



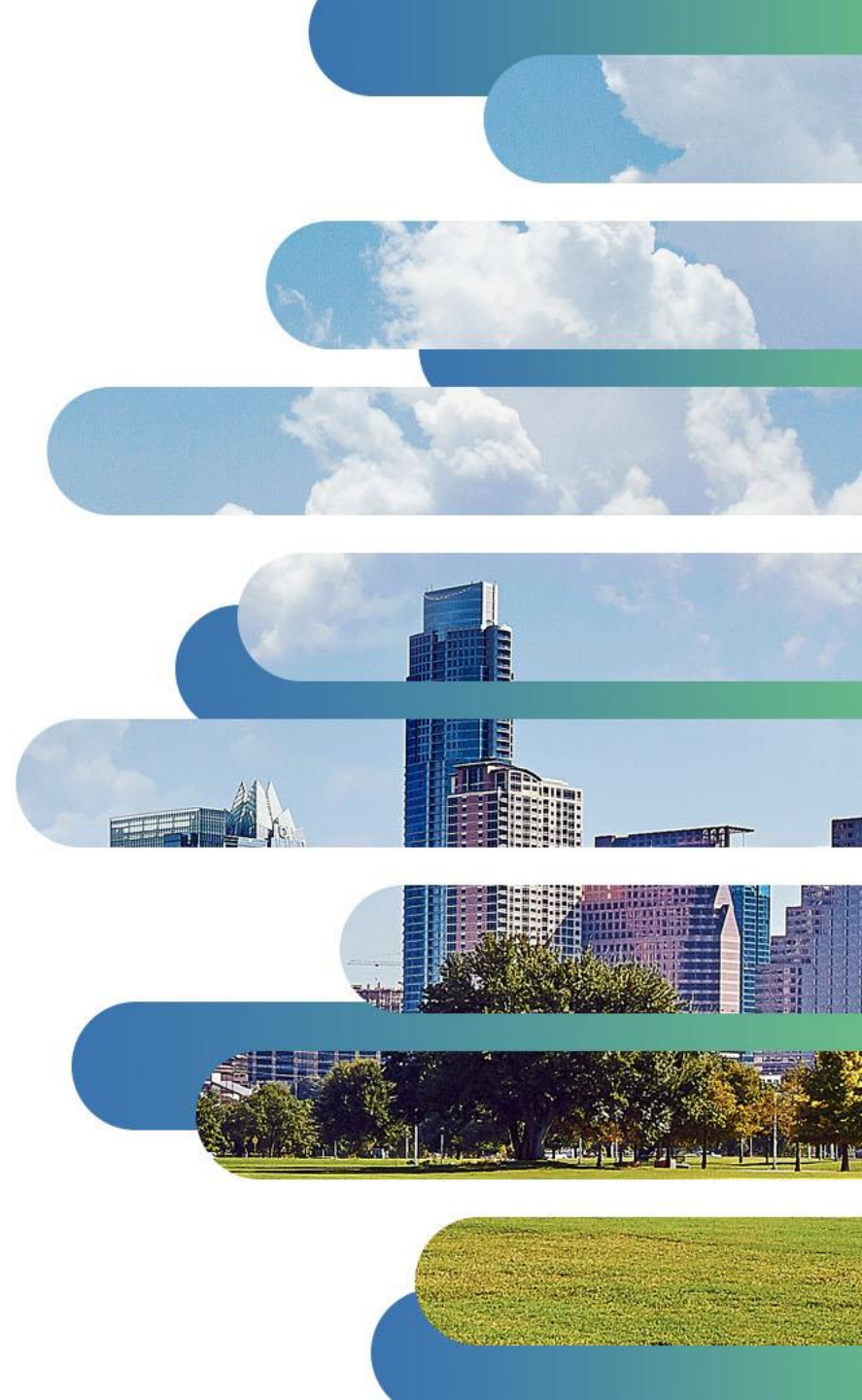
Global Platform for Sustainable Cities

Integrated Urban Planning—why, what, how?

GEF Africa Regional Consultation
African Green Growth Forum Kigali

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The World Bank

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Why?

Rationale integrated approaches



Technical Rationale

- **Systems approach**—assumption: Complex challenges need integrated solutions
- **Urban planning** benefits of coordination
- **Economics** of integration

Program Rationale

Central GEF Tenet for Impact Programs and GPSC objective.

GPSC Objective: To support participating cities in developing or enhancing their capacities and processes for an evidence-based, integrated approach toward resilience and sustainability



CLIMATE RISKS: 1.5°C VS 2°C GLOBAL WARMING

EXTREME WEATHER

100% increase in flood risk. VS **170%** increase in flood risk.

SPECIES

6% of insects, **8%** of plants and **4%** of vertebrates will be affected. VS **18%** of insects, **16%** of plants and **8%** of vertebrates will be affected.

WATER AVAILABILITY

1 billion urban residents were drought by 2100. VS **410 million** urban residents exposed to severe drought by 2100.

PEOPLE

1 billion of the world's population (1 billion people) will be exposed to extreme heat waves at least once every 20 years. VS **28%** of the world's population (2 billion people) will be exposed to extreme heat waves at least once every 20 years.

ARCTIC SEA ICE

Ice-free summers in the Arctic at least once **every 100 years.** VS Ice-free summers in the Arctic at least once **every 10 years.**

IPCC SR1.5 speaks of grave risks to the planet

SEA-LEVEL RISE

46 million people impacted by sea-level rise of 48cm by 2100. VS **49 million people** impacted by sea-level rise of 56cm by 2100.

OCEANS

Lower risks to marine biodiversity, ecosystems and their ecological functions and services at 1.5°C compared to 2°C.

CORAL BLEACHING

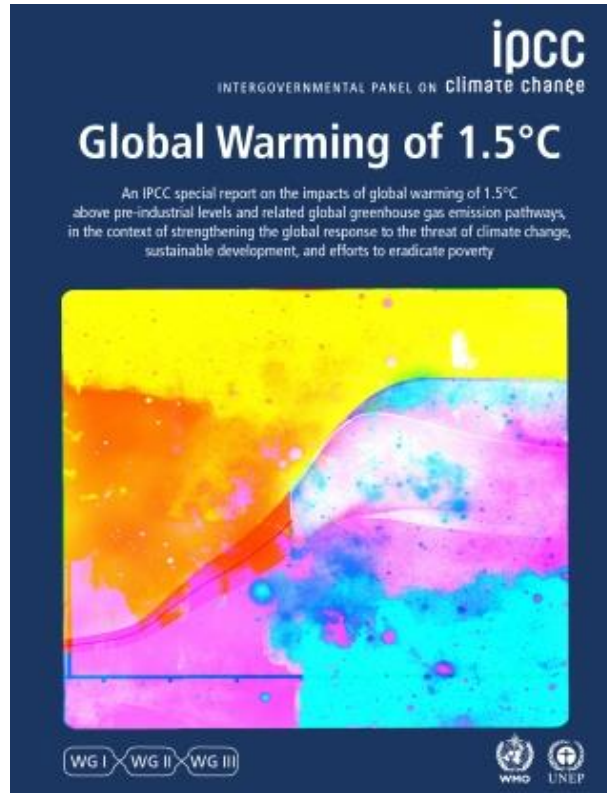
70% of world's coral reefs are lost by 2100. VS **Virtually all coral reefs are lost** by 2100.

COSTS

Lower economic growth at 2°C than at 1.5°C for many countries, particularly low-income countries.

FOOD

Every half degree warming will consistently lead to lower yields and lower nutritional content in tropical regions.



