



Presentation Materials by Cities in Asia and the Pacific

17 October 2025 Nagoya, Japan

The 16th UN-Habitat Environmental Technology Expert Group Meeting (EGM)

UN-Habitat Regional Office for Asia and the Pacific (UN-Habitat ROAP)

1. Hue Institute for Development Studies (Vietnam)

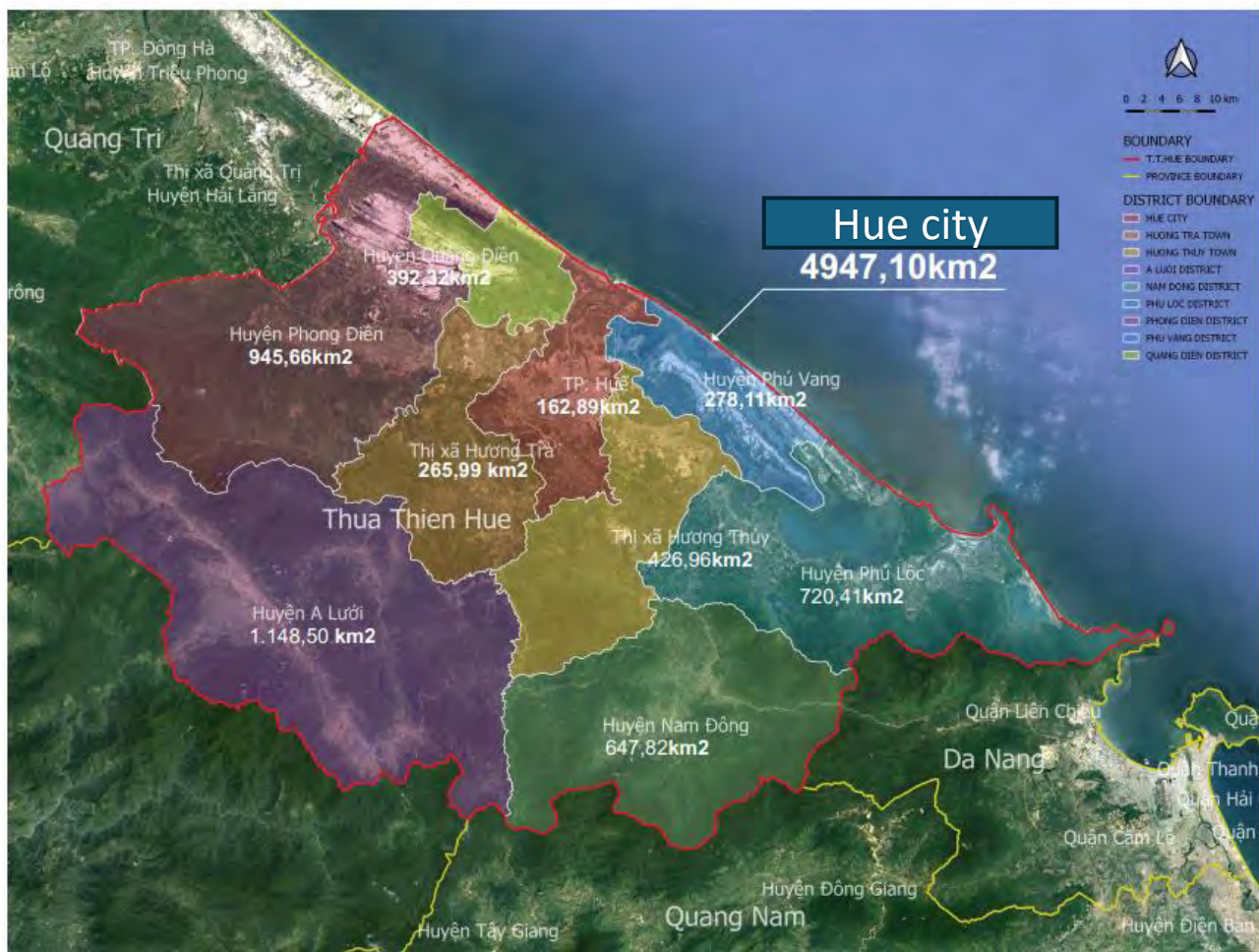


Hue's Urban Resilience: Key Needs and Challenges

HUEIDS

Innovation • Differentiation • Sustainability

GENERAL INFORMATION



01

NATURAL AREA

4.947,1 km²

02

POPULATION

Around 1,153 million

03

ADMINISTRATIVE UNITS

40 (21 wards, 19 communes).

04

DIVERSIFIED TERRAIN

Mountains, hills, plains, lagoons and seas.

ECONOMY

05

GRDP 3.39 billion USD. Average growth of 8.15%/year. Structure: Services 48,5% - Industry and Construction 32,4% - Agriculture and Forestry 10,1%, Product Tax. Subtract product subsidies: 9%

Key Challenges

- 📍 **Climate Vulnerability:** Rising risks from heat, storms, and floods worsened by climate change
- 🏙️ **Urbanization Pressure:** Urban growth increases heat, reduces green space, and raises flood risks



Key Challenges

🌊 **Air Quality Decline:** Traffic and dense development harm air quality, health, and livability



- 🐾 **Fragmented Ecosystems:** Habitat fragmentation weakens ecosystems and reduces biodiversity



Strategic Needs for Urban Resilience in Hue

- 🌳 **Nature-Based Solutions (NBS):** Promote green-blue spaces (parks, wetlands, tree-lined streets) to reduce heat, prevent floods, and support nature.
- 👤 **Community Engagement:** Inclusive planning with locals, experts, and leaders to co-create sustainable solutions.
- 🏠 **Integrated Urban Planning:** Align infrastructure with climate goals through zoning, green corridors, and smart drainage.
- 🎓 **Knowledge & Capacity Building:** Strengthen resilience via education, planner training, and cross-sector collaboration.





Solutions and lesson learn

- Planting mangrove forests in the Tam Giang lagoon
- Transition to green transportation and develop public transport
- Chance to "Design urban spaces prioritizing people over cars"

Authorities and local communities participate in initiatives and implementation

Thank You
for
Listening



2. Kharkhorum City (Mongolia)



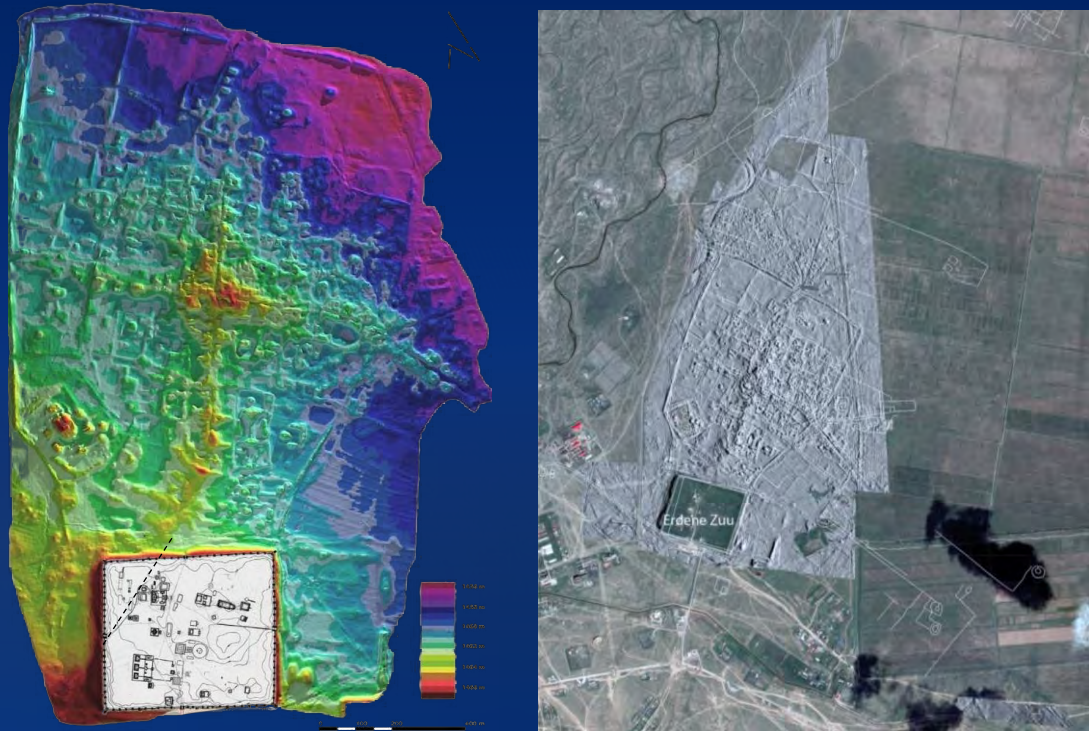
KHARKHORUM CITY

PLANNING CONCEPT

DECISIONS TO RE-ESTABLISH KHARKHORUM CITY



ANCIENT "KHARKHORUM" CITY'S RUIN

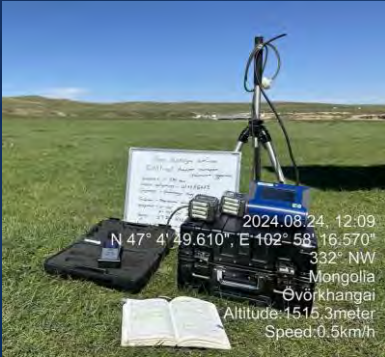


COMPLETED FOUNDATIONAL STUDIES FOR URBAN DEVELOPMENT



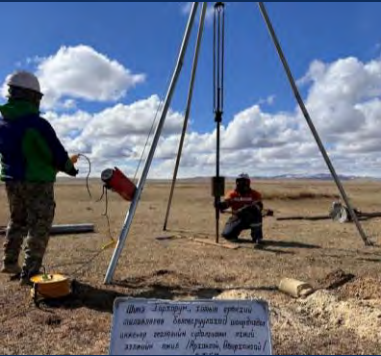
01

Topographic Survey Work
SCALE 1:2000



04

Environmental Impact
Assessment (EIA)



02

Engineering Geological Survey
Scale 1:10,000–15,000



05

Archaeological,
Paleontological and
Ethnological Survey



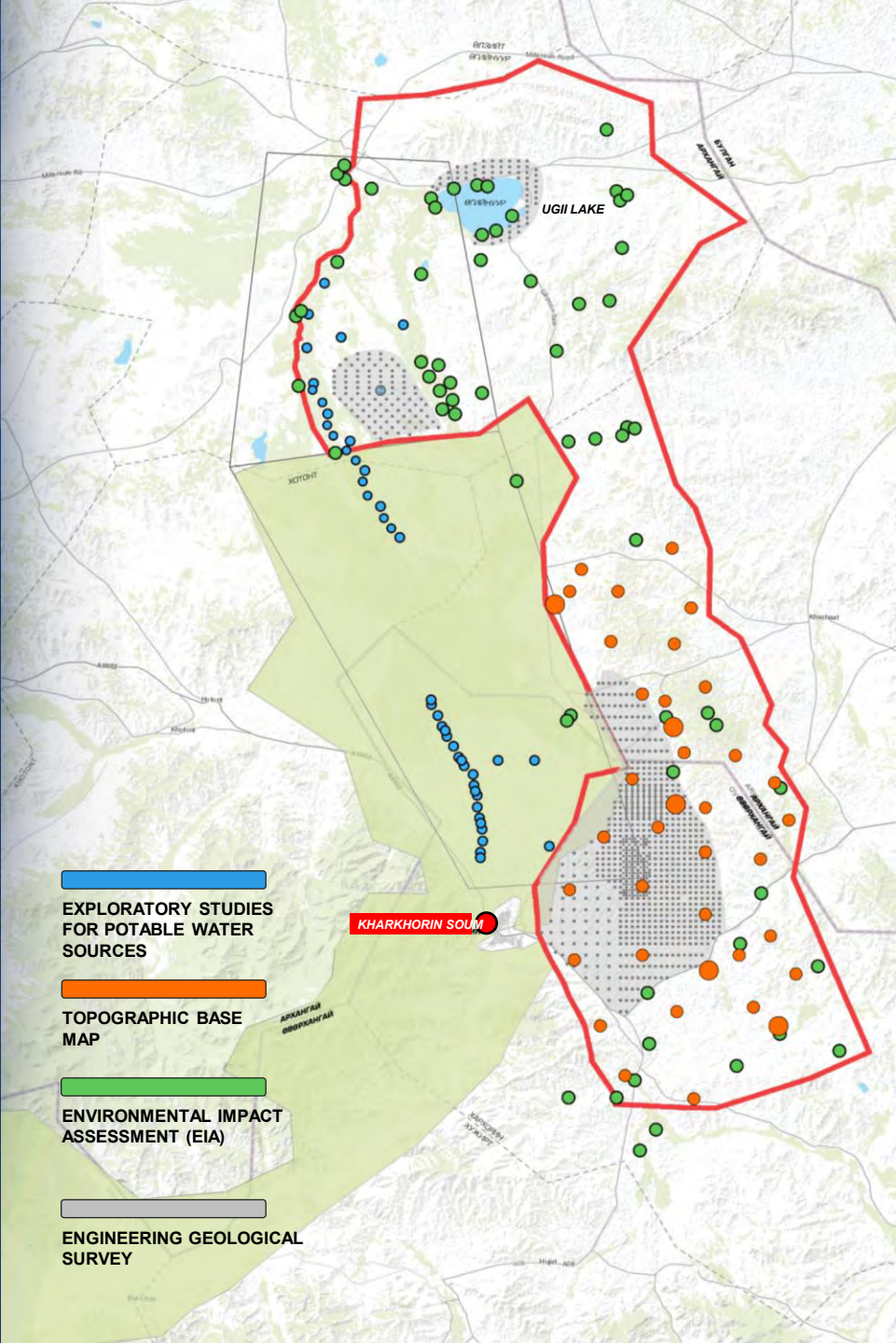
03

Exploratory studies for
potable water sources

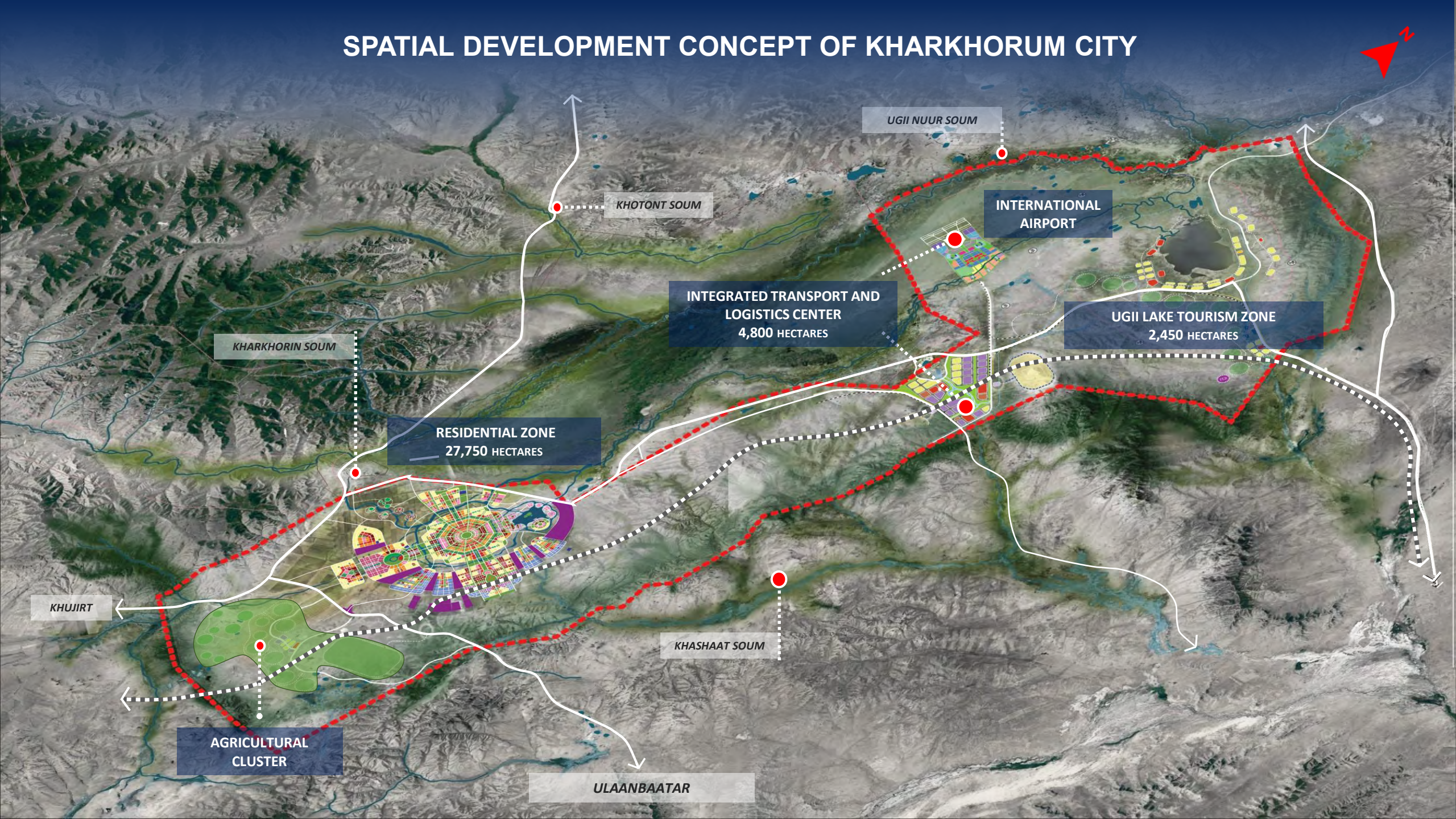


06

Feasibility Study of
Engineering
Infrastructure
Resources



SPATIAL DEVELOPMENT CONCEPT OF KHARKHORUM CITY



PRIORITY DIRECTIONS FOR DEVELOPMENT KHARKHORUM CITY



01 CITY OF HISTORY AND MULTICULTURAL TOURISM

- HISTORICAL TOURISM
- ARCHAEOLOGICAL AND PALEONTOLOGICAL TOURISM
- TOURISM THAT PROMOTES NATIONAL CULTURE, ARTS, AND SPORTS
- HEALTH TOURISM BASED ON TRADITIONAL MEDICINE
- VIRTUAL TOURISM TO LEARN ABOUT THE CITY'S HISTORY AND PLANNING



