



Addressing Urban Heat in Metro Manila Cities: Urban Heat in the Philippine Context

Urban Heat Island effects and mitigation measures planned
by the Philippine delegation

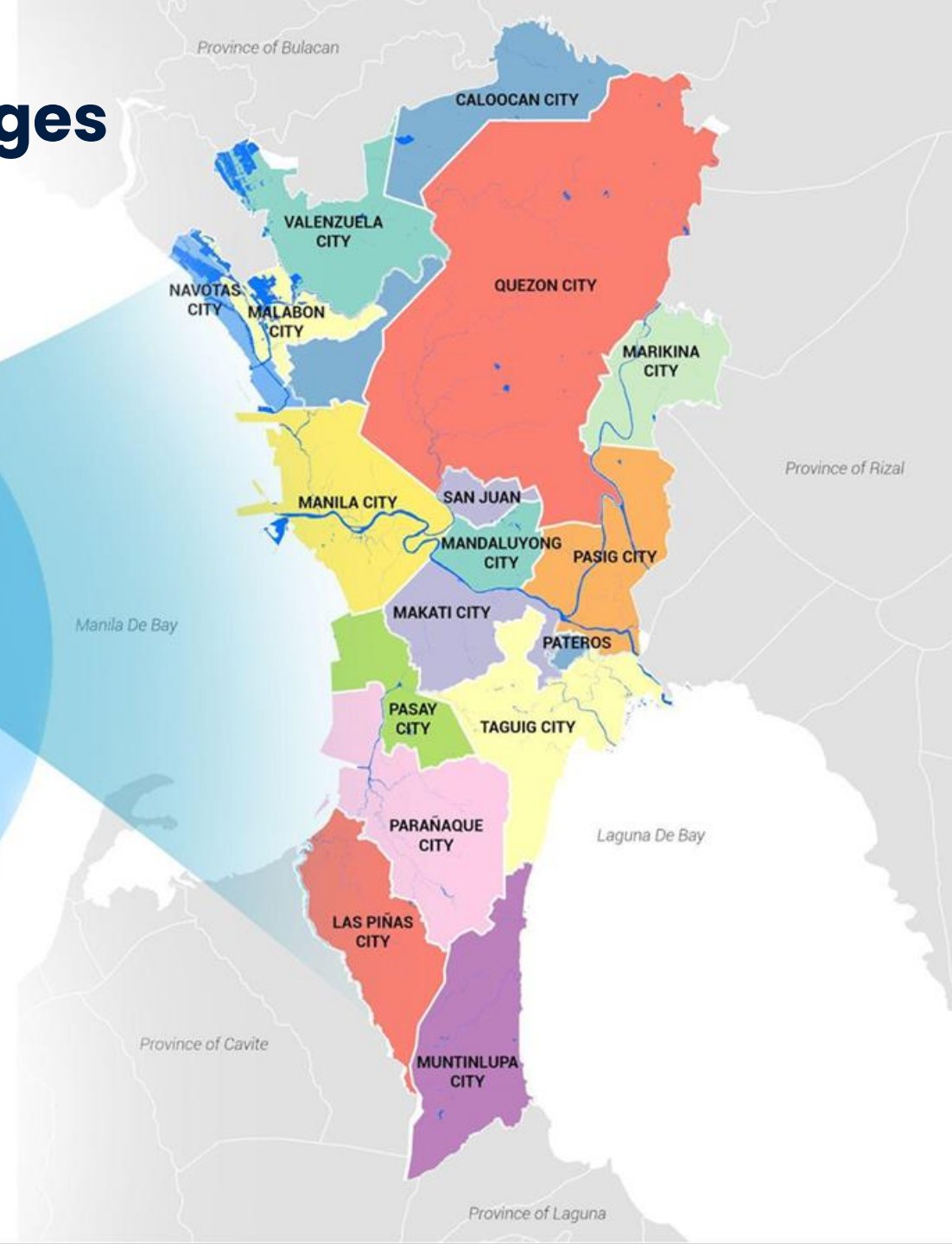


Metro Manila: Urban Heat Challenges