- Land use
- Energy
- Industry
- Cities

Cities are 1 of 4 systems offering hope for change

6 MILESTONES BY 2020

TO MEET SDGS BY 2030



We need to reach net zero emissions by 2050

2050 : NET ZERO

1	2	3	4	5	6
ENERGY	INFRASTRUCTURE	TRANSPORT	LAND USE	INDUSTRY	FINANCE
Renewables outcompete fossil fuels as new electricity sources worldwide.	Cities and states are implementing policies and regulations with the aim to fully decarbonize buildings and infrastructure by 2050.	Zero emission transport is the preferred form of all new mobility in the world's major cities and transport routes.	Large-scale deforestation is replaced with large-scale land restoration and agriculture shifts to earth friendly practices.	Heavy industry, including cement, steel, oil & gas - refineries, is being Paris compliant.	Investment in climate transition is beyond \$1 trillion per year and all financial institutions have a disclosed transition strategy.

But this requires strong action by 2020

What?

Four types of integration



1. **Vertical integration**—national, regional, local—lagging regions
2. **Horizontal integration**—across sectors and systems
3. **Natural and human systems integration**—between biodiversity and wetlands, or watersheds, and the city
4. **Poor and Non-Poor**—last mile connectivity; spatial divides
5. **Other types?**

Well known successes—New York, Paris, London, Tokyo, Singapore, Hong Kong, Seoul

Lesser known examples—Integrated urban planning in African cities context—FCV, and low-and-middle income countries—where urbanization is increasingly occurring

Why Now?



Sustainable Cities Impact Program—operationalizing knowledge and investments

Theme I
Evidence-based Spatial Planning—national, regional, local

Theme II
Decarbonizing Urbanization with Infrastructure Integration at national, regional, local scales

Theme III
Building Deep Resilience with smart systems and slum solutions

Theme IV
Maximizing Finance for Sustainable Urban Development

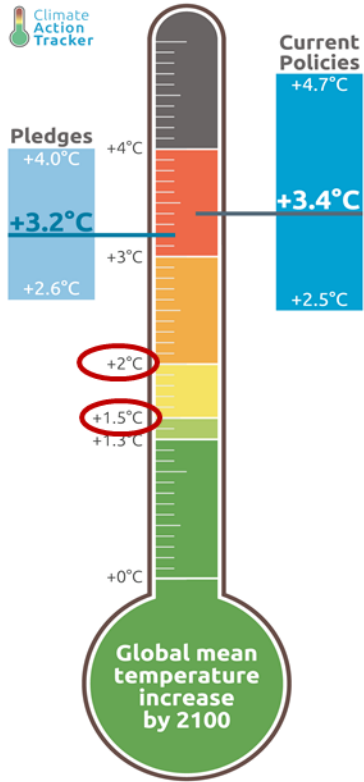
Sectors or themes for integration

- Transport
- Energy
- Solid Waste
- Biodiversity
- Climate Change
- Governance
- Water

Country and city selection based on **impact potential**

Takeaway

Grant offers **significant flexibility** with several thematic entry points.



How?



Integrated Planning Solutions

Evidence-based spatial planning for practical multi-sectoral solutions to build sustainable cities in developing countries



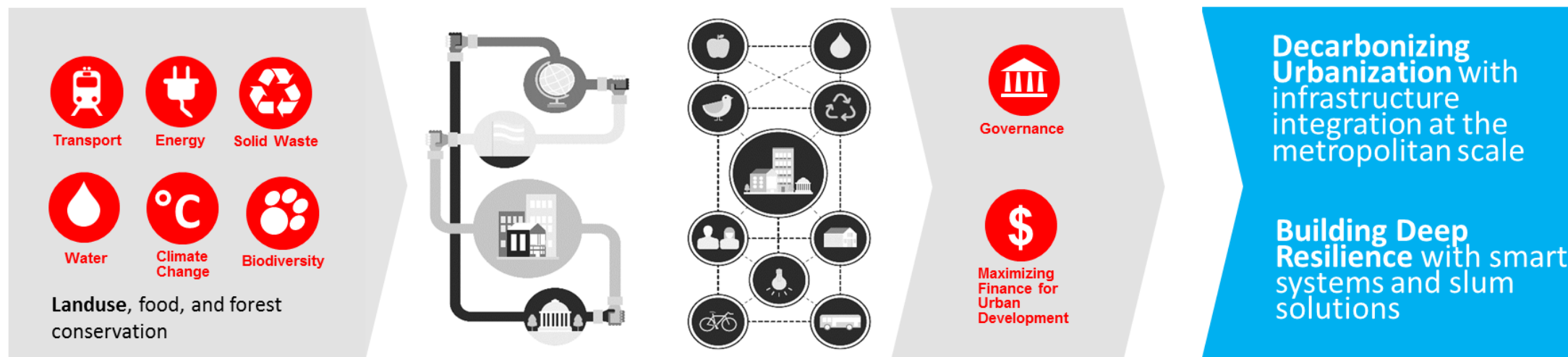
MEANS



Integrated Plan + Finance + Implement



ENDS



1 What? Sectors or themes for integration

Degrees of integration

- Spatially coordinated but discrete and dispersed multi-sector interventions
- Spatially clustered and coordinated city systems and services
- Metropolitan scale systems integration and co-production

2 How? Multi-sectoral, clustered, practical solutions, with institutional arrangements that maximize finance for urban development

Objective* of the Sustainable Cities Impact Program is to enable delivery of international environmental convention priorities by

- **Biodiversity**—Integrating biodiversity and ecosystem values in urban planning
- **Climate Change**—Urban-related GHG emissions avoidance
- **Land Degradation**—Sustainable management of production systems in urban and peri-urban areas
- **International Waters**—Shared water ecosystems (fresh or marine) under new or improved cooperative management

3 Results Sustainable Cities delivering global and local environmental benefits

Expected outcomes* and GEBs for the impact program will align with the MEAs, as follows:

- Mitigation of GHG emissions through energy efficiency;
- Removal or disposal of hazardous chemicals, especially Mercury;
- Conservation of threatened wildlife species and habitats; and

GEF7 Scaleup support for Integrated Urban Planning

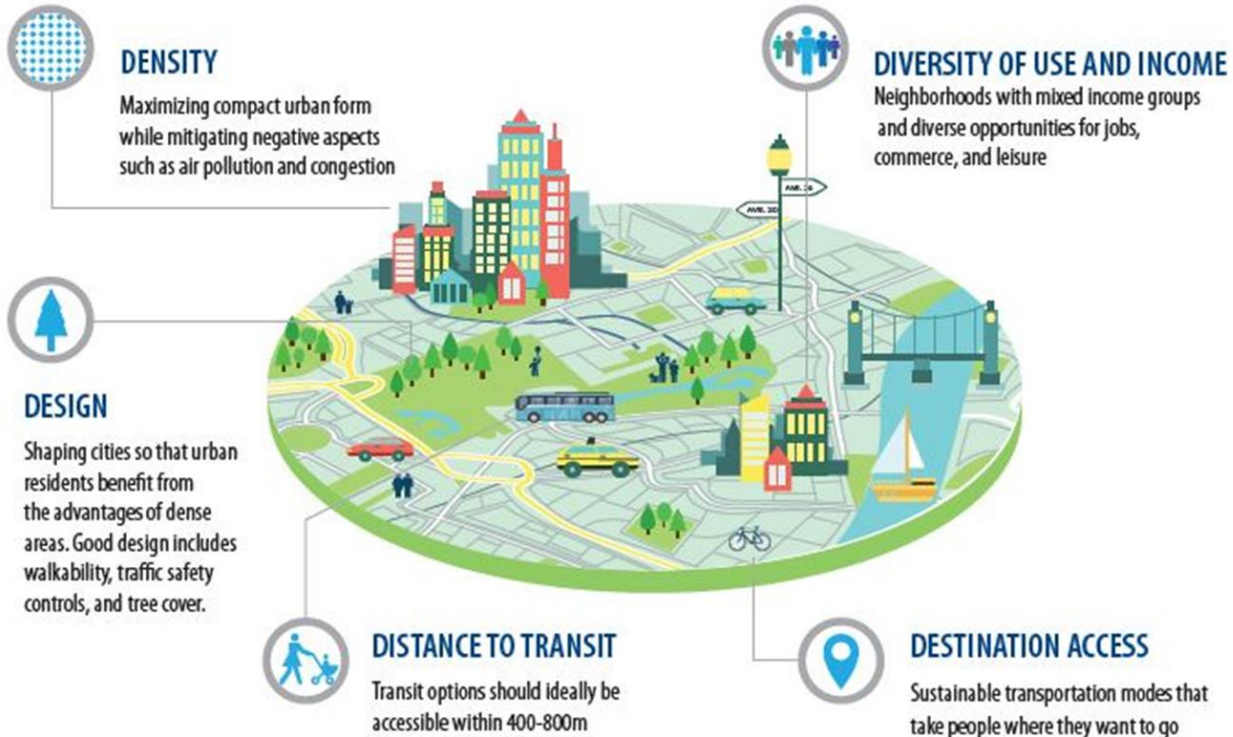


The 5D Compact City Framework Is An Essential Tool

A city can combine multiple nodes of high-density development with a rich mix of housing, jobs and amenities at the neighborhood level, connected via transit lines and surrounded by medium and low-density areas in the rest of the metropolitan area.