02 AGRICULTURAL CLUSTER HUB CITY

- ORGANIC FOOD PRODUCTION
- INTENSIVE LIVESTOCK PRODUCTION /FARMER/:
- CULTIVATION OF MEDICINAL PLANTS AND PRODUCTION OF NATURAL MEDICINES
- PRODUCTION OF FINISHED LEATHER, WOOL, AND CASHMERE PRODUCTS TO IMPLEMENT THE WHITE GOLD PROGRAM:
- AGROPARK



03 CITY OF SCIENCE AND HIGH-TECH MANUFACTURING

- SCIENCE AND TECHNOLOGY PARK
- HIGH-TECH MANUFACTURING NATIONAL AND INTERNATIONAL DATA CENTER
- SMART TECHNOLOGY DEVELOPMENT CENTER
- INTEGRATED SMART MANAGEMENT CENTER



04 A CITY FOSTERING INTERNATIONAL BUSINESS AND COOPERATION

- BRANCH OFFICES OF INTERNATIONAL ORGANIZATIONS
- DIPLOMATIC MISSION BRANCH /OFFICES
- FREE ECONOMIC ZONES (HIGH-TECH, HEALTHCARE, TOURISM)
- INTERNATIONAL CONFERENCE, SYMPOSIUM, AND TRADE FAIR COMPLEX
- INTERNATIONAL BUSINESS AND FINANCIAL INSTITUTIONS
- BRANCHES OF FOREIGN AND DOMESTIC UNIVERSITIES



05 TRANSPORT AND LOGISTIC HUB CITY OF THE KHANGAI REGION

- REGIONAL TRANSPORT AND LOGISTICS CENTER
- INTERNATIONAL 4E CATEGORY AIRPORT
- ULAANBAATAR-KHARKHORUM RAILWAY LINE
- ULAANBAATAR-KHARKHORUM HIGHWAY
- A 500 KV OVERHEAD POWER LINE AND SUBSTATION WILL BE CONSTRUCTED BETWEEN ULAANBAATAR CITY AND KHARKHORUM CITY
- BAGA ILENKH BORDER CROSSING-SHIVEEKHURE BORD

GREEN CITY PRINCIPLES

RESIDENTIAL ZONE **50%** GREEN AREAS

SURFACE WATER UTILIZATION
PLANNING ARTIFICIAL LAKE AND POND

NOISE PROTECTION

REDUCE CARBON EMISSION

CULTURALLY AND
TECHNOLOGICALLY ADVANCED
INFORMATION CITY

GREY WATER RESUSE

RECYCLE WASTE

SMART TRANSPORTATION

RENEWABLE ENERGY
PRODUCTION

UTILIZATION OF BUILDING ROOFS

SMART CITY PRINCIPLES

ЯВГАН ХҮНИЙ ЗАМ
ДУГУЙН ЗАМ
НИЙТИЙН ТЭЭВЭР

70%

АВТО МАШИНЫ
ХЭРЭГЛЭЭ

30%

PROMOTE BALANCED
REGIONAL DEVELOPMENT

ACCESSIBLE SOCIAL
INFRASTRUCTURE PLANNING

INDEPENDENT ECONOMY
DEVELOPMENT

MAIN PRINCIPLES

A HUMAN-CENTERED CITY
THAT GUARANTEES
COMFORT AND SAFETY

AN ENVIRONMENTALLY INTEGRATED AND
WILDLIFE-FRIENDLY CITY

ЭCO CITY PRINCIPLES

SUSTAINABLE CITY PRINCIPLE





**KHARKHORUM IS A SYMBOL OF NATIONAL
PRIDE AND UNITY**

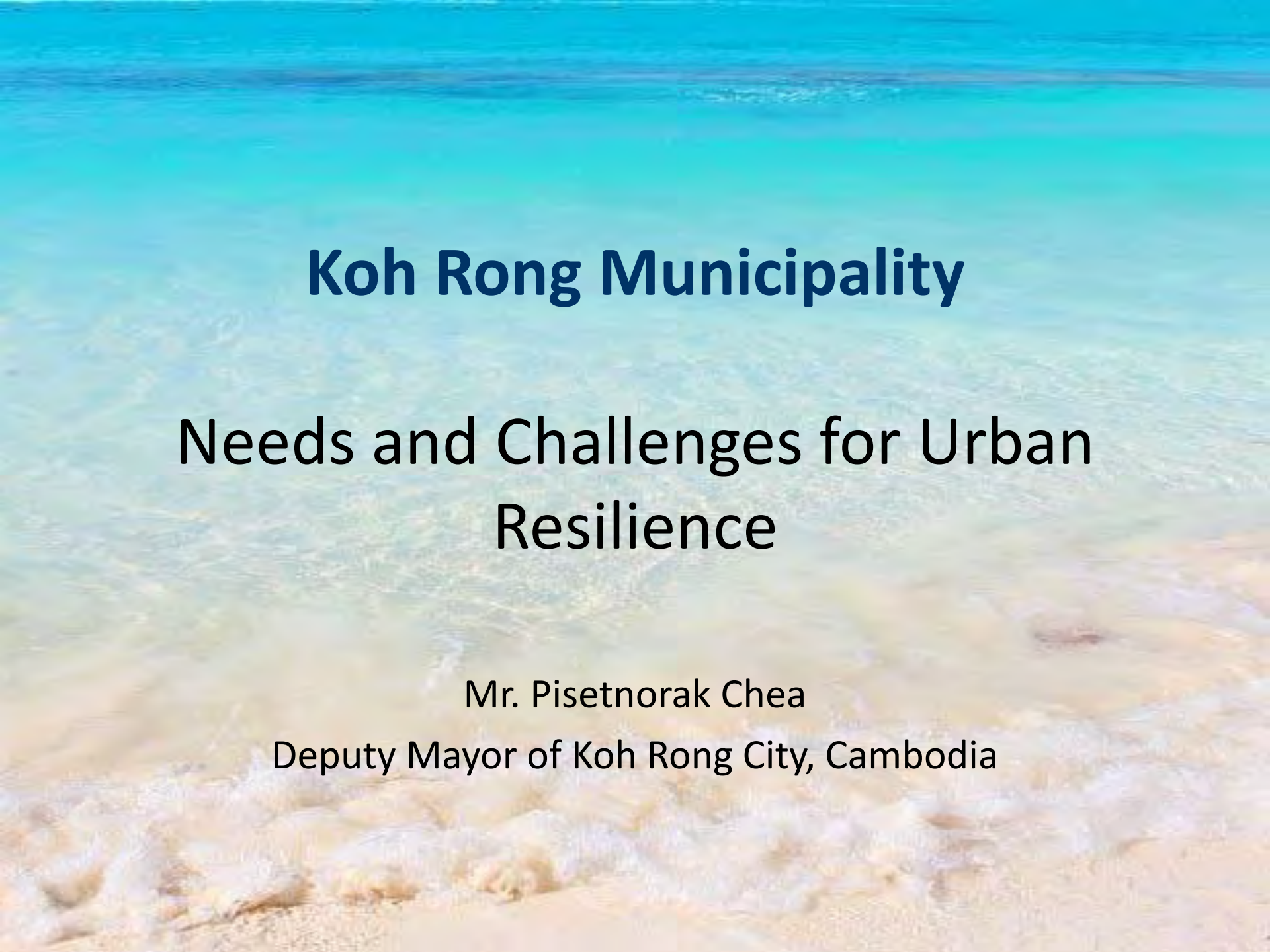


WWW.KHARKHORUM.GOV.MN



[FACEBOOK](#)

3. Koh Rong City (Cambodia)



Koh Rong Municipality

Needs and Challenges for Urban Resilience

Mr. Pisetnorak Chea

Deputy Mayor of Koh Rong City, Cambodia

1. Koh Rong City Overview



- Located off the coast of Preah Sihanouk Province
- Municipality consist of 2 commune and 6 villages covering 18 islands with rich biodiversity and tourism potential
- Population: approx. 4,000 people
- Number of tourist visit per day: approx, 1000 people
- Rapid growth in domestic and international tourism

Key sector

- **Tourism:** main economic driver (beaches, diving, hiking)
- **Hospitality:** resorts to hostels serving visitors
- **Fishing & Agriculture:** traditional livelihoods, food security
- **Real Estate & Development:** rapid growth linked to tourism
- **Transportation:** boats, local mobility services



2. Environmental Sustainability Challenges

- Solid waste management:
 - Contracted private collector → landfill
 - Need advanced recycling & landfill management
- Liquid waste: low cost treatment technologies needed
- Biodiversity: protect marine & terrestrial ecosystems
- Climate change: coastal erosion, rising seas, extreme weather



3. Infrastructure Development Needs

- Transportation:
 - o 70 km concrete road (80% complete)
 - o 2 multipurpose jetties planned (0% complete)
- Utilities:
 - o Water supply coverage only 32% (68% rely on natural/underground)
 - o Electricity coverage 80% (20% generators/renewables)
- Waste systems: need reliable collection, treatment, recycling

4. Economic & Social Dimensions

- **Economic diversification:** reduce reliance on tourism; promote agriculture, fishing, crafts
- **Community engagement:** involve residents in planning & decision making
- **Health & social services:** improve healthcare access for residents & tourists

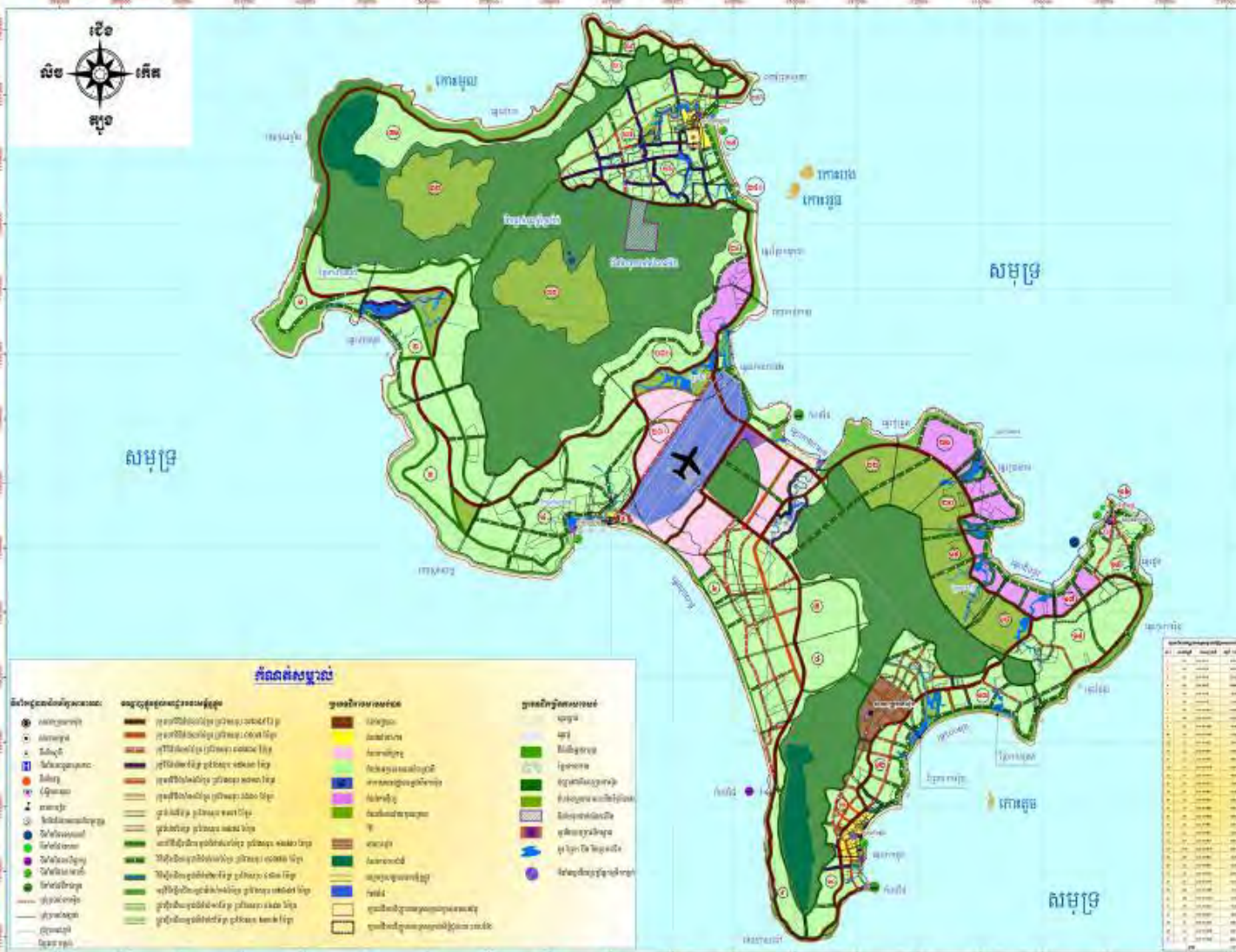


5. Governance & Way Forward

- Regulatory framework: effective land use planning to prevent overdevelopment
- Collaborative approach: municipality, communities, NGOs, private sector
- Goal: build a resilient, sustainable future for Koh Rong

ផែនទីប្លង់គោលសមាហរណកម្មការអភិវឌ្ឍន៍ការអភិរក្សគ្រោះរុំ ប្រកបដោយចីរភាព ចក្ខុវិស័យឆ្នាំ២០៣៨

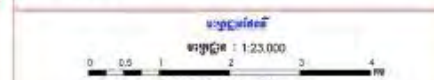
ឧបសម្ព័ន្ធនៃសេចក្តីសម្រេចលេខ: ០០២/២០២២ ចុះថ្ងៃ ២៤ ៣/២២ ខែ ២២២២ ឆ្នាំថោះ បញ្ចស័ក ព.ស.២៥៦៨ ព្រះរាជក្រឹត្យ ២២២២ ខែ ២២២២ ឆ្នាំ២០២២

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សេចក្តីសន្និដ្ឋាន:

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မည်သော အခြေအနေအထားတွင် ရှိနေကြောင်းကို သိရှိရန်အတွက် အချိန်အတိုင်း အသေးစိတ် စစ်ဆေးမှုများ ပြုလုပ်ရမည်။ ထို့အပြင် အချိန်အတိုင်း အသေးစိတ် စစ်ဆေးမှုများ ပြုလုပ်ရမည်။



អត្ថប្រយោជន៍: ០៦ ក្រុមប្រឹក្សាភិបាល

[illegible]

A wide-angle photograph of a tropical beach. The foreground shows shallow, clear turquoise water with visible sand ripples. The water extends to a distant horizon under a bright blue sky with a few scattered white clouds. The text "Thank You" is centered in the middle of the image.