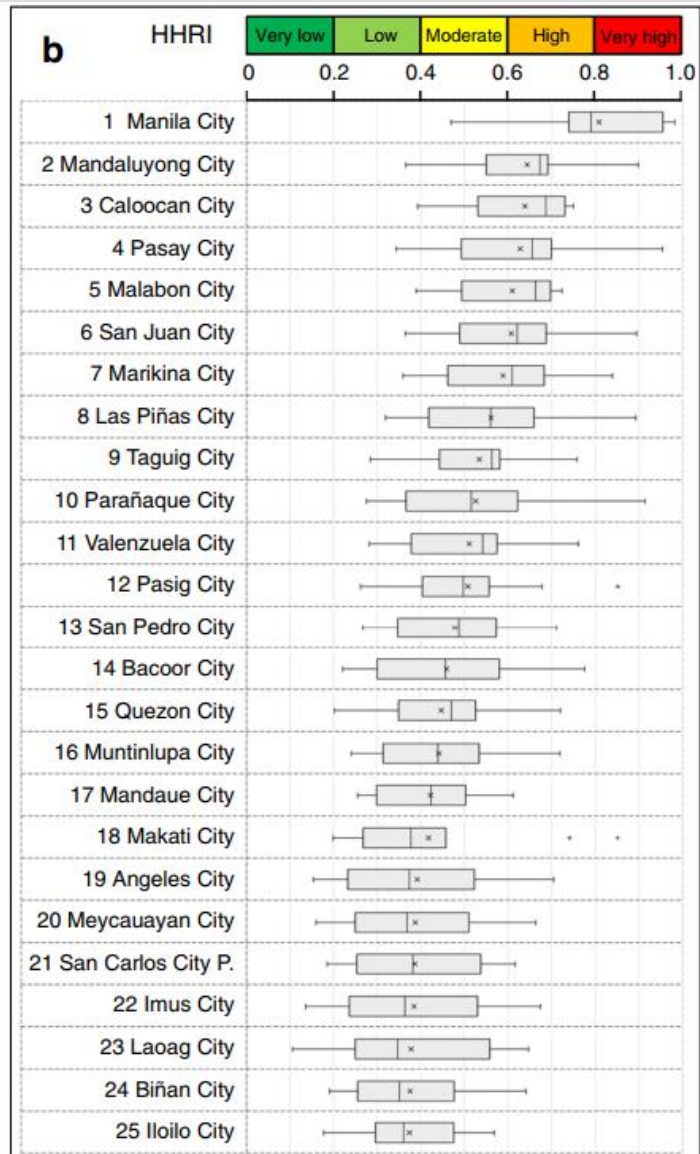
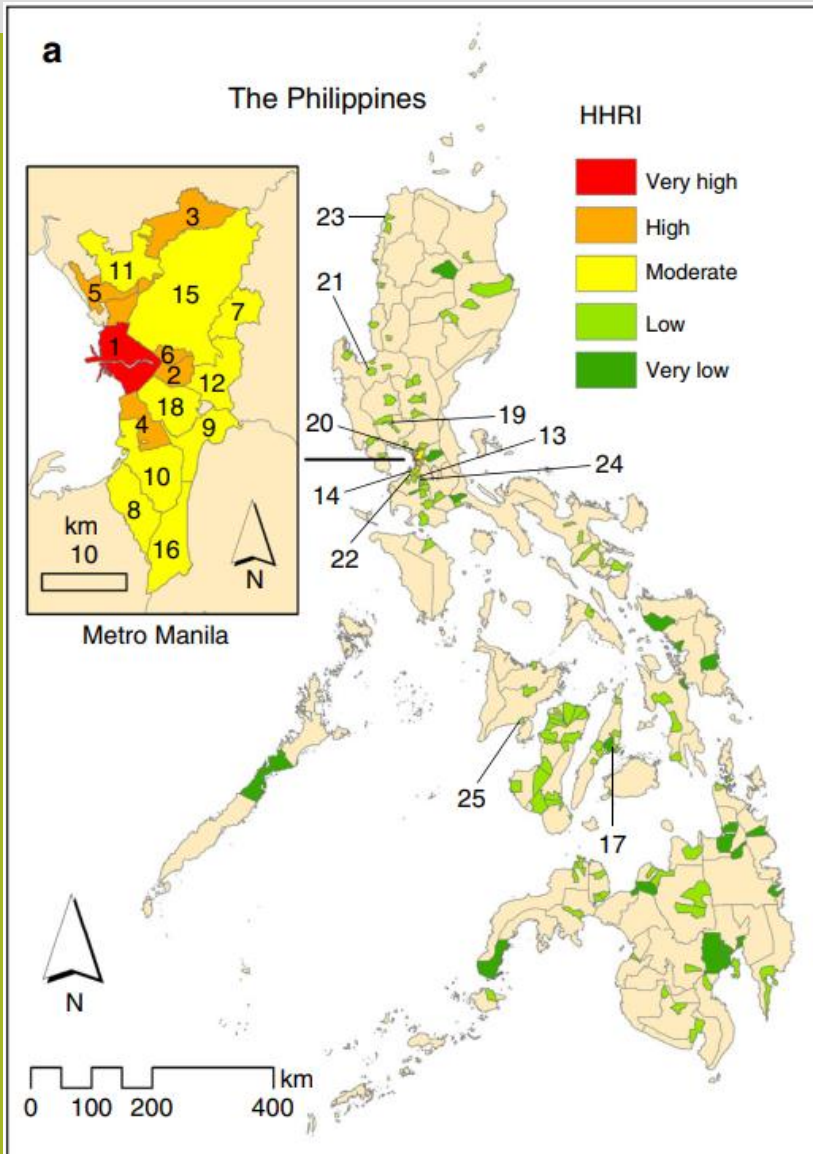
The Philippines ranks among the most rapidly urbanizing countries in the world. In 2019, **more than 60%** of its population lives in cities.¹