HIGH DENSITY: Approx. 15,000 persons/km²

LOW DENSITY: Approx. 7,500 to 10,000 persons/km²



Toolkit Type: Website

KNOWLEDGE PRODUCTS



Integrated Solutions

Expanding Supply—Land Readjustment

Sustainable Cities | Pool, Curate, and Apply Global State-of-the-knowledge

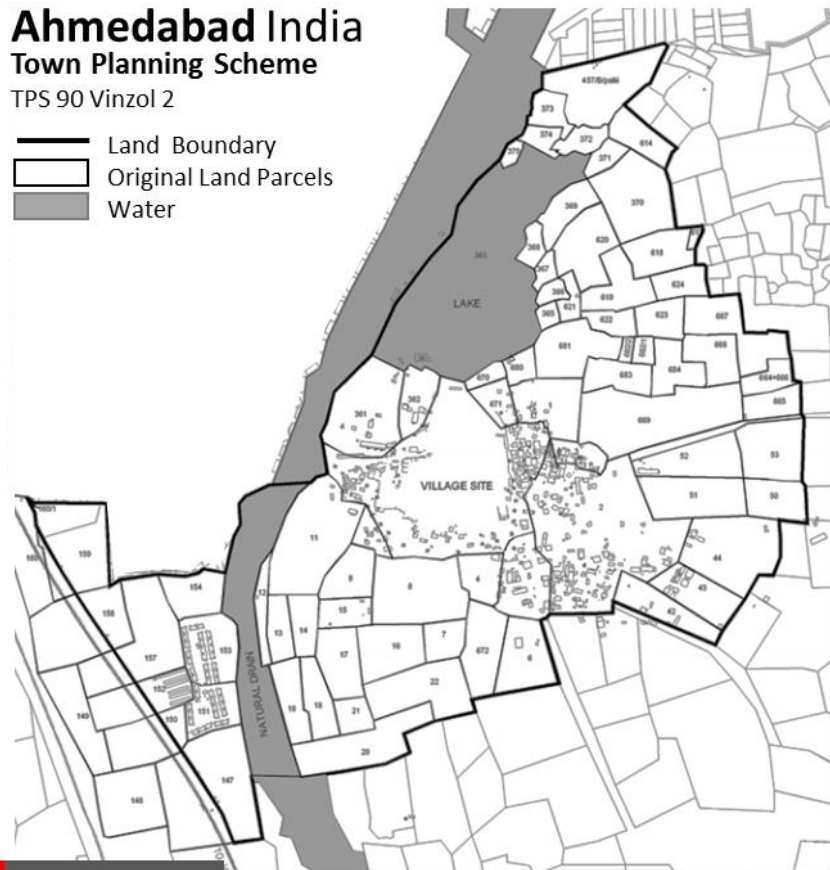
IDEAS for
Horizontal Integration
 GPSC—Knowledge Product



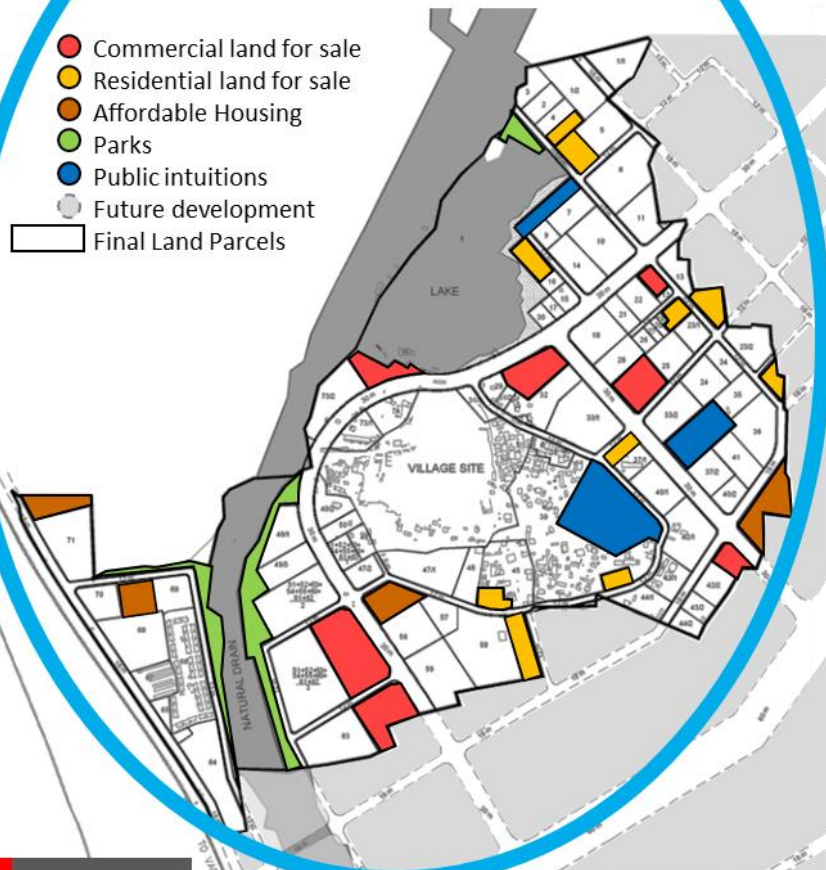
Ahmedabad India Town Planning Scheme

TPS 90 Vinzol 2

- Land Boundary
- Original Land Parcels
- Water



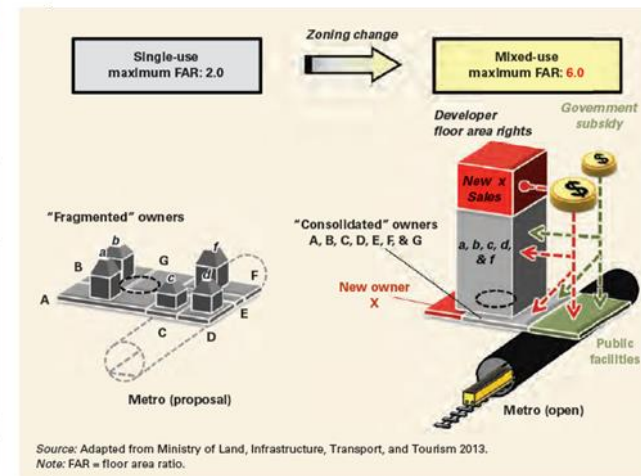
Before



After

Source: Adapted from Ballaney (2008), Author analysis

Density Diversity



Source: Adapted from Ministry of Land, Infrastructure, Transport, and Tourism 2013.
 Note: FAR = floor area ratio.

Shared land for prosperity—Land parcels rezoned, development densified, and land holdings proportionally readjusted to plan, finance, and deliver environmental infrastructure, affordable housing, and public institutions—parks, schools, health services.