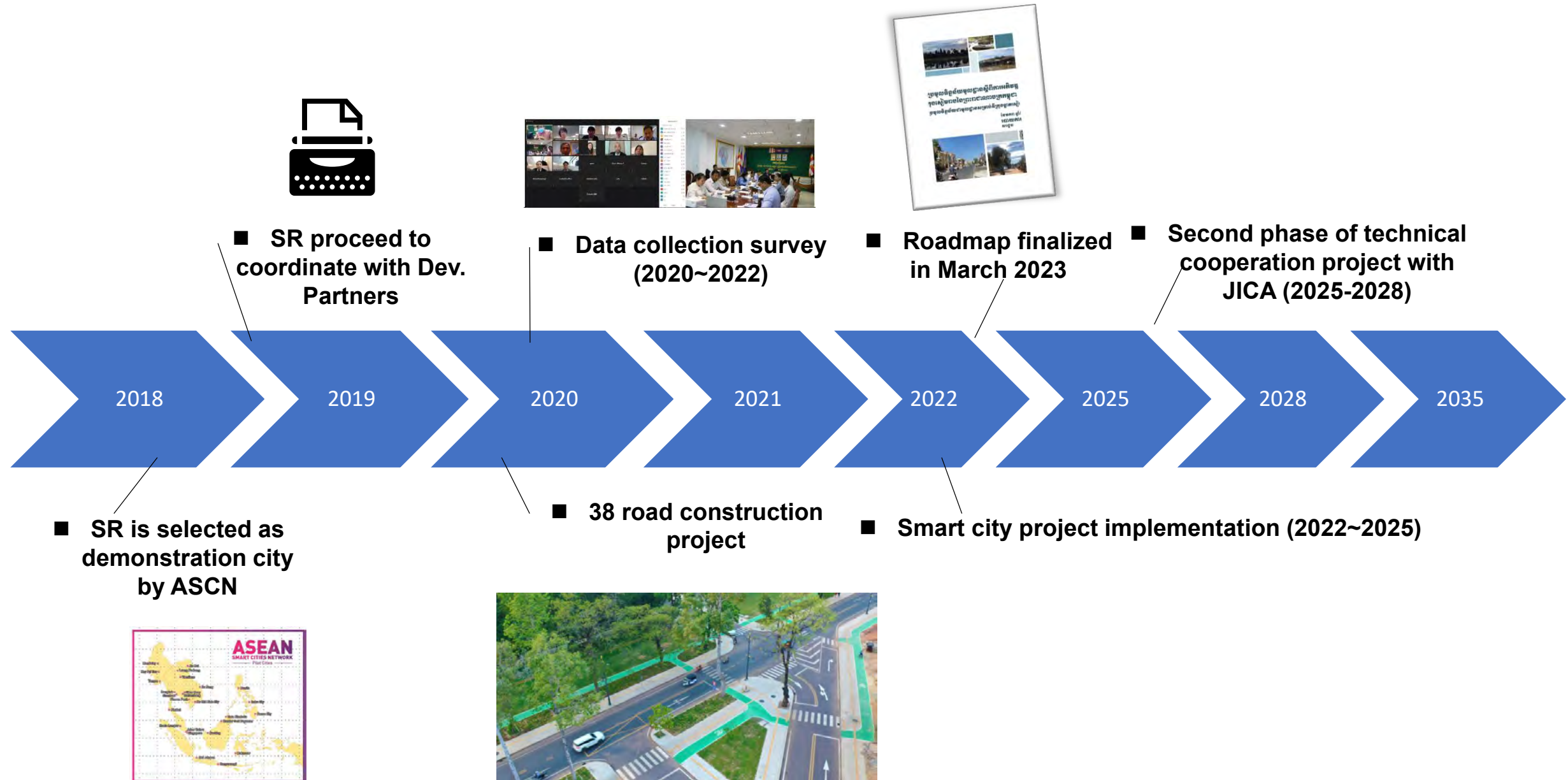
Thank You

4. Siem Reap Province (Cambodia)

Smart City: Challenges in Siem Reap City



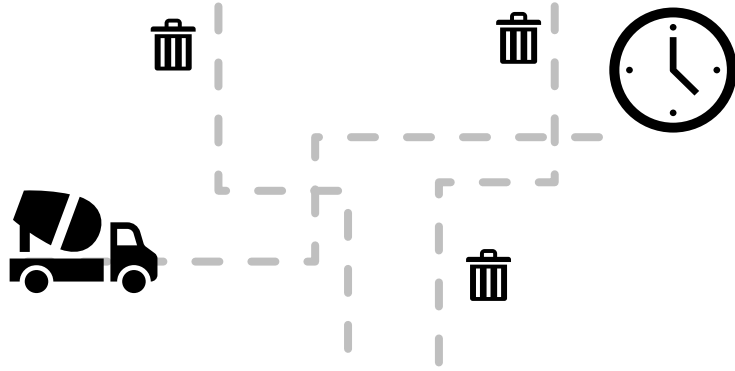
1. Smart City Development and Priority sectors



5. Digital Infrastructure and Application

Smart City Pilot Projects (first round)

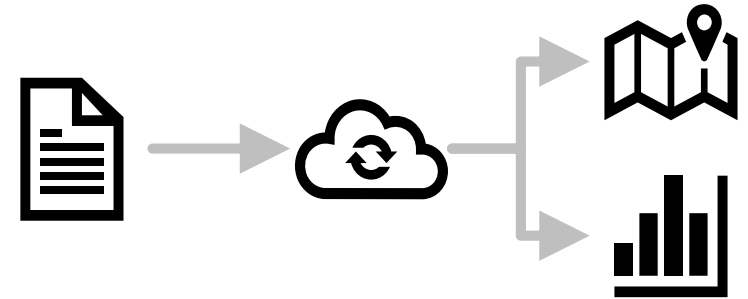
(1) Waste Collection Improvement



(2) Illegal Parking Monitoring



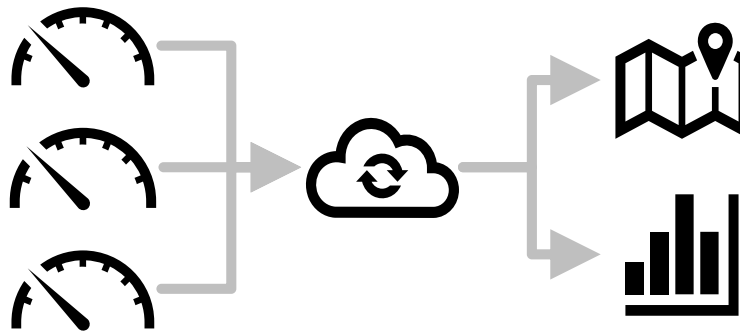
(3) Tourism Statistics Digitalization



(4) Government Internal Document Tracking



(5) Urban Environment Monitoring by Sensors



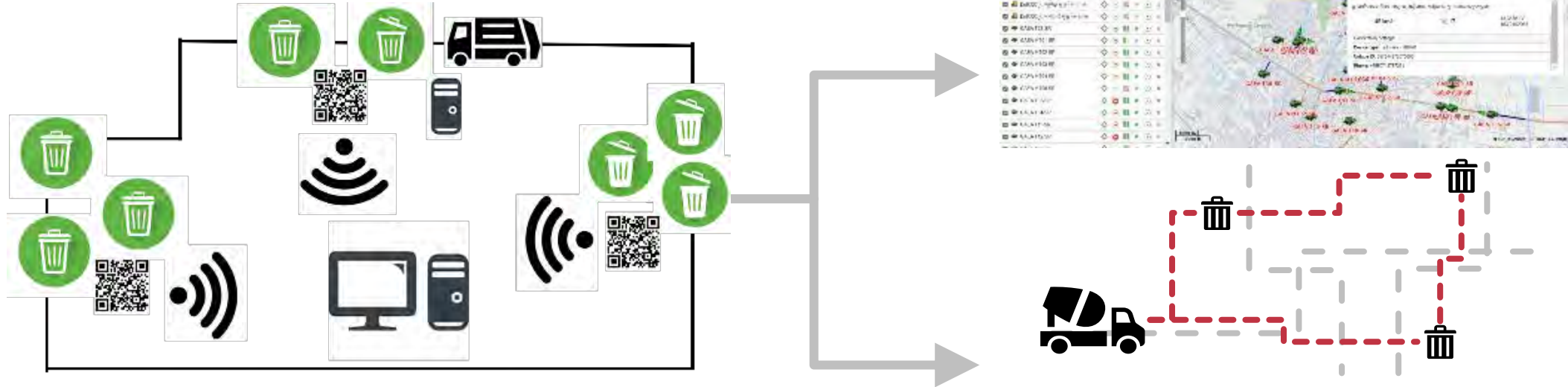
(6) Public Private Tourism Collaboration



Pilot Projects (second round)

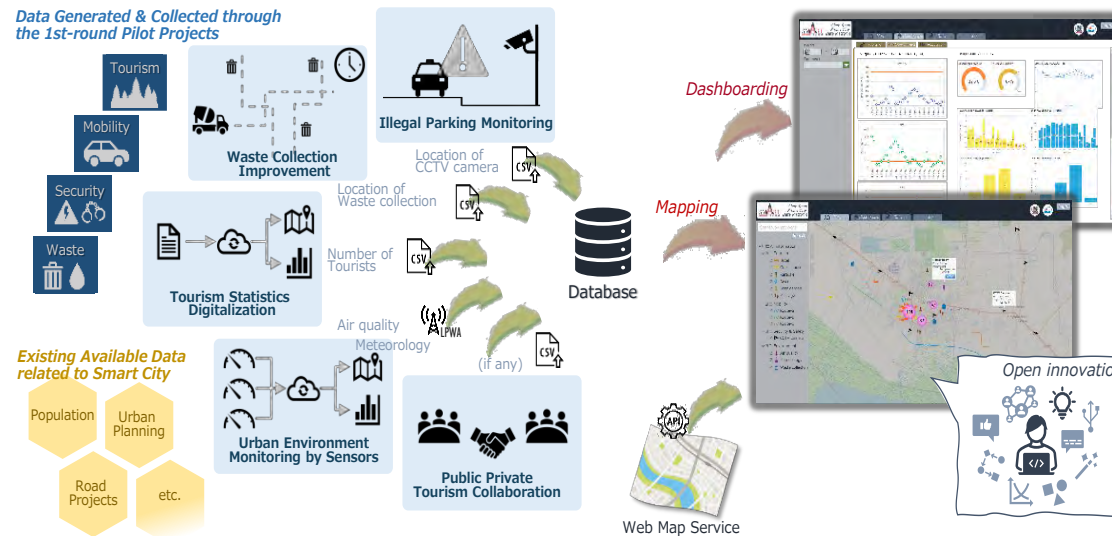


(7) Smart Waste Collection and Transportation



(8) Data Platform

Data Generated & Collected through the 1st-round Pilot Projects



(9)

Public Emergency Pole

Crime or Fire



Fire



Traffic accident



Theft



Robbery



Violence

Need medical help



ត្រូវការជំនួយបន្ទាន់?
NEED HELP?

សូម រក្សា មើលរូបថតផែនទី
Please scan to view the map



នៅពេលមានអាសន្ន សូមស្វែងរក ប៉ាស៊ីនប្រកាសអាសន្ន
ដែលនៅជិតអ្នកបំផុត ដើម្បីបញ្ជូនសញ្ញាអោយការណ៍នៅកន្លែងប៉ូលីស
IN CASE OF EMERGENCY, PLEASE FIND THE NEAREST PUBLIC EMERGENCY POLE
AND PRESS THE BUTTON TO SEND THE SIGNAL TO POLICE.



- ការលួច ឆក់ ឬ ឆក់
Stealing / Robbery
- ការហិង្សា
Fire Accident
- បទល្មើសផ្សេងៗ
Crime / Violence
- គ្រោះថ្នាក់ប្រព្រឹត្តិបទ
First Aid
- ប្រការសង្គ្រោះបឋម
Accidents
- ជំនួយសម្រាប់អ្នកចាស់
Help for elderly
- ការរាយការណ៍ និងស្នើសុំជំនួយផ្សេងៗ
Report / Request for help

ប៉ាស៊ីនប្រកាសអាសន្ន
Emergency Button

ប្រព័ន្ធបញ្ជូនសញ្ញា
Audio Intercom

ប្រព័ន្ធបញ្ជូនសញ្ញា
Video Linkage and Record

ប្រព័ន្ធបញ្ជូនសញ្ញា
Alarm-Strabo Light

បញ្ជូនសញ្ញាទៅប៉ូលីស
Send Signal to Police

សេវាសង្គ្រោះ 24 ម៉ោង
Police 24h monitor

អន្តរាគមន៍ពេលវេលា
On time intervention

បញ្ជូនរថភ្លើង
Send Fire Engine

បញ្ជូនរថសង្គ្រោះ
Send Ambulance

គ្រប់គ្រង និង ដំណើរការដោយ មន្ទីរពេទ្យស្រាវជ្រាវ និង អនុវត្តន៍នៃការងារសុខាភិបាល
Managed and Operated by SRPA and Police

សម្របសម្រួល និង ដំណើរការដោយ គម្រោងស្រាវជ្រាវ និង អនុវត្តន៍នៃការងារសុខាភិបាល
Sponsored by JICA Under Smart Reap Smart Project

JICA SMART

គ្រូបច្ចេកទេសគាំទ្រ
FORVAL SS ESS
Technical Support by FORVAL and ESS

FORVAL

(10)

Street Behavior System

Gun Detection



Conflict



Challenging

- Government officers' capacity still limited to implement smart technology.
- Financial to implement smart city roadmap implementation.
- Law and regulation to support implementation smart city projects at local government.
- Mechanism to promote private sector to join or invest on smart city projects.
- Skill and mechanism to monitor and evaluate on smart city projects.
- Resident and community need to involve with smart city consortium.

សូមអរគុណ
Thank you!



5. Surigao City (Philippines)



CITY OF SURIGAO:

Building Resilience,
Enhancing Citizen's Welfare

Presented for the
**16th UN-Habitat
Environmental Technology
Expert Group Meeting**



CITY PROFILE

BRIEF FACTS



No. of Villages : **54** (5 Urban; 9 Sub-urban; 19 Rural Mainland; 21 Island)



Population : **171,107** (Phil. Statistics Authority 2020)



Population Growth: **2.2%** (Phil. Statistics Authority 2015-2020)



LGU Income: **P1.368B** (2024)



Land Area: **24,354** hectares (57%-Mainland Barangays; 43%-Island Barangays)

COMPARATIVE ADVANTAGES



ISO Quality Management System

13 offices certified under
ISO 9001:2015



Stable Peace and Order

26.83 Average Monthly Crime Rate per
100,000 population (2023)



Choice Investment Location

P15.152 billion in gross sales (2024)
P3.035 billion new investments (2019-2024)



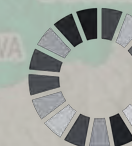
Resource-Based Potentials

Investment opportunities in agriculture,
fisheries, livestock, mineral processing,
tourism



Top Tourist Destination

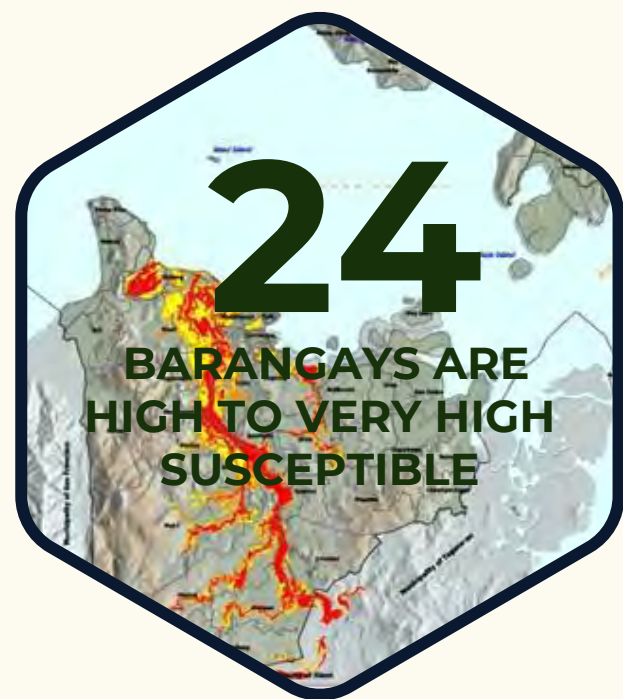
211,479 arrivals in 2024



SDG Localization

LGU Plans, Programs and Policies
aligned with the Sustainable
Development Goals





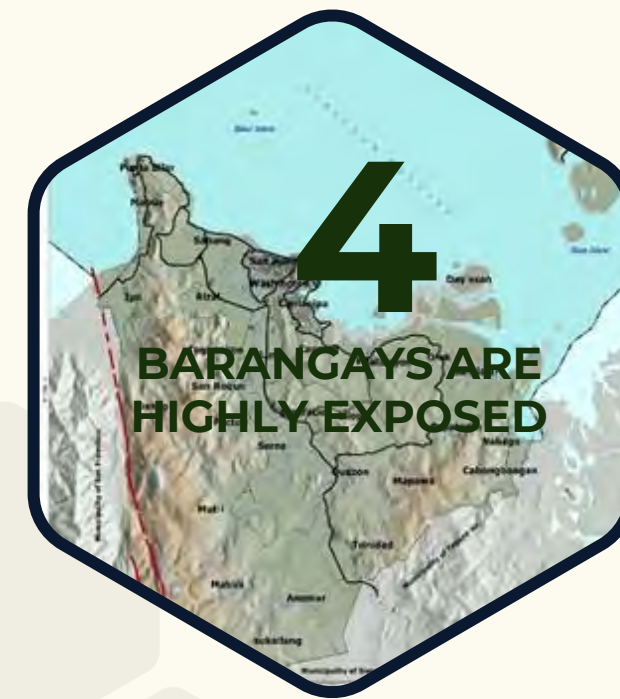
FLOODING
95,443(55%)
AFFECTED POPULATION



