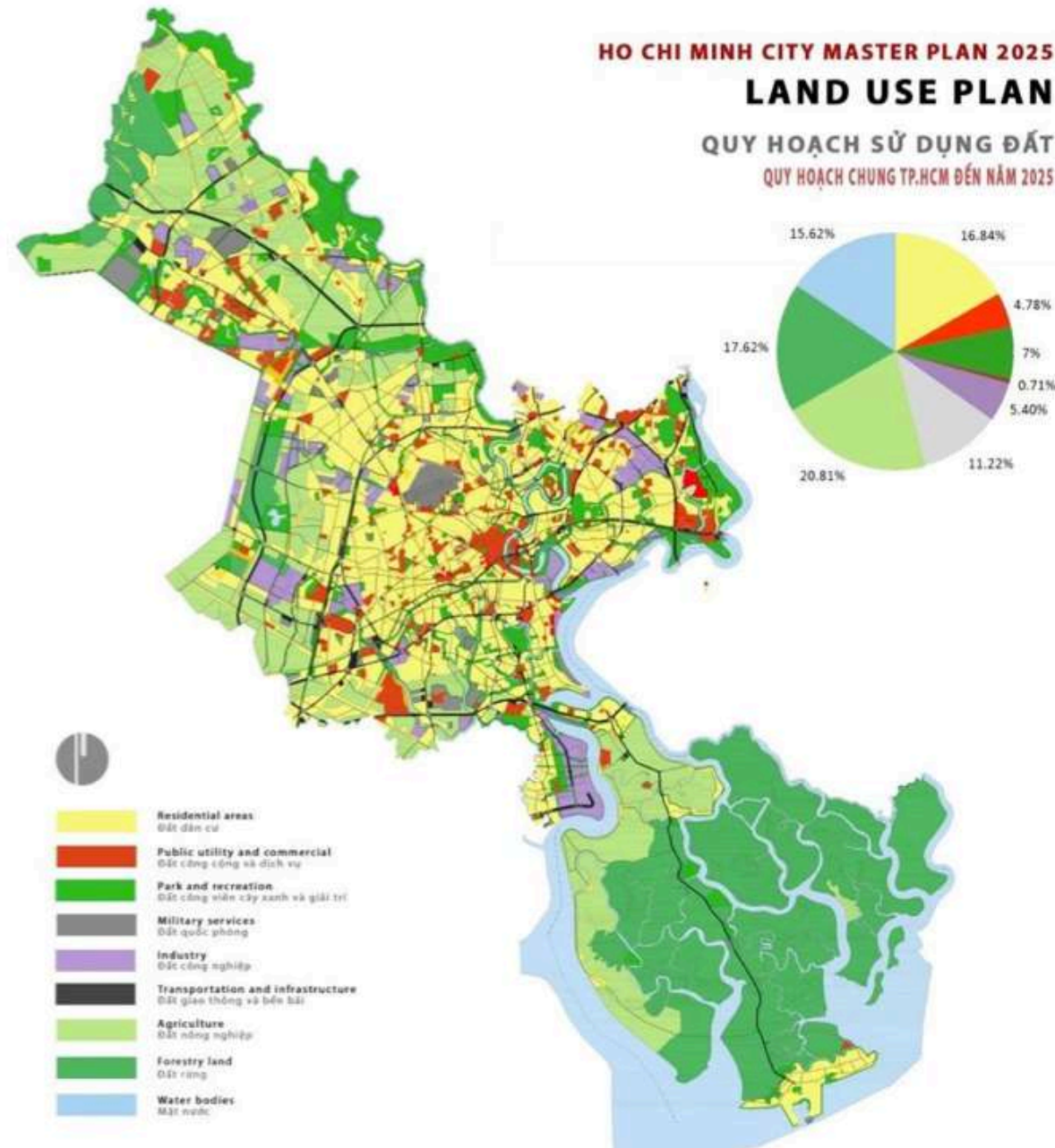
- Pressure of economic growth over an already-crowded city territory
- In need of a holistic and practical approach to urban solutions (spatial planning, policy, mechanism, etc)
- Awareness and capacity constraints of a growing-up market



# Opportunities



- Ongoing revision of the HCMC Master Plan (including a complete master plan for Thu Duc City)
- City government commitment towards climate change resilience
- Contributions from experts and market “trend-setters”





Thank you.