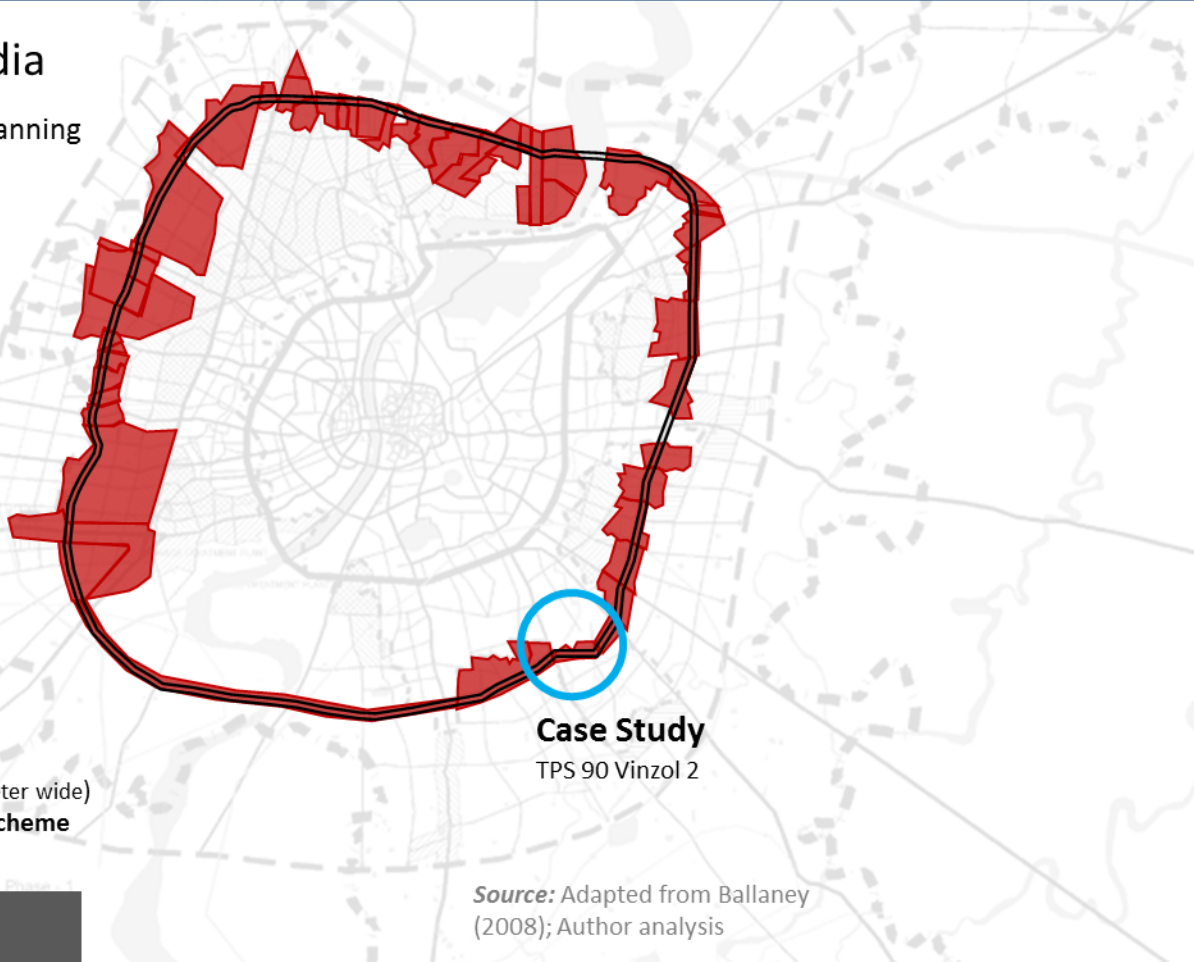
Integrated Solutions

Expanding Supply—Land Readjustment

Sustainable Cities | Pool, Curate, and Apply Global State-of-the-knowledge

Ahmedabad India

City Development Plan
overlayed with Town Planning
Schemes



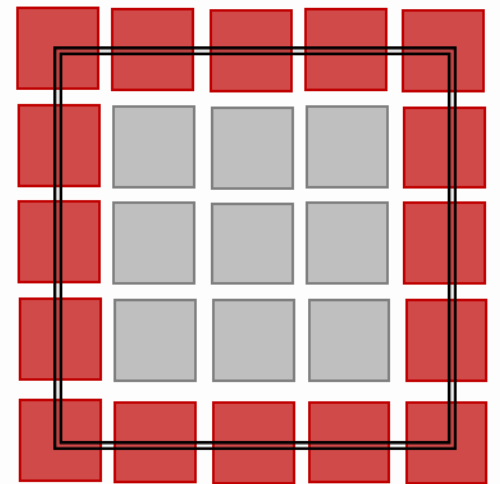
IDEA
Roster of case summaries—strategic knowledge for expanding solutions—by geography and type of solutions

Case Study
TPS 90 Vinzol 2

Source: Adapted from Ballaney (2008); Author analysis

City-wide Solution

Sum greater than parts



How can we adapt such solutions for other regions?

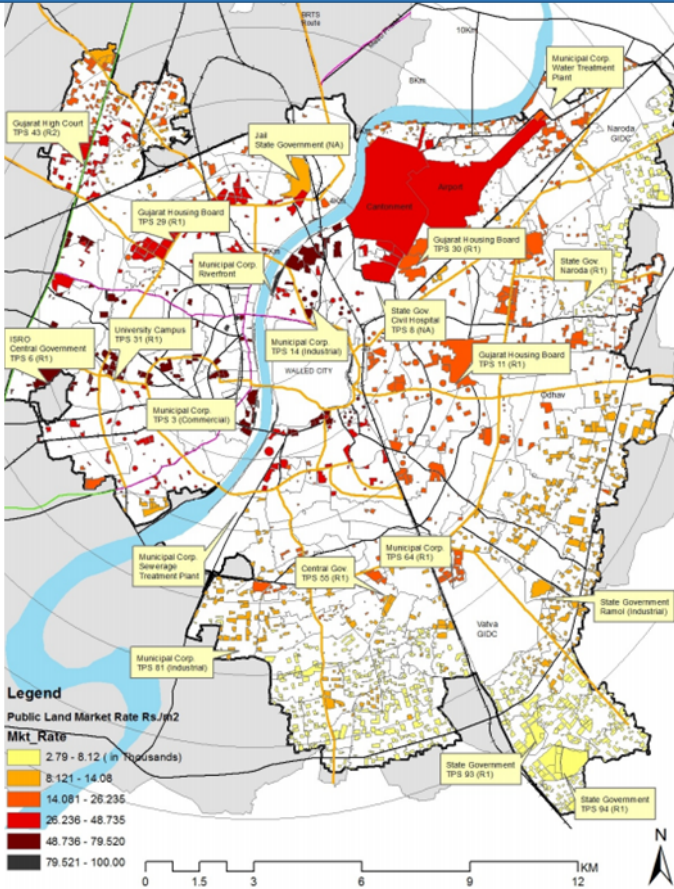
Outcome

Scaled-up by contiguous replication—Right of way for a 76 kilometer long ring road (beltway) was acquired through aggregation of Town Planning Schemes. About 100 Town Planning Schemes to serve site and service needs of 1.5 million people.