LANDSLIDE
43,439(25%)
AFFECTED POPULATION



GROUND SHAKING
171,107(100%)
AFFECTED POPULATION



GROUND RUPTURE
5 HECTARES
AFFECTED PRODUCTION AREA

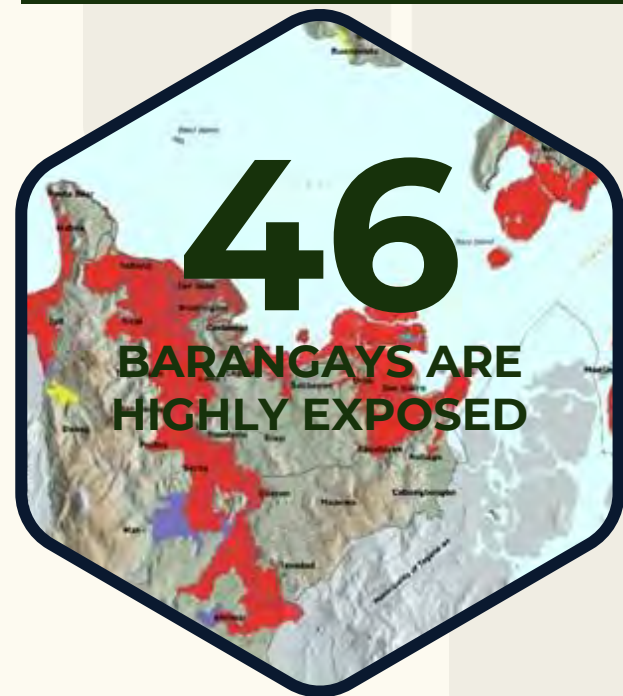
SIGNIFICANT EXTREME EVENTS

**Tropical Cyclone
Nidang (Ike)**

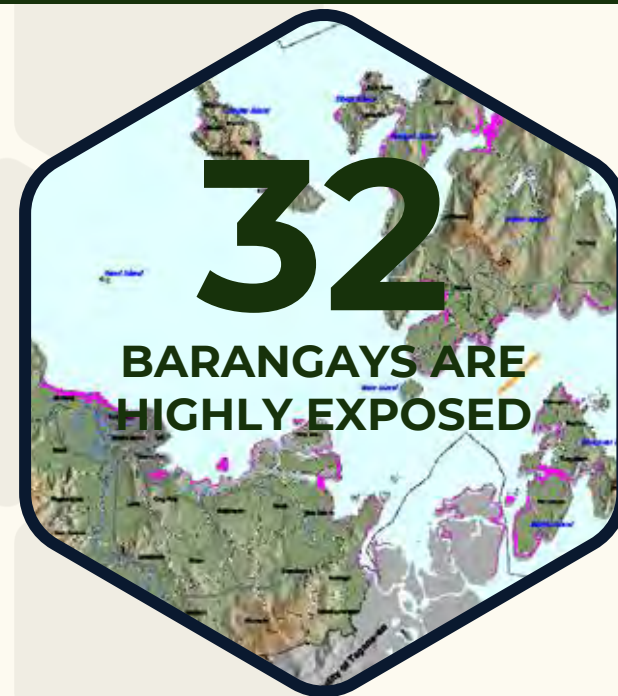
September 1, 1984
Deaths: 85
Est. Damage: 4.1B

**Tropical Cyclone
Odette (Rai)**

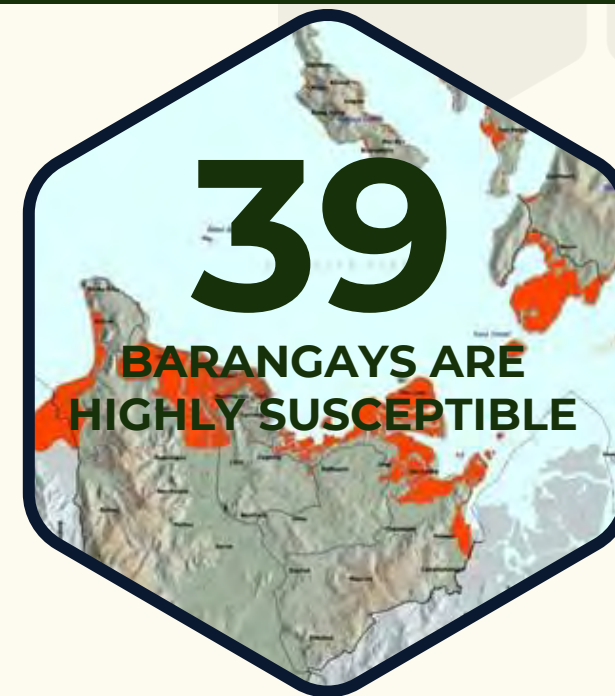
Dec. 16, 2021
Deaths: 71
Est. Damage: 37.56B



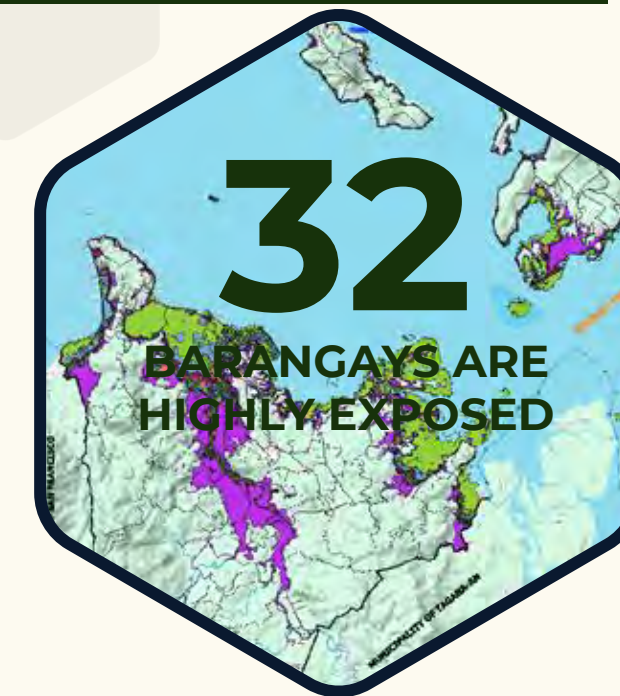
LIQUEFACTION
95,718(56%)
AFFECTED POPULATION



STORM SURGE
30,516(17%)
AFFECTED POPULATION



TSUNAMI
77,860(45%)
AFFECTED POPULATION



SEA LEVEL RISE
55,206(32%)
AFFECTED POPULATION

The **City of Surigao** is geographically located in the **Northeastern tip of Mindanao** facing the **Pacific Ring of Fire** expose the city to a variety of natural hazards and climate-related risks which affects the population, resources and properties.

HAZARD PROFILE

WHAT WE NEED TO DO MORE?

Surigao Green Social Housing: *A Vision of Resilience and Sustainable Community*



To reduce the
Housing Backlog (2020):

10,050
Households



A **Multi-level Green-roofed Modular Social Housing** project is an innovative sustainable living concept which envisions a vertically integrated community built using **pre-fabricated modular units**, incorporating **roof gardens** and **renewable energy systems** to promote active mobility, sustainability and community well-being.

WHAT WE NEED TO DO MORE?

Surigao Resilient Water System:

Empowering island communities through sustainable water solutions

An initiative that **captures and stores rainwater or seawater** to provide a **reliable, sustainable, and eco-friendly water source for all**. By turning rainfall/sea water into a shared resource, the system promotes water security, resilience, and collective stewardship of the environment.

36
out of 54
are coastal
and island
barangays

Total
Population
115,158
(67%)

Highly Exposed to
ALL HAZARDS





**SALAMAT
KARAJAW!**

6. Ministry of Public Works and Transport (Lao PDR)



The 16th UN-Habitat Environmental Technology Expert Group Meeting (EGM)

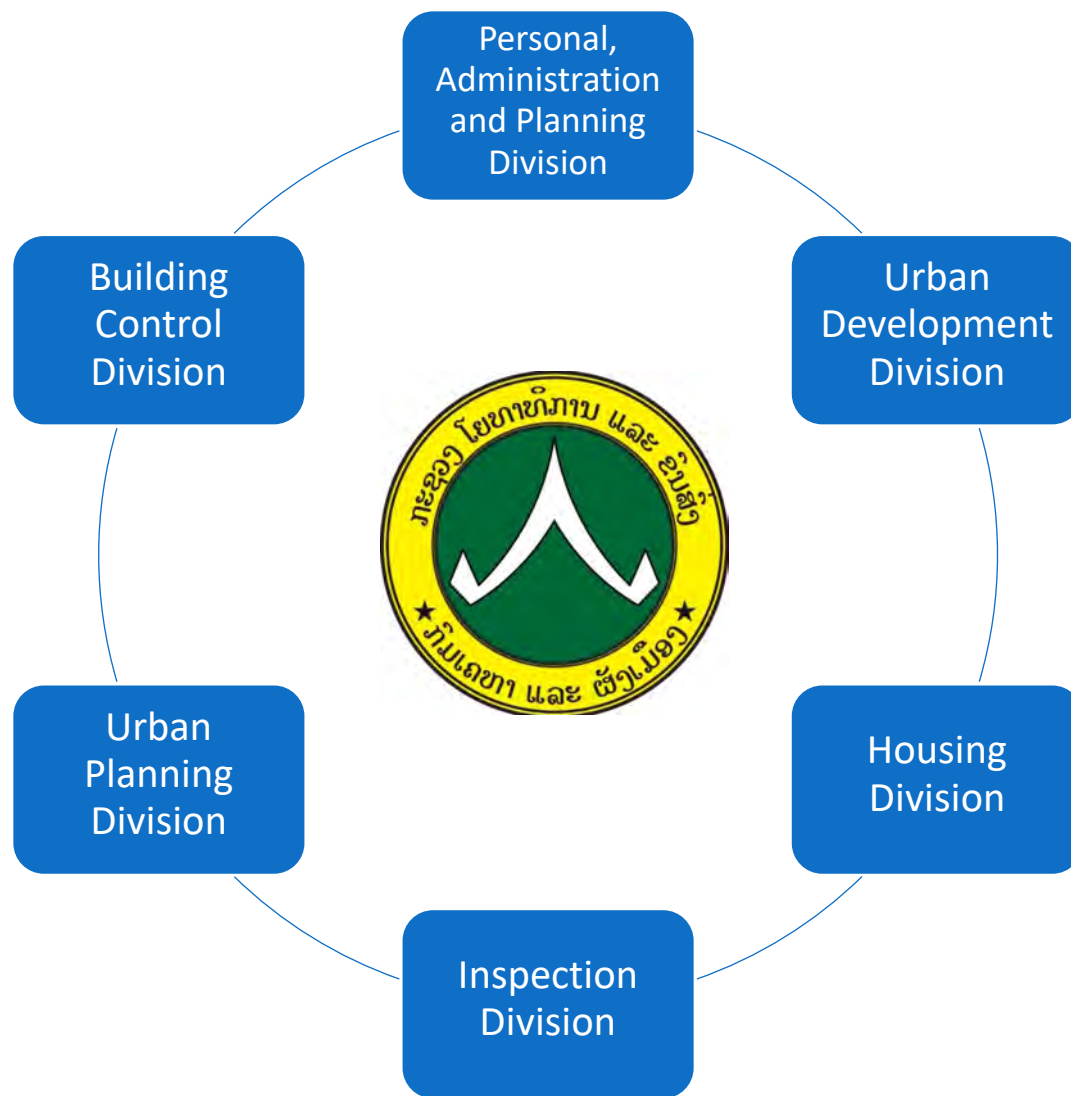
National Initiatives of Resilience City in Lao PDR

Ms. Visaphone INTILATH

Deputy Director General
Department of Housing and Urban Planning,
MPWT



Organization as MPWT/DHUP



Challenges & Opportunities for Housing and Urban Development

Challenges

- Environmental degradation
- Impacts of rapid urbanization
- Inadequate infrastructure & limited connectivity
- Basic services demands

Opportunities

- Increased climate resilience & environmental sustainability
- Improved urban planning & resource efficiency
- Increased quality of life & sustainable urban development



Inclusive and Sustainable Future

- **What kind of urban transformation do we need?**

- ➔ Can the digital innovation & technology can improve city operation efficiency and quality of life of urban people by utilizing advanced IT technology.



- **Enabling Cities**

- Aiming at...
 - 1. Appropriate Utilization of Digital Technology
 - 2. Smart Governance
 - 3. Urban Management by GIS Platform



Our Focus



Green Growth: Policies and mechanisms guiding green growth and sustainable development have been a focal point. The National Urban Development Strategy for 2030 is being updated to incorporate trends such as climate resilience and the smart city concept.

Inclusive Urban Management: Inclusive Urban Management Platform has been established. The Lao National Urban Forum has been launched and rolling to provide a stage for all stakeholders to collaborate, shaping effective future urban and town development at all level



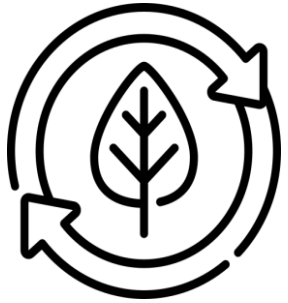
Strategic Urban Investments: Significant investments have been made in urban development initiatives, particularly in cities and districts with high economic and social impact along vital economic corridors. These investments have significantly contributed to socioeconomic growth and resilient urbanization.

Data-driven decision making: Platforms promoting evidence-based and digitalization.



Capitalizing on Smart City Concept: Recognizing the potential of digital disruption, we are exploring smart city concepts, utilizing smart solutions to address urban challenges. Laos' first smart city development strategy is being developed, paving the way for efficient city planning and management, ensuring citizen livability and improved standards of living.

EXPECTED OUTCOMES FOR HOUSING AND URBAN DEVELOPMENT ACTIONS



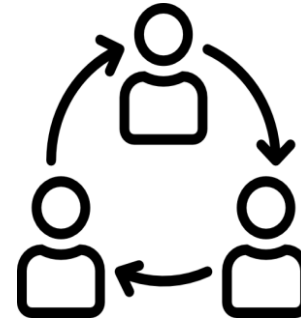
**Sustainable,
livable, inclusive
and resilient cities**

To meet the need of residents while harnessing the power of technology to improve the delivery of services and address urban, social and economic challenges



**Enhanced quality
of life for citizens**

By promoting economic growth, reducing carbon footprint, encouraging citizen participation, and developing a culture of innovation and entrepreneurship



**Enhanced capacity,
decision-making,
and efficiency of
government**

To adopt smart cities strategies and implement projects that are inclusive, sustainable, and centered on people's needs

Align with the mandate of MPWT & focus on leveraging technology and digital solutions to support people-centered sustainable urban development, improved service delivery & climate action in cities.

Ways Forward

- Develop integrated development strategy and policies that focus on the use of technology to improve the quality of life, robust economy and sustainable environment;
- Seek financial and technical support for stocktaking, studying and planning of smart initiatives/projects as well as investing in hard and soft infrastructure;
- Identify internal framework of responsibilities of relevant spatial planning tasks;
- Cooperation with all sectors, ASEAN member states and external partners.



THANK YOU

7. Malé City (Maldives)

Making Malé City More Resilient

Report as of 17th October, 2025

Mayor of Male' City Adam Azim



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MALÉ CITY COUNCIL

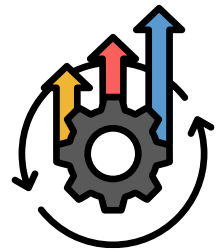


Why Resilience Matters



Protects Lives and Infrastructure

Safeguards people and critical assets from climate-related disasters like flooding and storm surges.