PERCENTAGE OF FILIPINOS LIVING IN CITIES AND URBAN AREAS

60% IN 2019 → **84%** BY 2050



Metro Manila: Urban Heat Challenges



Metro Manila: Urban Heat Challenges

Problem Statement:

Rising Temperature in Metro Manila (lack of awareness)

Background

Climate Change :Extreme weather condition

Average: 27.1 degree C

Heat Index for Metro Manila: 38 degree

- longer hotter season (El Niño Phenomena)
- increasing temperature
- Increasing population
- Rapid Urbanization
- Air pollution, Heat emission (AC, cars)

Urban Heat Effects/ Impacts:

- health risks/ spread of diseases
- water shortage
- surging electricity demand (increasing cost)



Learning Goals

Addressing UH in Metro Manila Cities: Urban Heat in the Philippine Context

- Baseline (research, data collection, etc.)
- Modelling and Scenario building
- Framework development and Policy Integration
- Planning (design, strategies, and guidelines/standards)
- Communication Plan (Public Consultation/Bilateral Meetings with concerned stakeholders)
- Financing/ Investment
- Project implementation/ application of strategies

Note: Stakeholder consultation will be done from the initial stage until the project implementation



Key Takeaways and Action Plan

Takeaways	Action from Previous Case Studies	Transfer to our Context <i>(How the TDD solution will be applied to the Action)</i>
Science-based UHI strategies through scenario-building and comprehensive mapping	<ul style="list-style-type: none"> ● Digital Urban Climate Twin ● UHI Mapping <ul style="list-style-type: none"> ○ Heat and Land Surface Temperature ○ Urban Heat Risk and Vulnerability ○ Existing green spaces ○ Indices (i.e. Greenery View Index) 	<ul style="list-style-type: none"> ● Capacity-building <ul style="list-style-type: none"> ○ Acquisition/development of programs and platforms ○ Installation and rehabilitation of sensors ○ Workshops on UHI ● Identification of Baseline, KPIs and Targets <ul style="list-style-type: none"> ○ Stakeholder consultation <ul style="list-style-type: none"> ■ Surveys ■ Multi-agency meetings ○ Database validation and updating ● Geospatial analysis <ul style="list-style-type: none"> ○ Mapping of vulnerability of MM cities to UHI ○ Mapping of existing Urban Green Spaces ● Monitoring and Evaluation <ul style="list-style-type: none"> ○ Assessment through KPIs ○ Establishment of feedback mechanism ● Valuation of natural resources