Integrated Solutions

Expanding Supply—Vacant Land Utilization

Sustainable Cities | Pool, Curate, and Apply Global State-of-the-knowledge



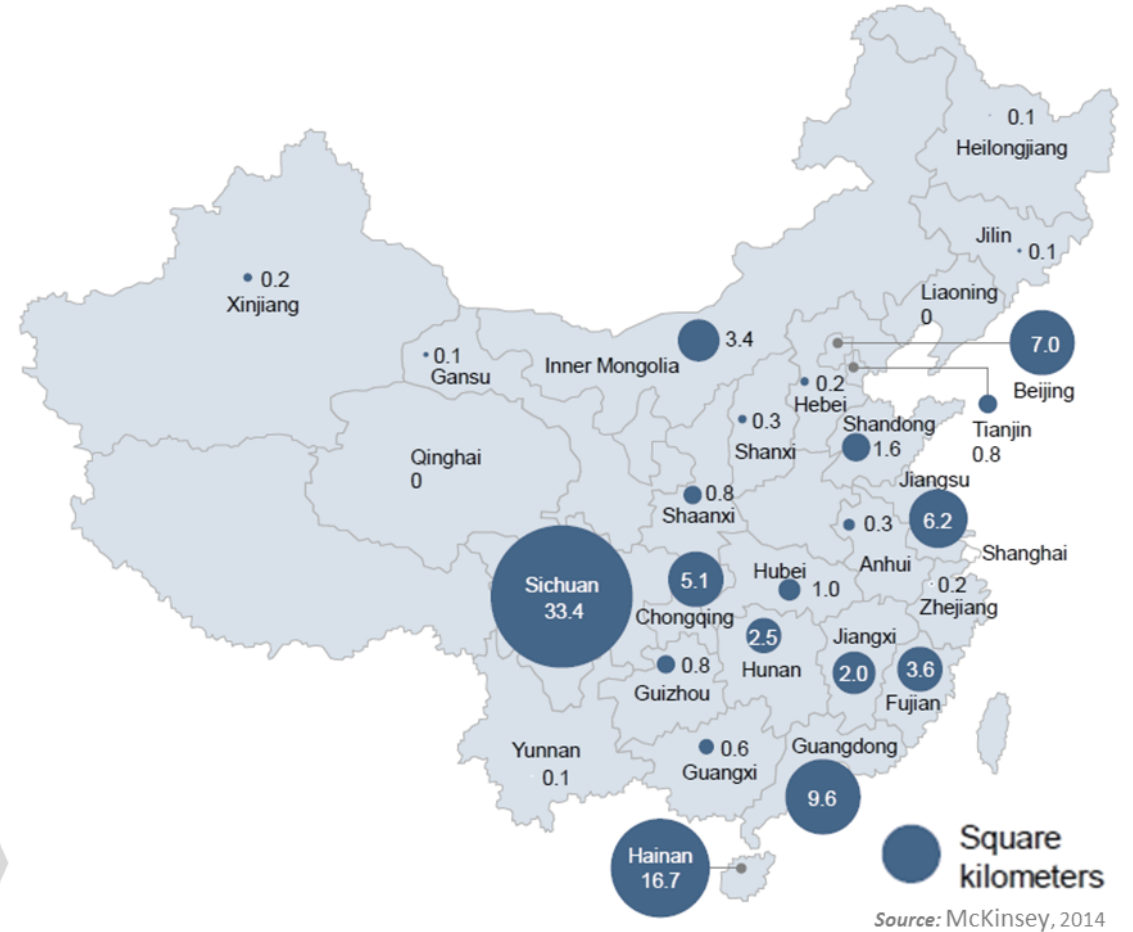
▶ **Ahmedabad India**
 Value of unused (non-slum) public land (2010 prices)

- **\$9.8 billion** if land is optimally developed at market rates*
- **Equal to twice the 20-year urban infrastructure investment needs** or
- **\$1,800 per capita** (city population is 5.57 million)

*Note: \$3.6 billion if land is partially developed and valued at official government rates that are significantly below market rates.

Source: World Bank, 2013

China
 Vacant land inspection revealed 97 square kilometer in cities



Source: McKinsey, 2014

Outcome

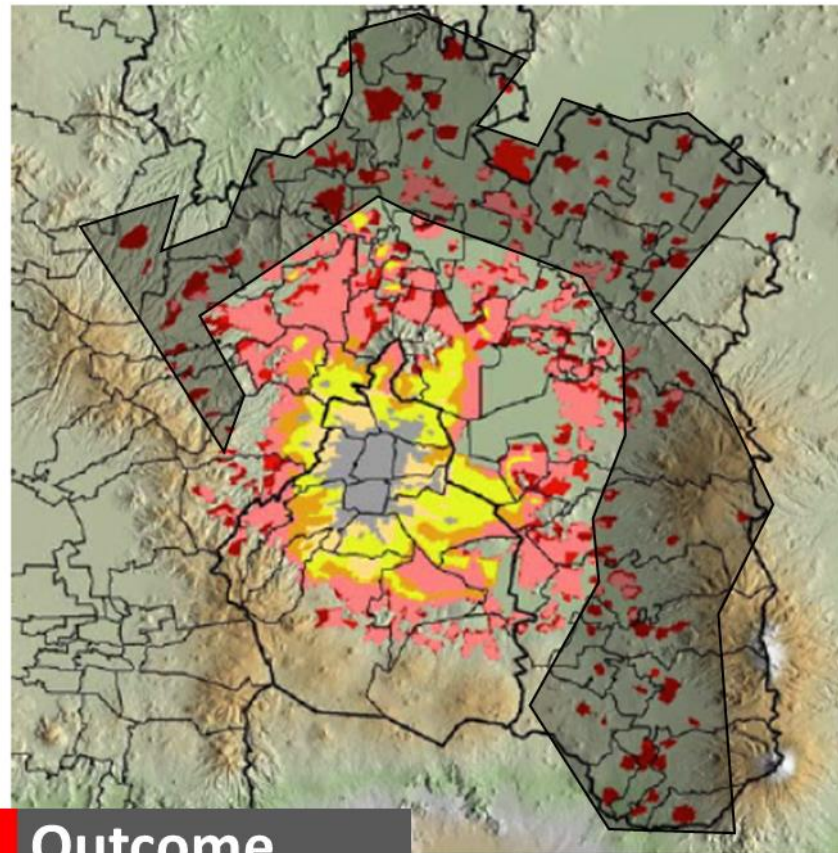
Commercializing public land for shared prosperity—through sale or lease, reclassification of land use, enhanced density—can unlock resources adequate to finance city-wide environmental infrastructure, slum upgrading, and slum prevention.

Crowd in, not sprawl out

Expanding Supply—Land Readjustment

Sustainable Cities | Pool, Curate, and Apply Global State-of-the-knowledge

Urban expansion of the Mexico City metropolitan areas, 1950–2006



Ratio of vacant houses over total housing (national)



Take-away

Environmental infrastructure, site and services, and affordable housing could utilize vacant or low-density within urban core serviced land in the proximity of job centers. With added benefits of reducing carbon footprint.

Source: World Bank, 2013; Eulich and Villagran (2010) in McKinsey, 2014 with Author analysis.

Outcome

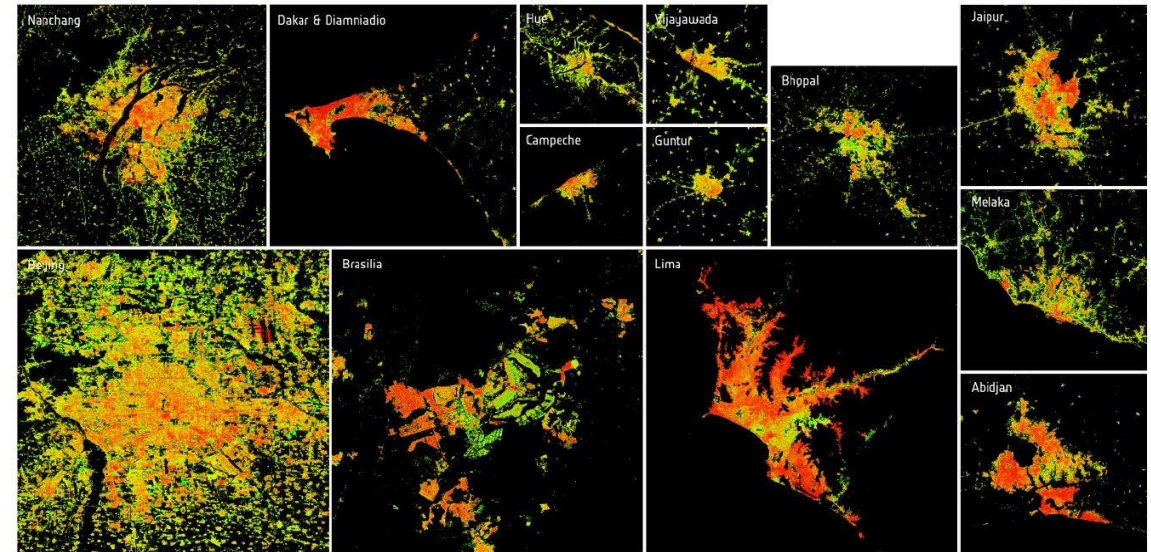
Peri-urban housing for the poor without adequate transportation to job centers, low quality of construction, and absence of social services resulted in high vacancy rates. Additionally, peri-urban sprawl significantly increases urban GHG emission. Mexico City has introduced policies to densify.