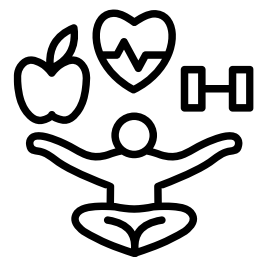
Ensures Continuity of Services

Keeps essential services—water, electricity, healthcare, running during and after emergencies



Supports Sustainable Development

Prevents setbacks in education, health, and economic progress by building climate-smart systems.



Enhances Community Well-being

Builds trust, reduces stress, and empowers citizens through inclusive planning and preparedness.



Urban Vulnerabilities and Climate Risk



Extreme Urban Density

Over 211,000 residents in just 8.3 km²; one of the most crowded cities globally

Sea-Level Rise & Coastal Exposure 95% of land

at risk of flooding by 2100; Malé sits just 1m above sea level

Frequent Flooding & Drainage Failures 8 major flood events since 2019

732 homes affected in 2024 alone

Water Security Challenges 100% reliance on desalination

only 0.1% use rainwater; vulnerable to energy shocks. We have increased greenery in the city, which could utilize other forms of water.



Reef Resilience

Loss of reef cover contributes to higher flood intensity, shoreline erosion, and infrastructure damage during extreme weather.



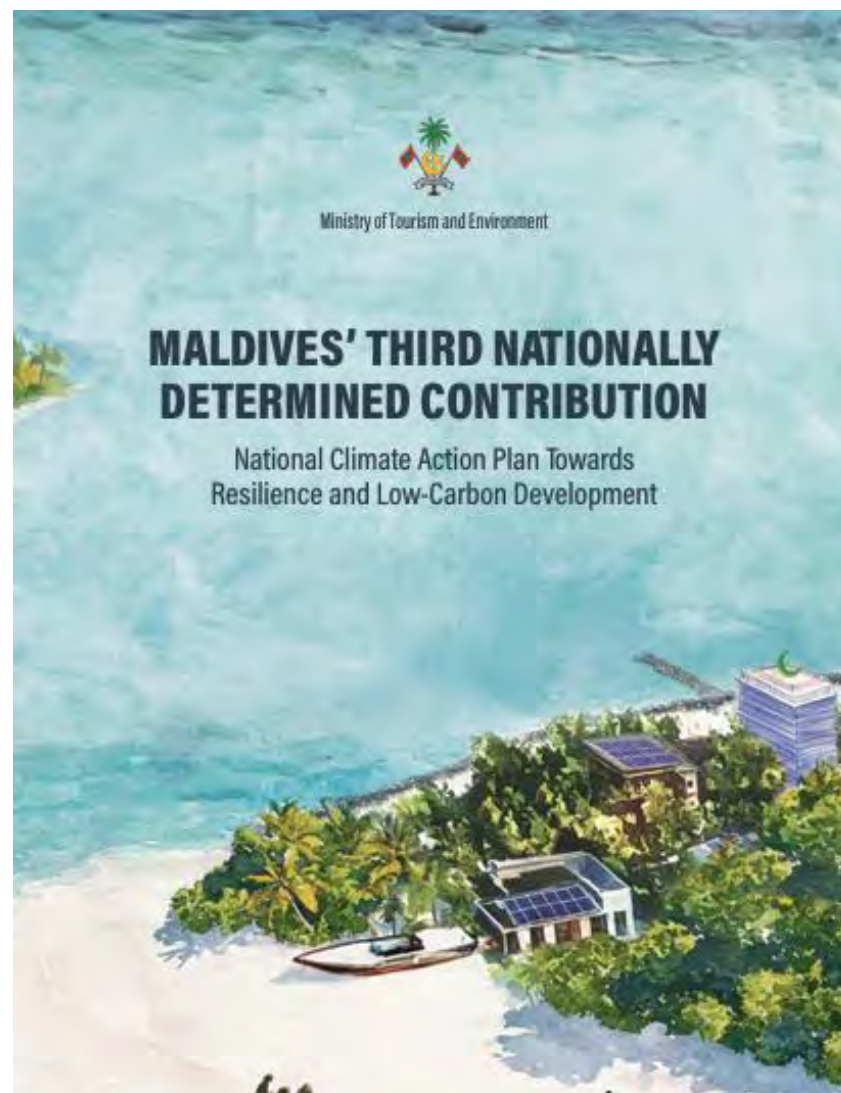
Flooding in 1987 in Male'



Reef resilience is essential to climate adaptation, biodiversity, fisheries, and sustainable tourism, all pillars of Malé city's urban sustainability.

Challenges and Needs

Cross-Sector Climate
Integration



Siloed Governance Challenges

Fragmented climate planning results from isolated governance across housing, transport, and health sectors



Capacity and Training Gaps

City staff often lack training in climate adaptation and Sustainable Development Goal alignment



Importance of Local Climate Data

Absence of localized climate data hinders evidence-based decision-making for adaptation strategies.

Planning and finance challenges.

Challenges:

- Dependence on external funding sources, government limited grants
- Limited local revenue for adaptation projects.

Needs:

- Innovative financing mechanisms (e.g., climate bonds).
- Private sector engagement in resilient infrastructure.



8. Penang City (Malaysia)



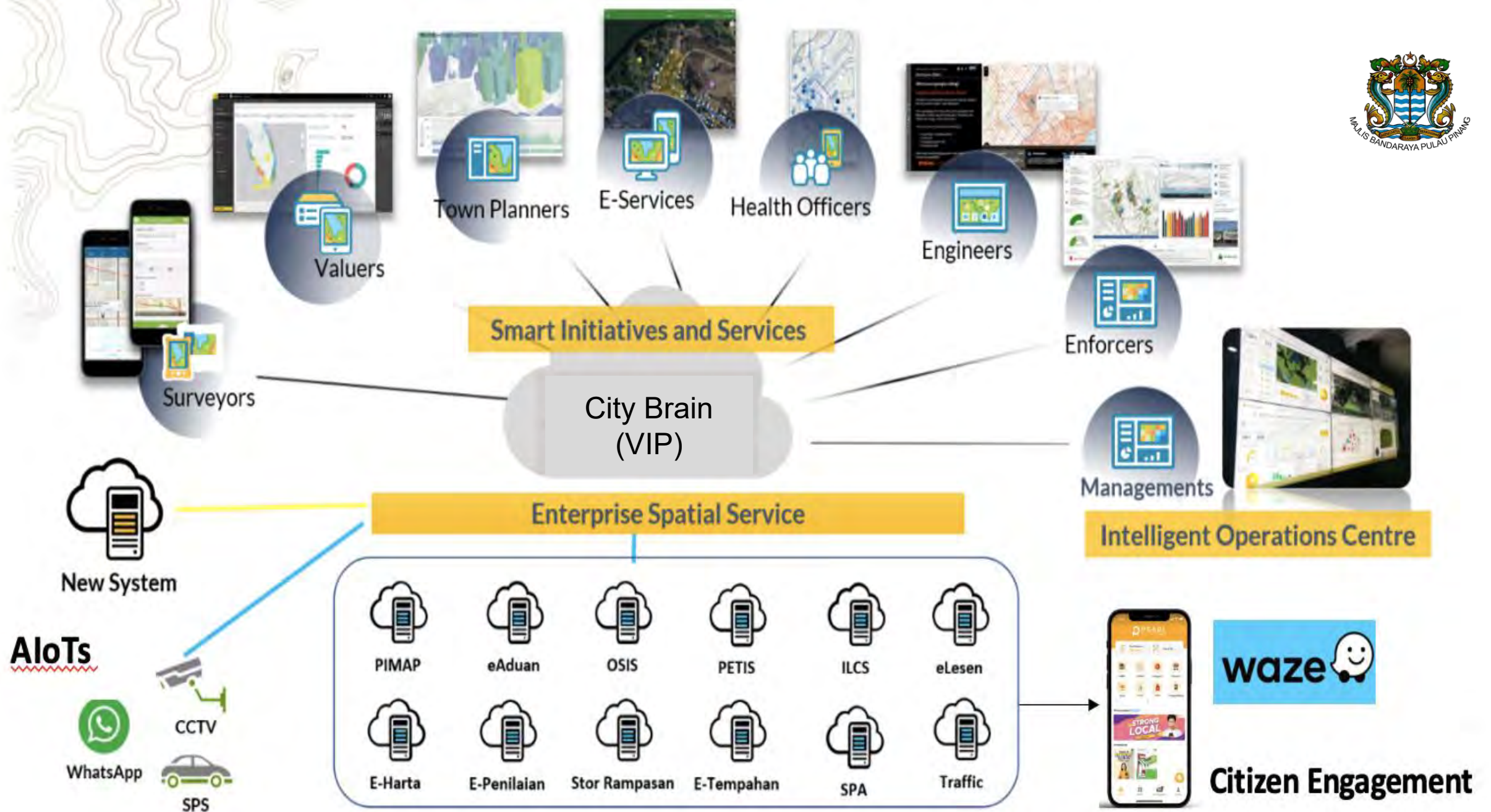
MAJLIS BANDARAYA PULAU PINANG

Virtual Island of Penang (VIP)

Smart City Unit, Department of Planning Development

TPr Gs MOHD BASHIR BIN SULAIMAN
Director of Planning Development Department



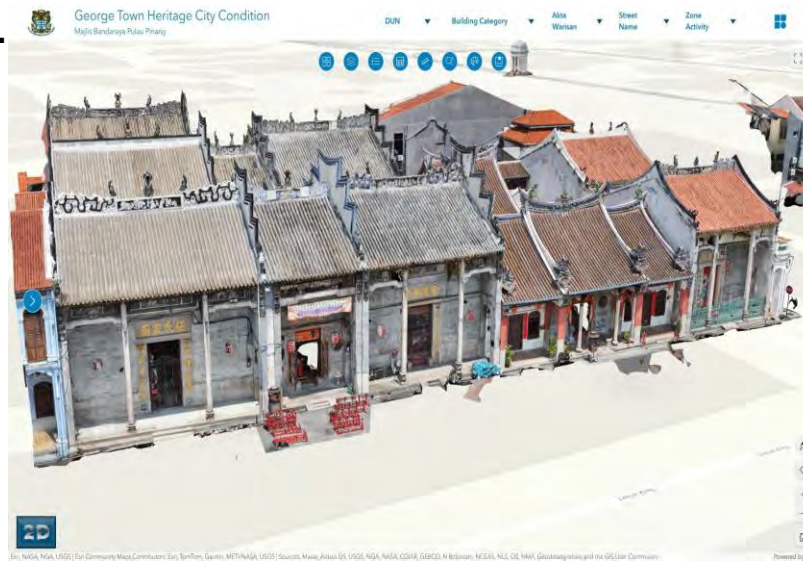


George Town Heritage City

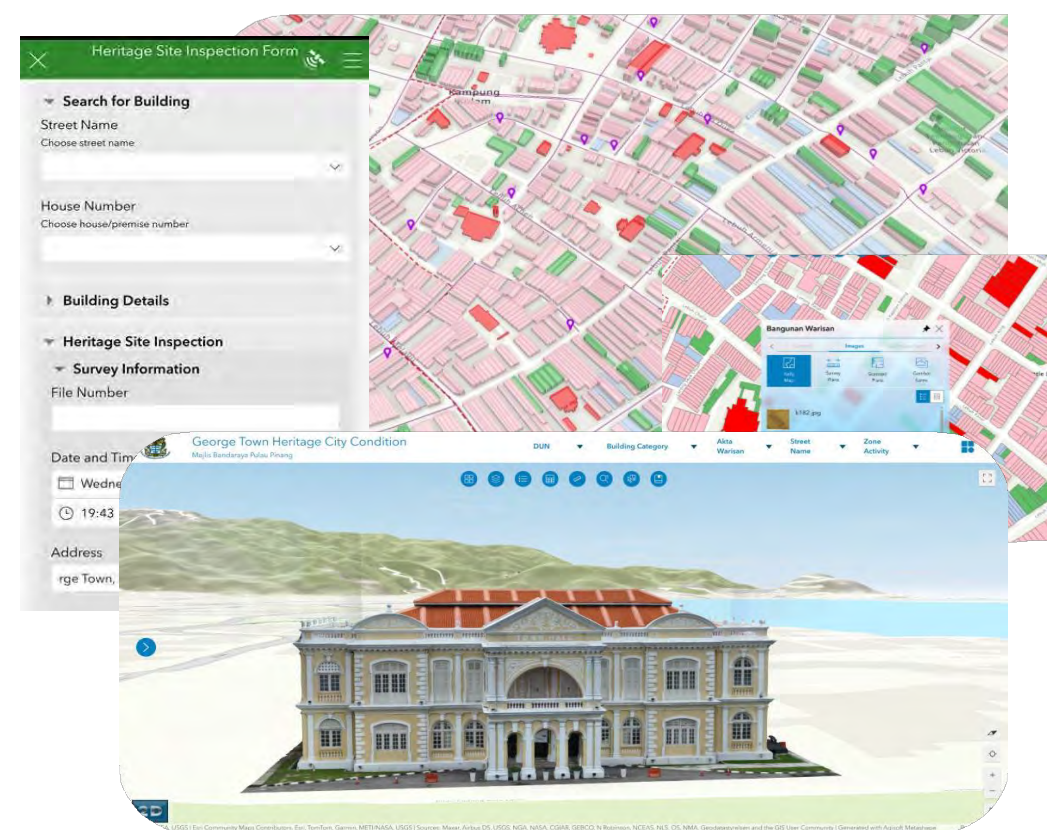
The Heritage Dashboard is designed to safeguard and manage our cultural assets more effectively.

- Preserves records of heritage buildings, while storing digital information, drawings, and photos in one centralised platform.
- The system also standardises and automates report generation, reducing manual effort. Most importantly, it enables us to analyse risks and conditions of each building by comparing site inspection records over time.

2D
View



3D
Heritage
building



E-Submission

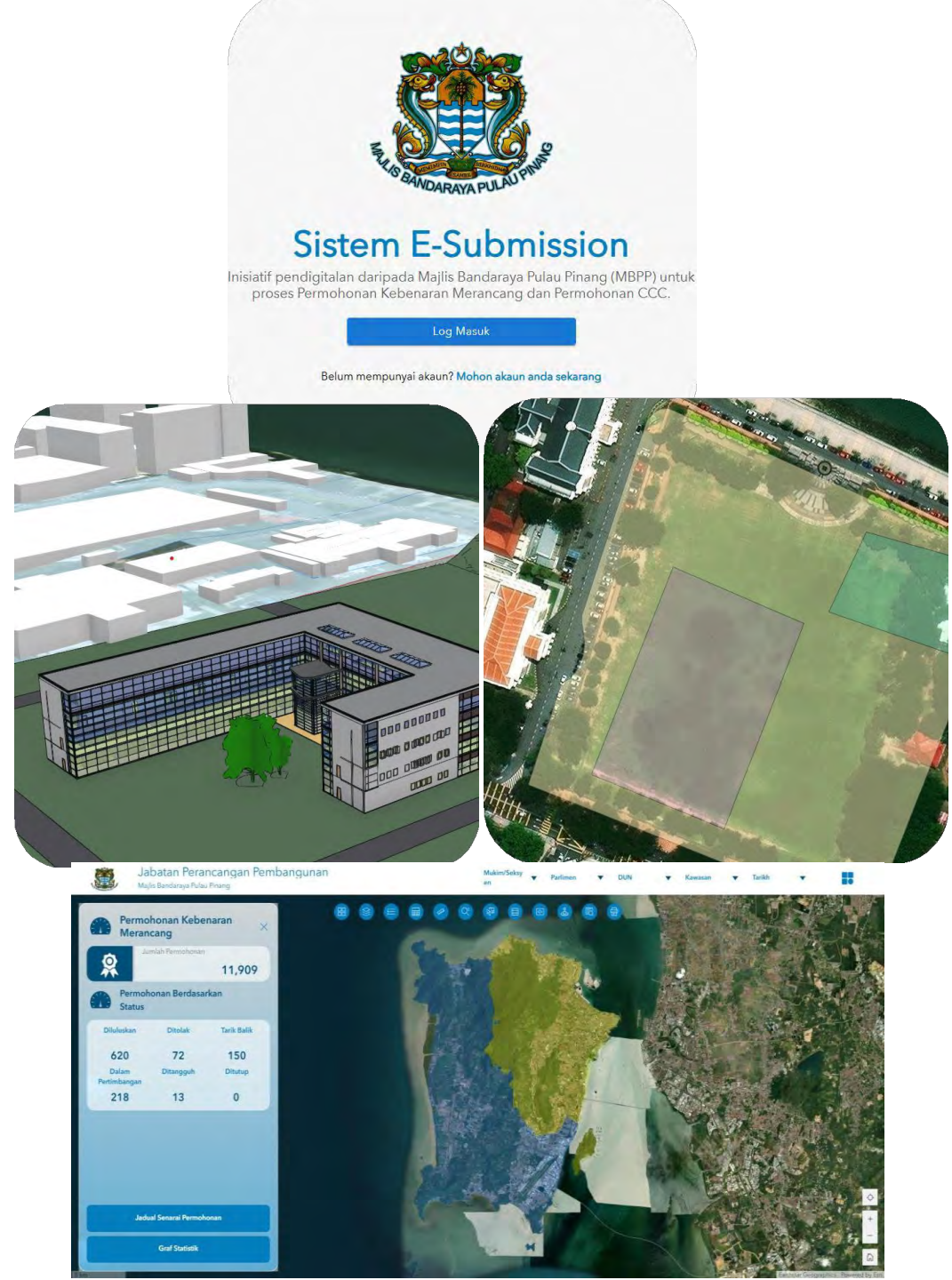
Benefits of the e-Submission System

- Automated Compliance Verification
- Integrated Map Visualisation for DWG and RVT Files
- Centralised Departmental Dashboard

Jabatan Perancangan Pembangunan Dashboard

Jabatan Perancangan Pembangunan Dashboard is a centralized platform designed to monitor and track planning permission applications in real time.