Key Takeaways and Action Plan

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Integration of UH strategies in policies, planning and design standards/guidelines	<ul style="list-style-type: none"> ● Using alternative bioclimatic materials ● Passive Cooling Techniques <ul style="list-style-type: none"> ○ Cool Paints ○ Green Roofs ○ Vertical Greenery ● Singapore's Green Mark System and Paris' national regulation 	<ul style="list-style-type: none"> ● Mainstreaming UHI in the regional and local land use and development plan as well as zoning ordinance <ul style="list-style-type: none"> - Formulation of UH Guidelines - Imposition of penalties for noncompliance and incentives to ensure that LGUs will follow the planning guidelines and implement their CLUPs and ZOs ● Legislation control requirements for open space and bldg. thru Zoning Ordinance ● Establishment of livable and sustainable communities <ul style="list-style-type: none"> ○ Green Bldg. Design (green roof/cooling system) ○ Use of vernacular materials (i.e. bamboo)
	<ul style="list-style-type: none"> ● Nature-Based Solutions <ul style="list-style-type: none"> ○ Guangzhou as a Sponge City – Haizhu wetlands ○ Paris as a Sponge and Waterproof City ○ Singapore Green Plan 2030 	<ul style="list-style-type: none"> ● Conservation of mangroves and wetlands surrounding Metro Manila ● Reintegration of vegetation (i.e. public and pocket parks) ● Development and maintenance of natural parks ● Rainwater harvesting/catchment

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Takeaways	Action from Previous Case Studies	Transfer to our Context <i>(How the TDD solution will be applied to the Action)</i>
Singapore Green Plan 2030	Green Corridors	<ul style="list-style-type: none">● Network of Open and Green Spaces● Green walkways● Vertical gardens
	Low Carbon Emission	<ul style="list-style-type: none">● Promotion of electronic vehicle● Provision of additional charging stations● Intelligent Transport System and Infrastructure● Promotion of Active mobility (i.e. biking)● Development of a Transit-Oriented Development Guideline

RIDGE TO REEF APPROACH (Proposed Climate Change Adaptation and Mitigation for Heat Stress)

UPLAND AREAS

LOWLAND AREAS

COASTAL AREAS





MMDA-VALENZUELA FRIENDSHIP PARK



PASIG CITY BUTING LINEAR PARK



SAN JUAN CITY EL POLVORIN PARK



MUNTINLUPA BAYANAN BAYWALK PARK



MALABON PARKS



LAS PINAS GATCHALIAN PARK



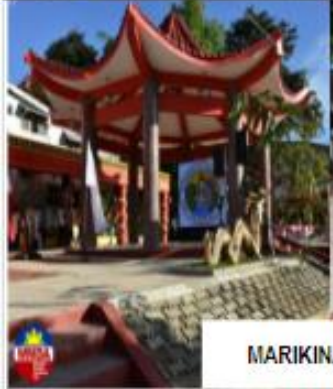
PARANAQUE CITY PARKS PHASE 3



NAVOTAS GREENZONE 2



MARIKINA PARKS



MAKATI POCKETPARK



CALOOCAN PARK



QUEZON CITY PARKS





EDSA Sidewalk Rehabilitation Project



Bike Lane Project
(White Plains)



EDSA Elevated Walkway and Bicycle Lane



Elevated Walkway in Katipunan Avenue, QC

Katipunan Ave.



EDSA Urban Greening (PPP)



Barriers to Implementation and Solution

Barriers	Solution
<ul style="list-style-type: none"> Budgetary Requirements (inadequate resources and funding) 	<ul style="list-style-type: none"> Partnership with Private Sectors and NGOs/CSOs Convergence among concerned agencies Engagement with multilateral organizations
<ul style="list-style-type: none"> Politics (personal interests of politicians) 	<ul style="list-style-type: none"> Presentation of Results i.e. ROI Early engagements in the project
<ul style="list-style-type: none"> Lack of National Geospatial Data Infrastructure 	<ul style="list-style-type: none"> Engaging scientific agencies Capacity building and Technical Assistance
<ul style="list-style-type: none"> Lack of awareness of UHI and resistance to change 	<ul style="list-style-type: none"> Communication Plan (Public consultations, developing IEC materials i.e brochures/AVPs) Continuous discussion with community and other concerned stakeholders until census is achieved
<ul style="list-style-type: none"> Lack of clarity on which agency is in charge of UH 	<ul style="list-style-type: none"> Creation of Inter-Agency Committee on UH (Commission on Climate Change, DENR, NEDA, LGUs, DILG, DSHUD) Creation of an agency that will handle UHI [long term]

Follow Up with Singapore Partners

- Invite experts to present UHI experiences during knowledge exchange events in the Philippines (URA, HDB, WB, Technical Experts from Singapore, Paris and Guangzhou):
 - The annual Philippine Urban Forum October 2023
 - Convention of the Philippine Environmental Planners - December 2023
 - Capacity Building and Technical Assistance of City/Municipal Urban Planners
- Engagement of UHI experts during the modelling and scenario building (TBD)
- Consultation of UHI experts during the formulation of Communication Plan on UHI