Leveraging Big Data for Smart and Slum Solutions



Geospatial analytics for better evidence-based spatial planning and urban management.

GEF-7: Leveraging new partners for data and analysis methods to further support cities.

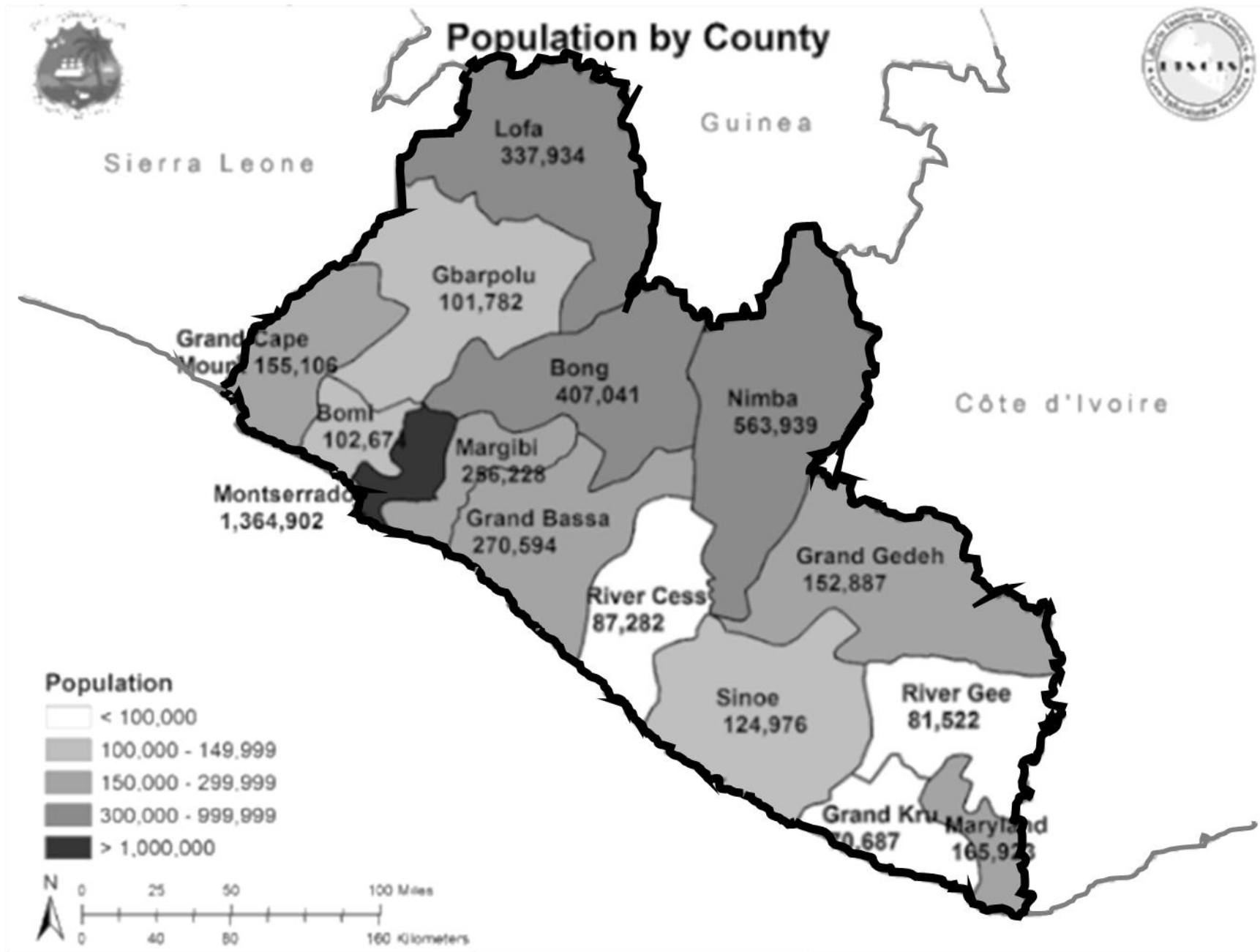


Imagery provided by the European Space Agency to GPSC participating cities

World Bank's Data Collaboratives with technology companies to solve development challenges