- Centralized Monitoring of Permohonan Kebenaran Merancang (PKM)
- Real-Time Status Tracking
- Data-Driven Planning Decisions
- Improved Collaboration



Weather Monitoring

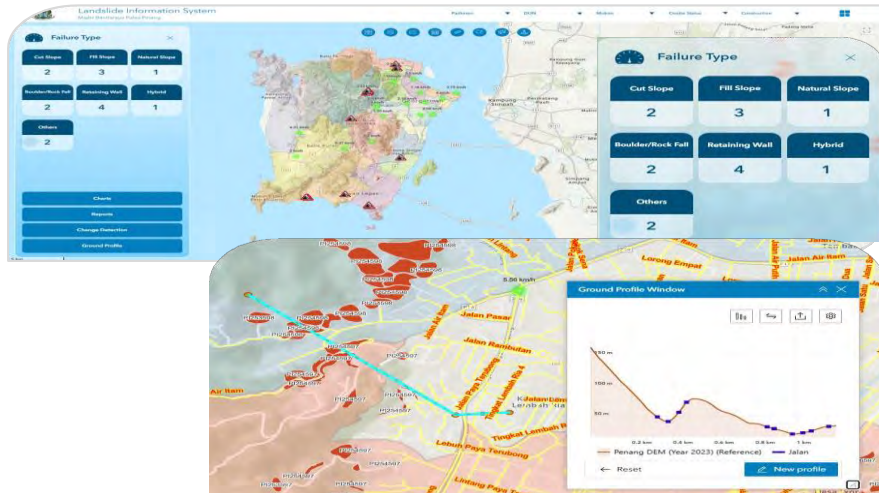
The Weather Monitoring Dashboard delivers real-time updates and alerts for authorities to respond swiftly in safeguarding the public.



LAND SLIDE INFORMATION SYSTEM

Landslide Information System

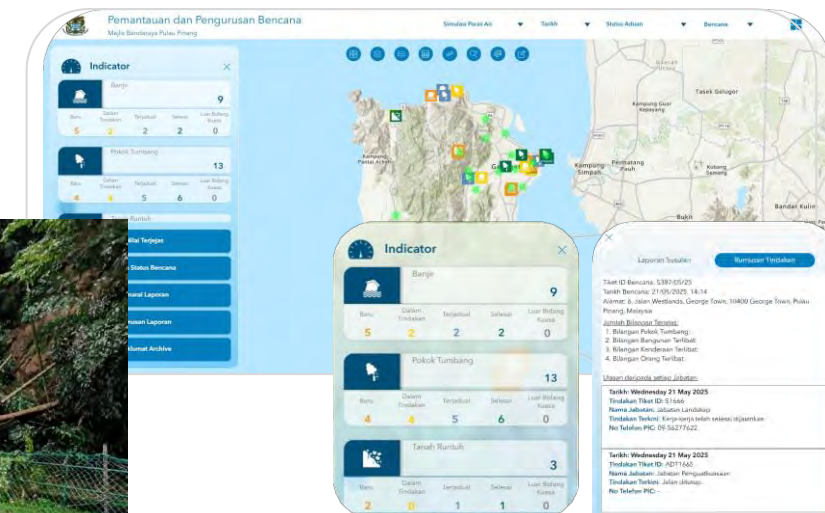
The Landslide Information System has been developed and designed to support effective geotechnical monitoring and decision-making by providing a centralised platform.



DISASTER MONITORING

Disaster Monitoring Dashboard

The Disaster Monitoring Dashboard strengthens both response and resilience for Penang.

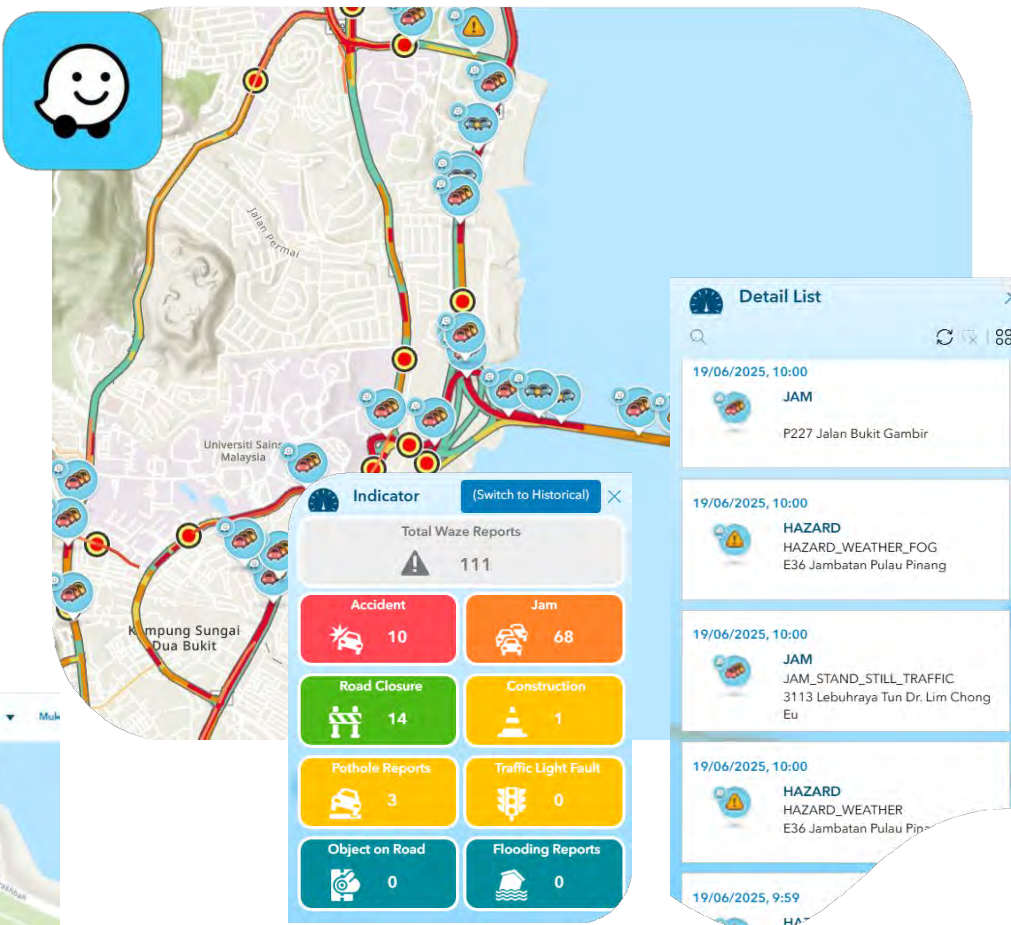
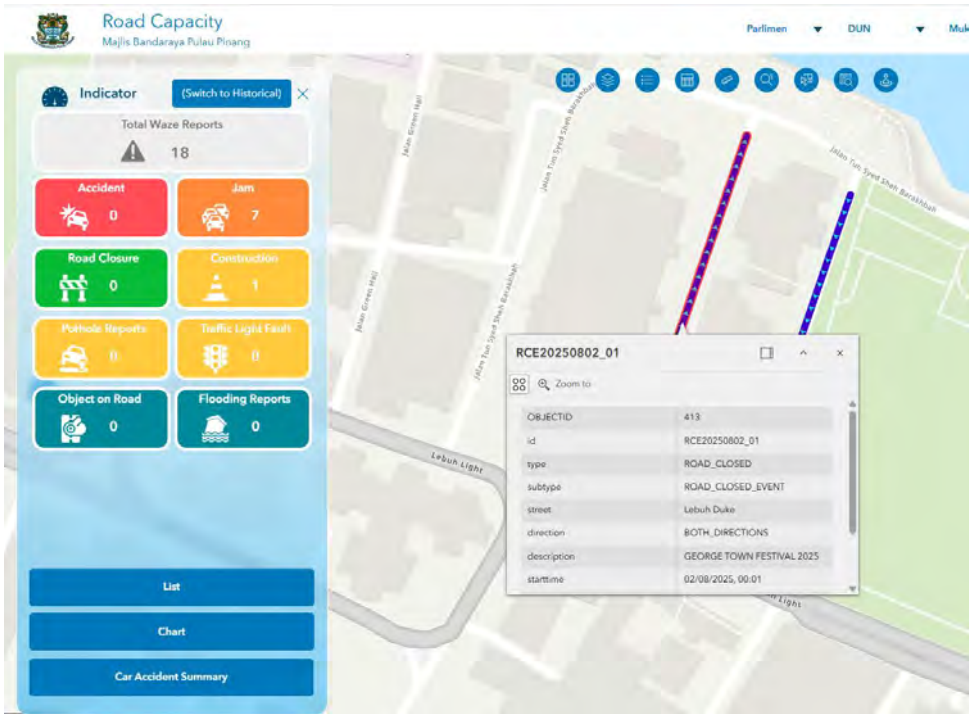


Road Capacity Analytics

The Road Capacity Analytics Module is an advanced, AI-powered dashboard designed to seamlessly integrate live data from Waze, CCTV systems, and smart traffic light system, providing a comprehensive platform for real-time road monitoring and traffic optimisation.

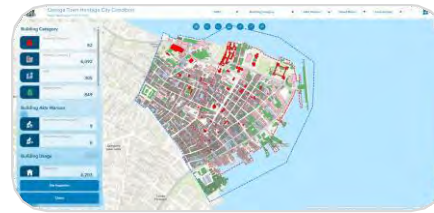
Benefits

- Smarter, Safer Roads with Real-Time Data.
- AI-Driven, Adaptive Traffic Flow.
- Better Planning for the Future

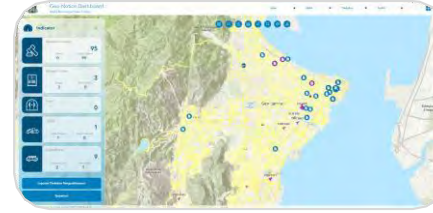


VIP Initiatives

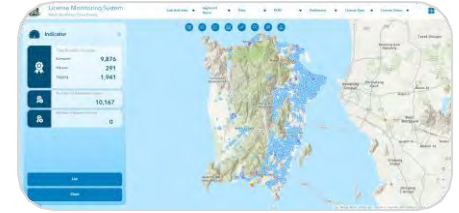
Smart Governance



Heritage Risk Dashboard



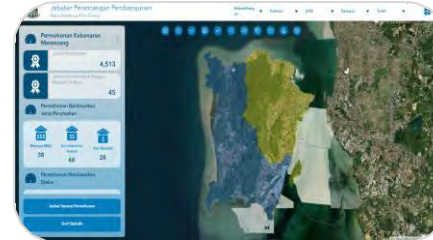
Geo-Notice Dashboard



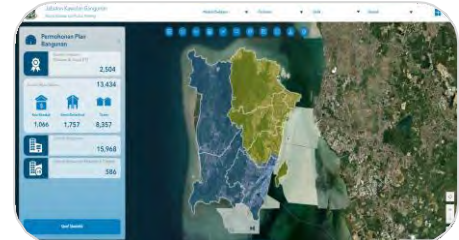
License Monitoring Dashboard



E-Submission System



Jabatan Perancang Pembangunan Dashboard



Jabatan Kawalan Bangunan Dashboard

Smart Environment



Landslide Information System



Weather Monitoring Dashboard

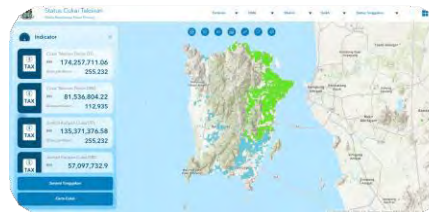


Penang Tree Inventory System



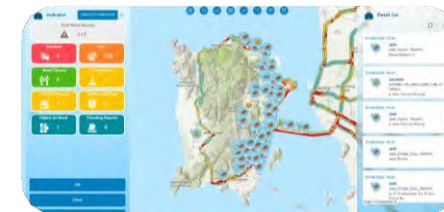
Disaster Monitoring Dashboard

Smart Economy



Tax Assessment Dashboard

Smart Mobility



Road Capacity Analytics Dashboard

Smart Digital



3D City Map

9. Stuenghav District Hall, Preah Sihanouk Province (Cambodia)



STUENGHAV DISTRICT'S NEEDS AND CHALLENGES TOWARD BUILDING URBAN RESILIENCE

**Presented by Mr. Ing Sovannaroth, Deputy Governor of
Stuenghav District, Preah Sihanouk Province, Cambodia**



Contents

➤ Introduction

➤ Challenges

➤ Needs

➤ Ongoing Efforts

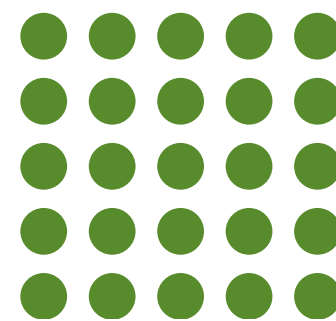
➤ Conclusion



Introduction



- One of 3 districts and 3 municipalities of Preah Sihanouk Province
 - Located in the northern coastal area
 - Area: 330 square kilometers
- Population: 19,722 (4,437 households; 9,869 female)
- 4 Communes and 13 villages
 - Main livelihoods: Fishing and Small Family Business



An aerial photograph of a coastal village. The village is built on a flat, green landscape with many small houses and buildings. A long, narrow pier or road extends from the village into the water, ending in a small structure. The water is a deep green color. The sky is clear and blue.