Liberia

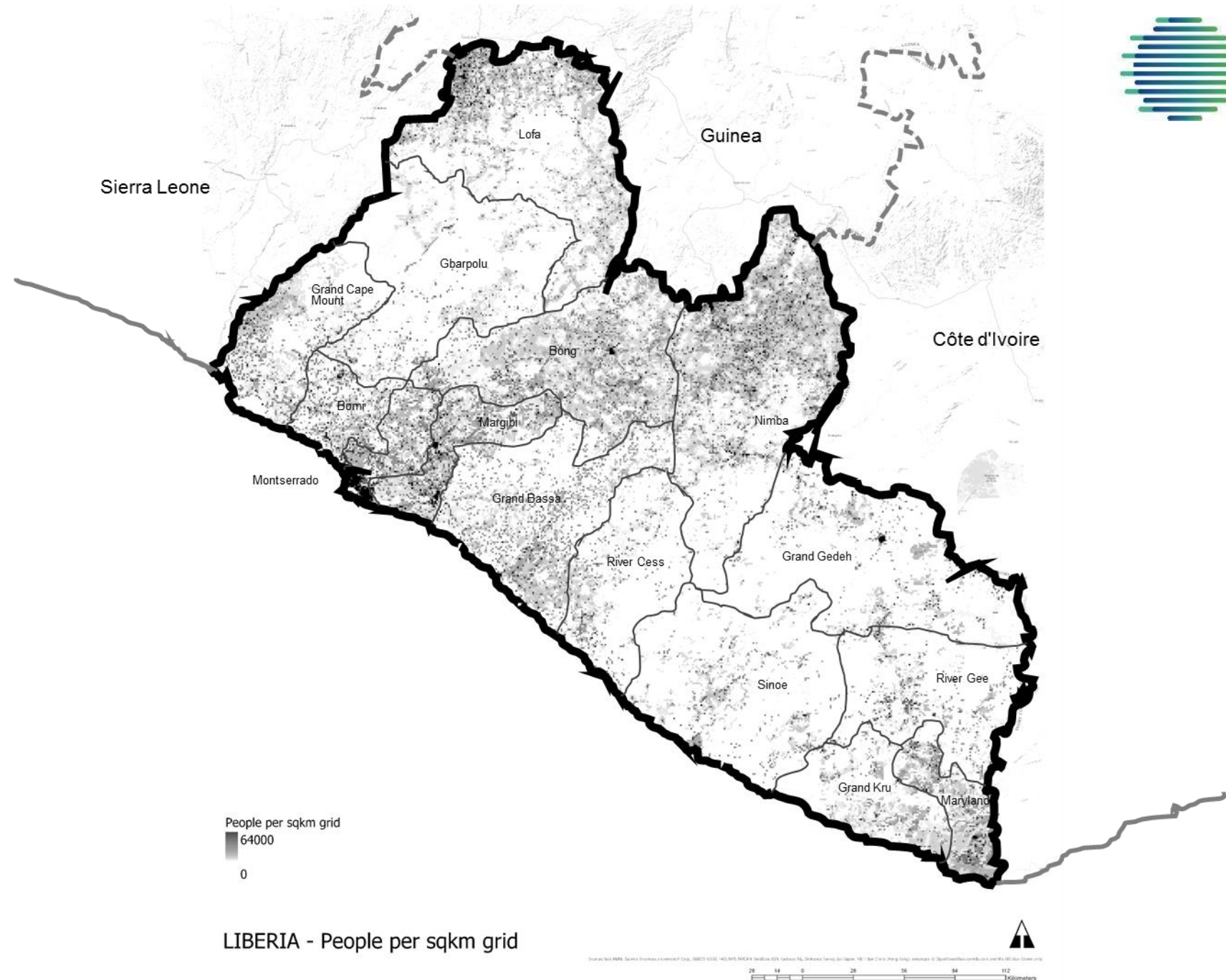
Population density by census



GPSC

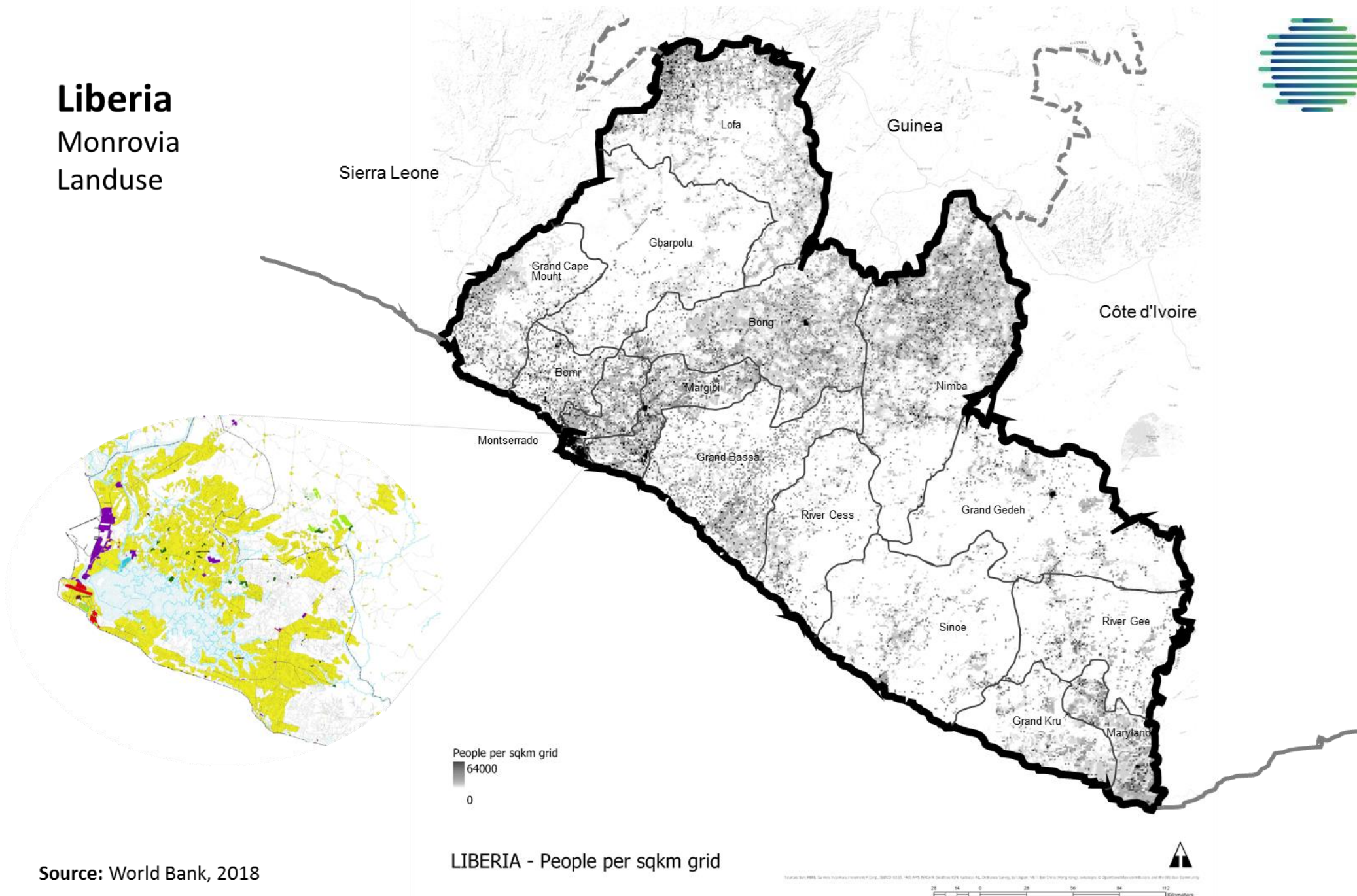
Liberia

Population density using geospatial big data



Liberia

Monrovia
Landuse

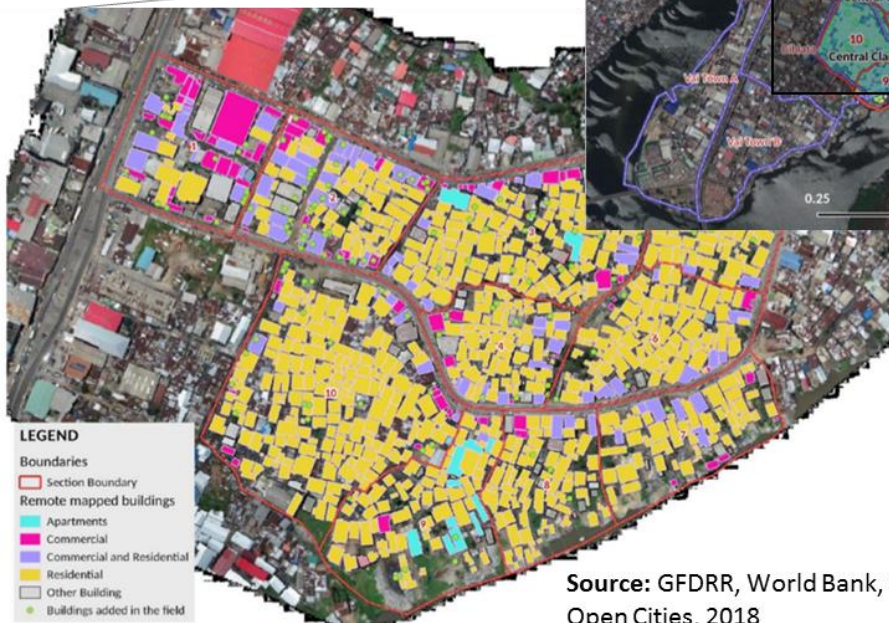
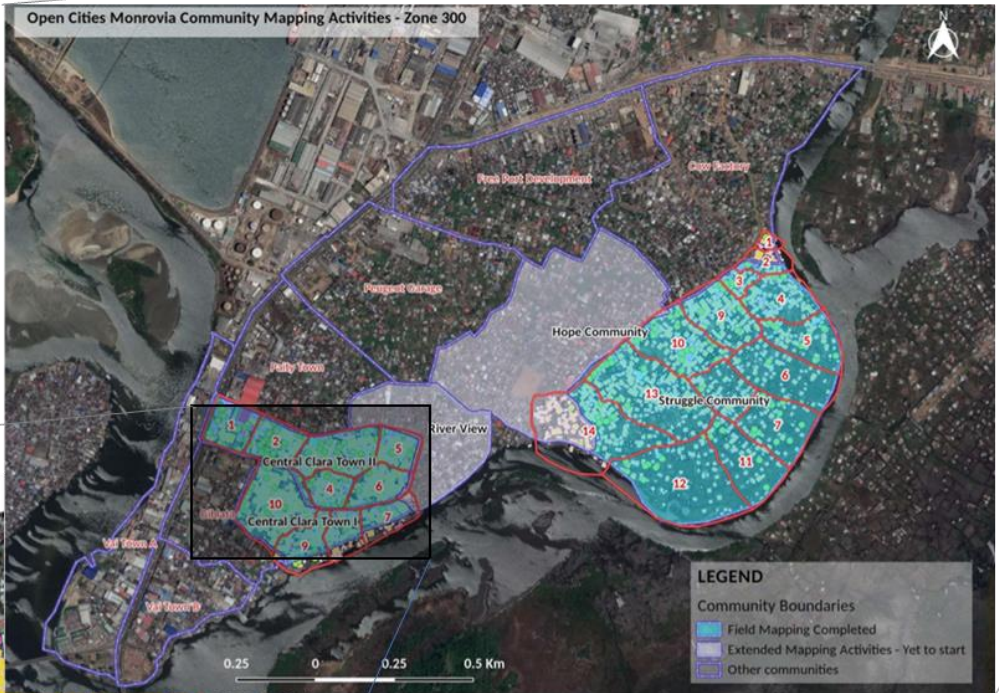