Resilience Challenges

- 1. Economic Dependence: Fishing as the main livelihood (limited alternative skills)**
- 2. Environmental Degradation: Poor waste management, which harms the marine ecosystems**
- 3. Disaster Preparedness: Lack of evacuation training and early-warning systems**
- 4. Low Population Density: Wide area with scattered settlements**
- 5. Unregulated Coastal Development: Construction near the sea causing erosion and mangrove loss**

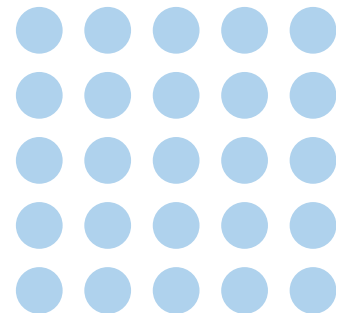
District's Needs for Building Urban Resilience



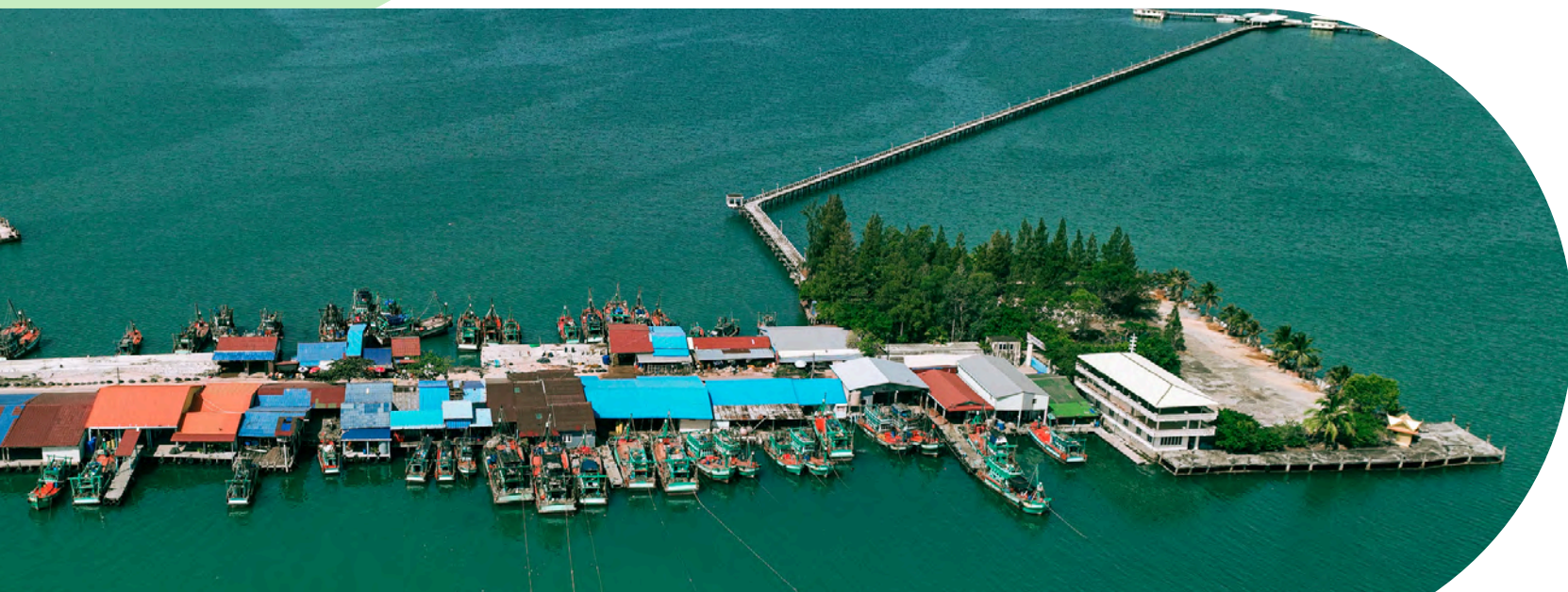
1. **Infrastructure:** Drainage, flood control, and waste-treatment facilities
2. **Technology:** Early-warning systems and GIS-based land-use planning
3. **Human Capacity:** Training for officials and communities in disaster response
4. **Investment:** Clean energy, sustainable aquaculture, and Factories



Ongoing Efforts Toward Resilience



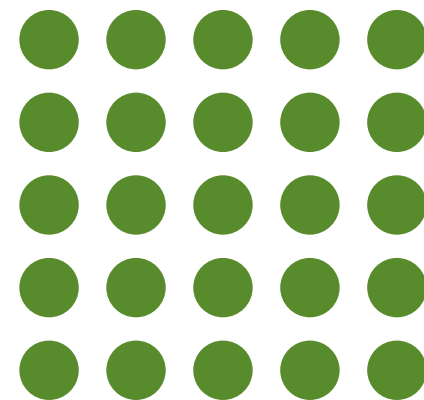
- Disaster Management: District Committee coordinating with provincial and national authorities
- Environmental Action: Landfill and community awareness campaigns
- Infrastructure Development: Roads being improved
- Social Services: 17 schools, 4 health centers, 1 national drug rehabilitation center
- Digitalization: E-services at One Window Service Office in order to improve the administrative transparency





Conclusion

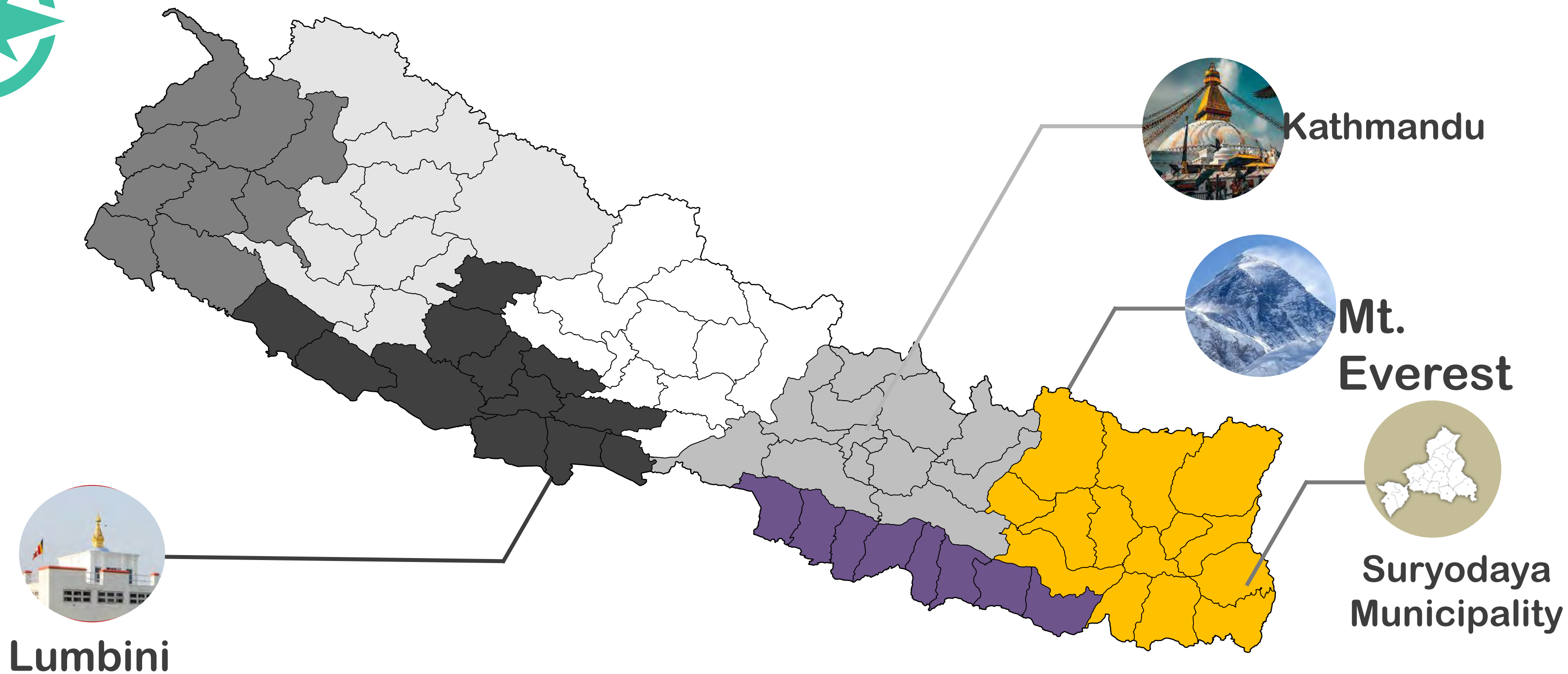
- **Stuenghäv district aligns with the 2030 Agenda and the Pact for the Future**
- **Open to International collaboration, technology exchange and capacity-building cooperation with partners like UN-Habitat, UN DESA, and other cities across Asia and beyond.**



**THANK YOU
FOR YOUR
ATTENTION!**

10. Suryodaya Municipality (Nepal)

Building Urban Resilience in Suryodaya Municipality



Legend — SudurPaschim — Karnali — Lumbini — Gandaki — Bagmati — Madesh — Koshi

Introduction



Total Area (SQ.KM.): 252.52



Total Population: 54,727

Our vision is to build a resilient, inclusive, and sustainable Suryodaya that can thrive amid these challenges.

City Context

Suryodaya Municipality is home to about 54,727 residents, encompassing both urban and rural settlements.

The city's economy depends mainly on tourism, and cross-border trade, Premium Quality of Black orthodox tea, Agriculture/ dairy product

While our hilly terrain gives us scenic landscapes, it also exposes us to landslides, flash floods, and water scarcity, heavy Rainfall, drought, wild animals and human conflicts

Major Resilience Challenges



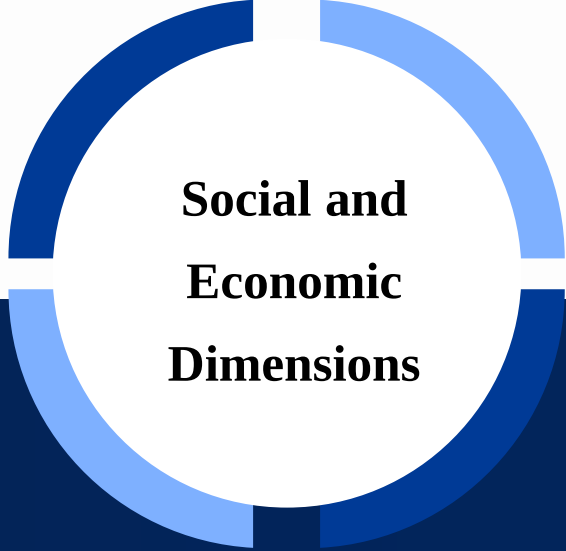
Climate and Environmental Risks

- Increasing rainfall intensity has led to landslides, erosion, and flooding in low-lying areas.
- Irregular weather patterns have affected agricultural productivity and water availability.
- Deforestation and unmanaged waste disposal further degrade the local environment.
- Multi-Hazards early warning system
- Weak Implementation of LAPA and LDCRP



Infrastructure and Urban Growth

- Rapid, unplanned expansion is putting pressure on roads, drainage, and solid waste systems.
- Many households still lack access to safe drinking water and sanitation.
- The municipality needs better disaster-resilient infrastructure such as slope stabilization and improved drainage,
- Difficulties in enforcing building code due to the issue of right of way of highway.
- Lack of proper drainage and sewerage system



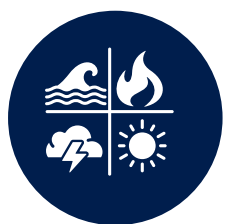
Social and Economic Dimensions

- Youth migration has created labor shortages and affected community resilience.
- Many vulnerable groups, including women, elderly, and informal settlers, face greater risk during disasters.
- Local businesses struggle to recover quickly after shocks such as floods or landslides.

Current Initiatives



Integrated Urban Development Plan (IUDP)
Aligns land use, transport, and environmental management with resilience priorities.



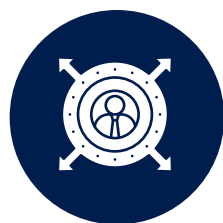
Community-Based Disaster Risk Reduction (CBDRR):
Local committees trained in EFLG- Environment friendly local governance , emergency response, and afforestation



Water Source Protection and Rainwater Harvesting: Though NBS
Pilot projects to improve year-round water security.



Child Friendly Municipality, Nutrition Friendly, Gender inclusive



Digitization:
[Suryoday Krishi](https://www.suryodayakrishi.gov.np)
<https://www.suryodayakrishi.gov.np>
GIS-Based Integrated Data Management & Decision Support System
<https://suryodaya.dmaps.org>



Green Infrastructure Promotion:
Small-scale green parks, roadside tree planting, and bio-engineering for slope stabilization.



Solid Waste Management and Composting:
Encouraging household composting and waste segregation with local cooperatives.



Land use planning, MTMP, ARMP, LAPA, LDCRP



SDG localization

Needs & Partnership Opportunities

We recognize that building resilience requires innovation and collaboration.
Suryodaya Municipality welcomes cooperation in the following areas:



Multi-Hazards
Early
Warning
Systems



GIS-based
Urban
Planning
Tools



Eco-friendly
Construction
Technologies



Smart Water
Management
Solutions



Renewable
Energy
Integration



Capacity
Building



Drainage and
sewerage
system as
well as safe
drinking
water



Nature
Base
solution for
urban
resilience





Conclusion & Call for Collaboration

“Suryodaya Municipality aims to become a model of sustainable and climate-resilient urban development through Nature-Based Solutions and DRR, seeking collaboration and support from partners to build a resilient future together”



**“TOURISTIC CITY”
SURYODAYA MUNICIPALITY
OFFICE OF THE MUNICIPAL EXECUTIVE**



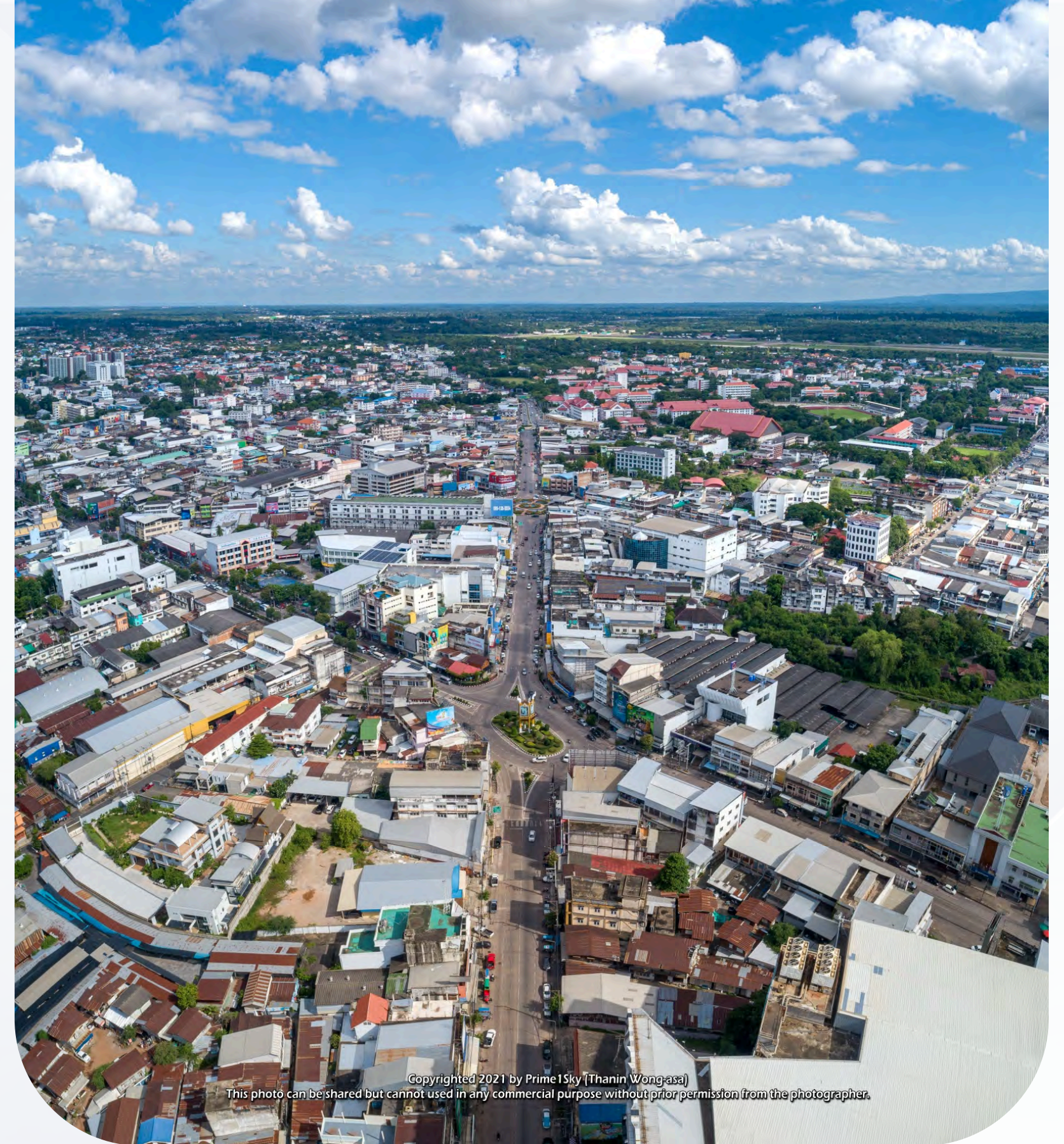
THANK YOU!

Ran Bahadur Rai- Mayor

11. Udon Thani City (Thailand)



Udon Thani City: Urban Growth and Emerging Climate Risks



Context

- Udon Thani City Municipality covers **47.7 km² in northeastern** Thailand.
- The city lies in a natural basin, **sloping south to north**.
- **Key watercourses:** Huai Mak Khaeng and Huai Mang, plus Nong Prajak and Nong Sim reservoirs.
- **Rapid urbanization** has increased impervious surfaces, intensifying flood risk.
- Udon Thani's geographic setting and fast urban expansion make it **vulnerable to climate-induced flooding**.

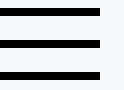


Understanding the ≡ Flooding Problem

- Flooding occurs frequently in **low-lying zones** after intense rain.
- **Main causes:**
 - **Landfilling** on private plots higher than drainage channels
 - Insufficient or blocked **drainage system**
 - **Housing** developments obstructing natural waterways
 - **Inadequate capacity** of existing streams
- The city's basin **topography** hinders quick outflow.
- Multiple **interlinked human and natural factors** amplify flood severity.



IMMEDIATE ACTIONS FOR FLOOD RELIEF



● Increase flow capacity

City-wide drain cleaning and dredging
Deployment of mobile pumps to accelerate drainage

● Emergency response

Emergency actions reduce short-term impacts but are resource-intensive and reactive.

● Flood relief equipments

Short-term engineering measures help relieve floods but cannot address systemic drivers.



Integrating Nature, Infrastructure, and Community

Sustainable adaptation combines engineering upgrades with citizen participation and ecosystem-based design.

Non-structural measures

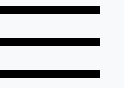
- **Collaborate** with citizens, government agencies, and private sector
- **Campaigns** against littering in drains and streams
- **Encourage** households to pre-treat oily wastewater before discharge
- **Expand green and permeable areas** to absorb runoff

Structural measures

- **Expand and interconnect** drainage channels
- **Upgrade public streams** to larger capacity
- **Install** real-time flood warning systems and underground pumping stations
- **Construct** new diversion canals within the city

Building a Resilient Udon Thani Together

Together, we can transform flood challenges into opportunities for a greener, safer, and more climate-resilient Udon Thani.



Climate Adaptation

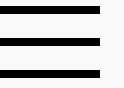
Climate adaptation under budget constraints requires shared responsibility.

Co-creation

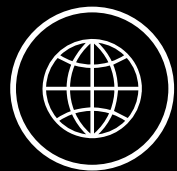
Co-creation with communities ensures local ownership and sustainability.

Next Steps

Develop an integrated urban flood resilience plan aligned with national and SDG goals.



+66 42-325-176



<https://www.udoncity.go.th/>



udoncity@udoncity.go.th

Thank you

12. Ulaanbaatar City (Mongolia)



GOVERNOR'S OFFICE OF THE CAPITAL CITY

ULANBAATAR CITY

SHARING STRATEGIES FOR URBAN
CHALLENGES THOUGH DEVELOPING
TRADITIONAL SETTLEMENT

Deputy Governor of the Capital City in charge of Social Sector,
Green Development, and Air and Environmental Pollution Affairs
AMARTUVSHIN Amgalanbayar

ULAANBAATAR CITY
OCCUPIES TERRITORY OF
MONGOLIA.

0.3%

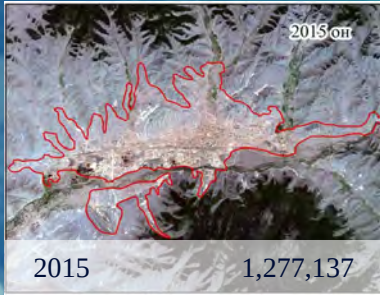
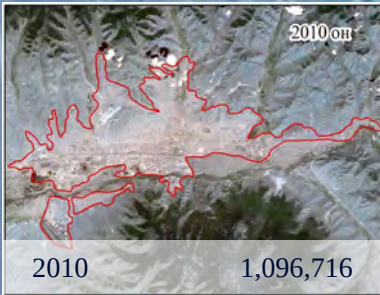
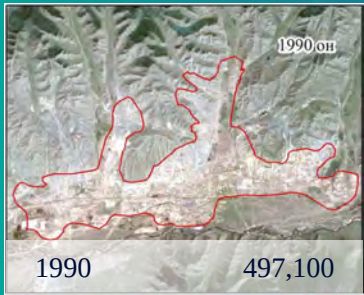
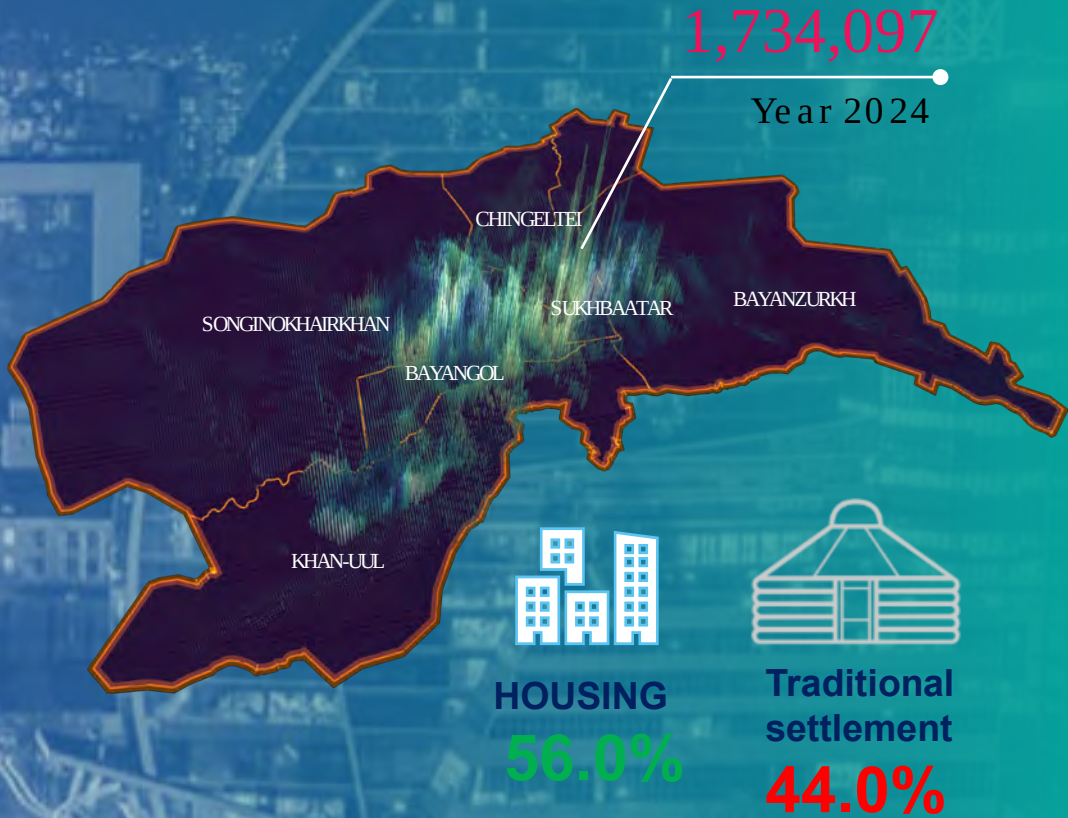
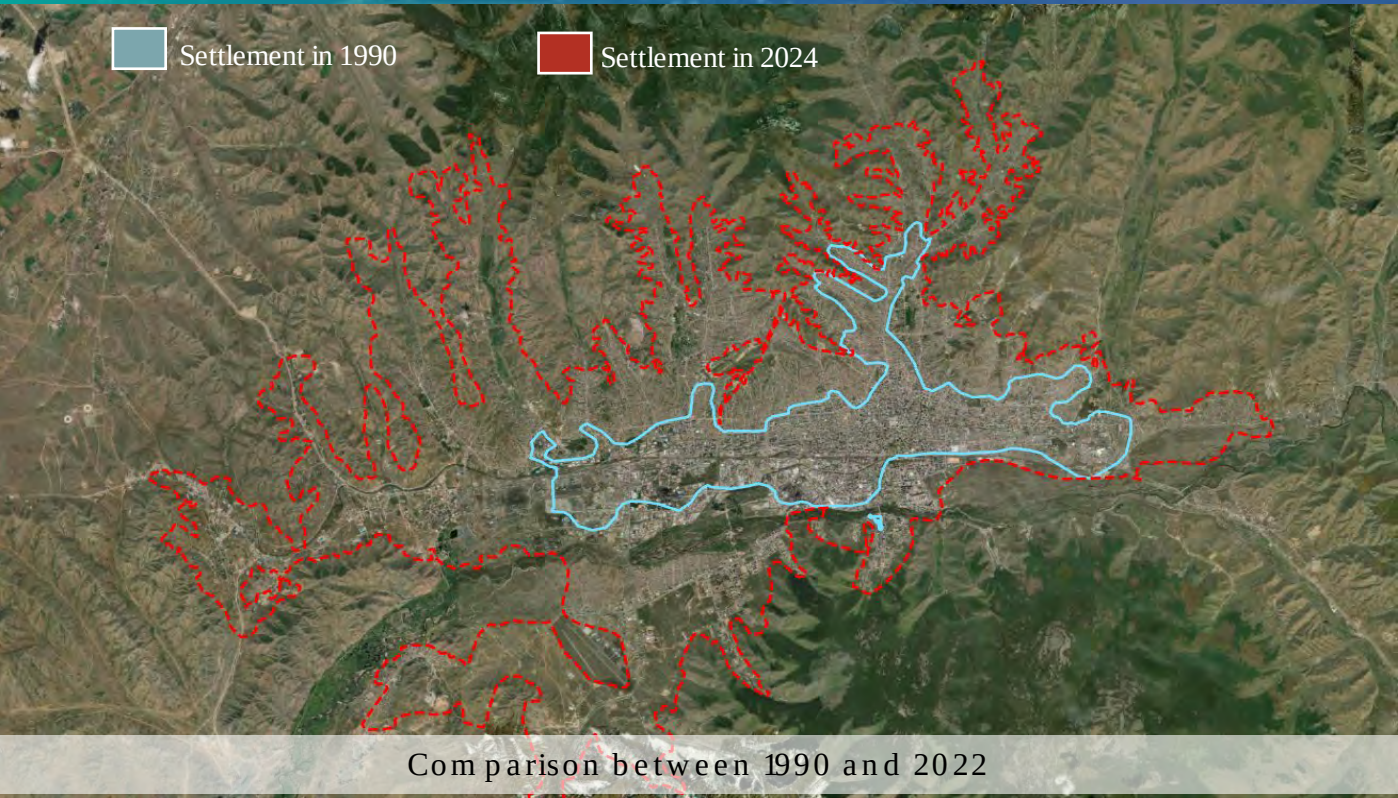
TOTAL POPULATION LIVES
IN ULAANBAATAR CITY.

50%

67% OF THE GROSS
DOMESTIC PRODUCT
(GDP) OF MONGOLIA IS
PRODUCED IN
ULAANBAATAR CITY.

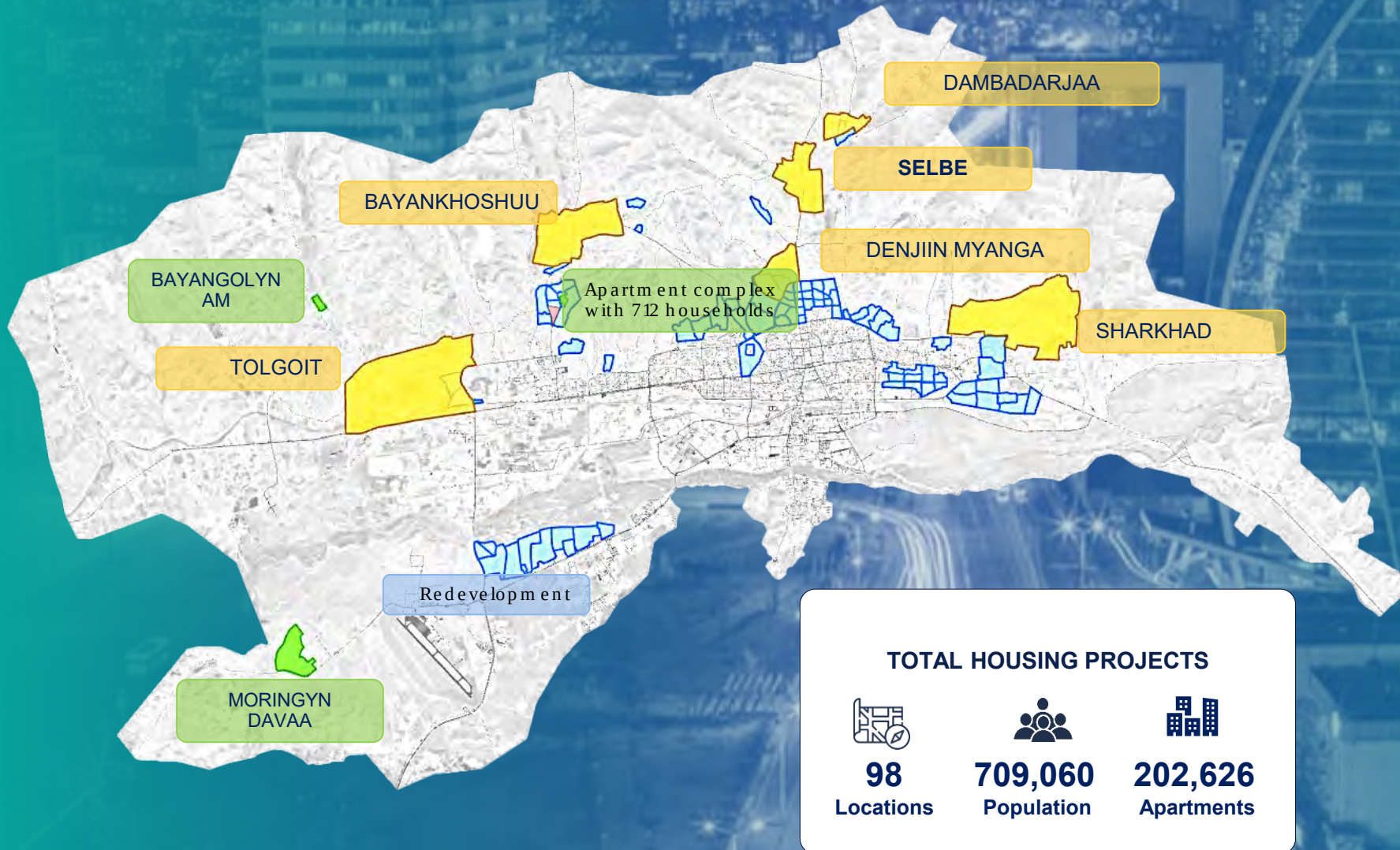
	ALL UNIVERSITIES AND COLLEGES	96%
	TRADE AND SERVICE SECTOR	85%
	TOTAL SAVINGS	76.5%
	BUSINESS ENTITIES AND ORGANIZATIONS ENGAGED IN OPERATIONS	70.4%
	REGISTERED VEHICLES	84%

CURRENT SITUATION OF ULAANBAATAR CITY



Ongoing housing projects GER DISTRICT REVIVAL

2040



ONGOING HOUSING PROJECTS

REVITALIZATION OF NEW INFRASTRUCTURE



ACCELERATING REDEVELOPMENT

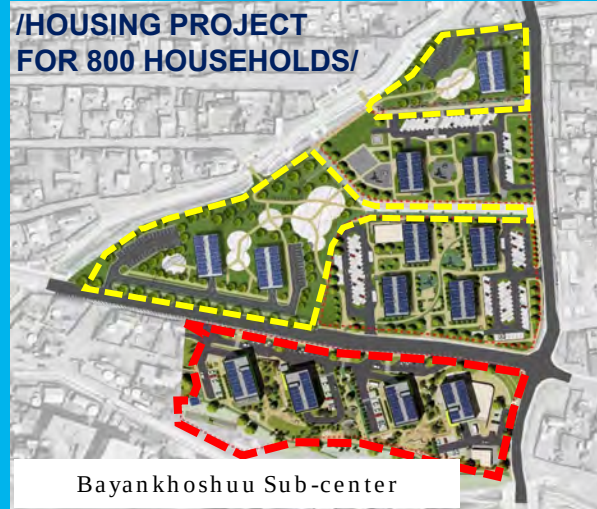


OTHER HOUSING PROJECTS



GREEN HOUSING SOLUTIONS AND FEATURES

/HOUSING PROJECT FOR 800 HOUSEHOLDS/



Bayankhoshuu Sub-center



01

Creating the foundational conditions for developing sub-centers through construction



02

Improving the accessibility of engineering infrastructure in Ulaanbaatar's ger district



03

Developing Sub-centers Promoting Green Housing Development

GREEN HOUSING SOLUTIONS

20%
RENEWABLE
ENERGY USED

20%
THERMAL
ENERGY
SAVINGS

20% WATER
SAVINGS
WITH GREYWATER
USAGE

TRIPLE-GLAZED
LOW-E
WINDOWS

20%
RECYCLED
MATERIALS
USED

40%
GREEN SPACE
PLANNED

PLANNED FOR
4-5 FLOORS

REDUCTION
IN OPERATING
COSTS

BUILDING
LIFESPAN:
80-100 YEARS

BASIC PRINCIPLES OF PLANNING



300 people
per hectare



5-6 floors



(heating) ≤ 150 kBT



30%



9,400 sq.m



3,020 sq.m



TO BE IMPLEMENTED IN ULAANBAATAR CITY BETWEEN 2025 AND 2028

MEGA PROJECTS

REDUCING
TRAFFIC
CONGESTION



REDUCING AIR
POLLUTION



OTHER





GOVERNOR'S OFFICE OF THE CAPITAL CITY

THANK YOU
FOR YOUR

ATTENTION