Source: World Bank, 2018

Liberia

Monrovia

Landuse in Slums

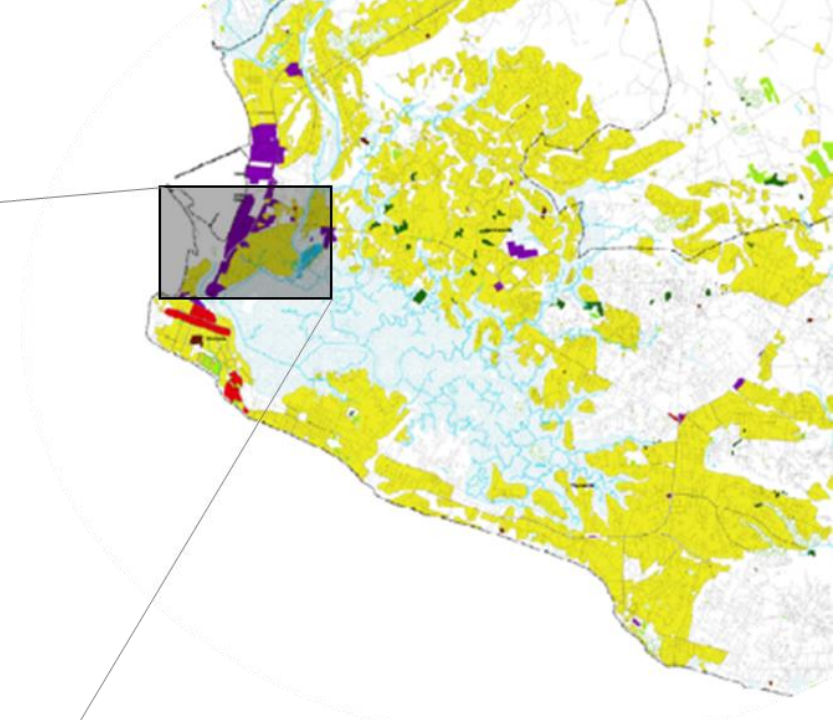


Source: GFDRR, World Bank, 2018; Open Cities, 2018

Community Slum Mapping—
slum landuse and SES.

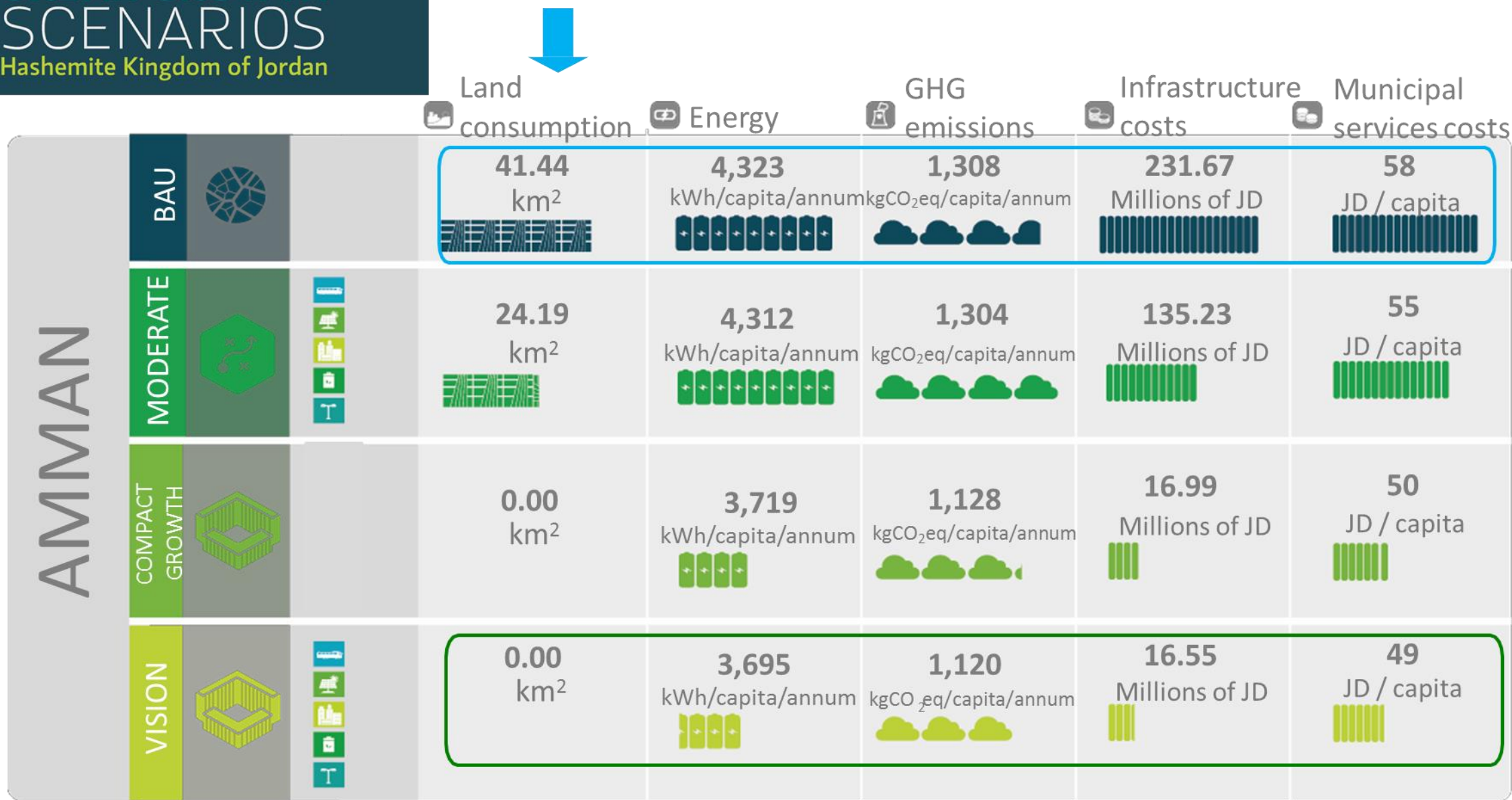
Mangroves displaced by slums

- **“Sanitation** >80% practice open defecation
- **Water** >85% lack access to safe drinking water
- **Solid waste** >95% don’t have access to waste collection
- **Drainage & Health** >60% live in wet conditions year round and >90% at risk of flooding and epidemic (Ebola, malaria, diarrhea and cholera), no reliable health care.”* (uneven SES data reliability)



URBAN GROWTH SCENARIOS

Hashemite Kingdom of Jordan



■ BAU
 ■ Moderate
 ■ Compact Growth
 ■ Vision

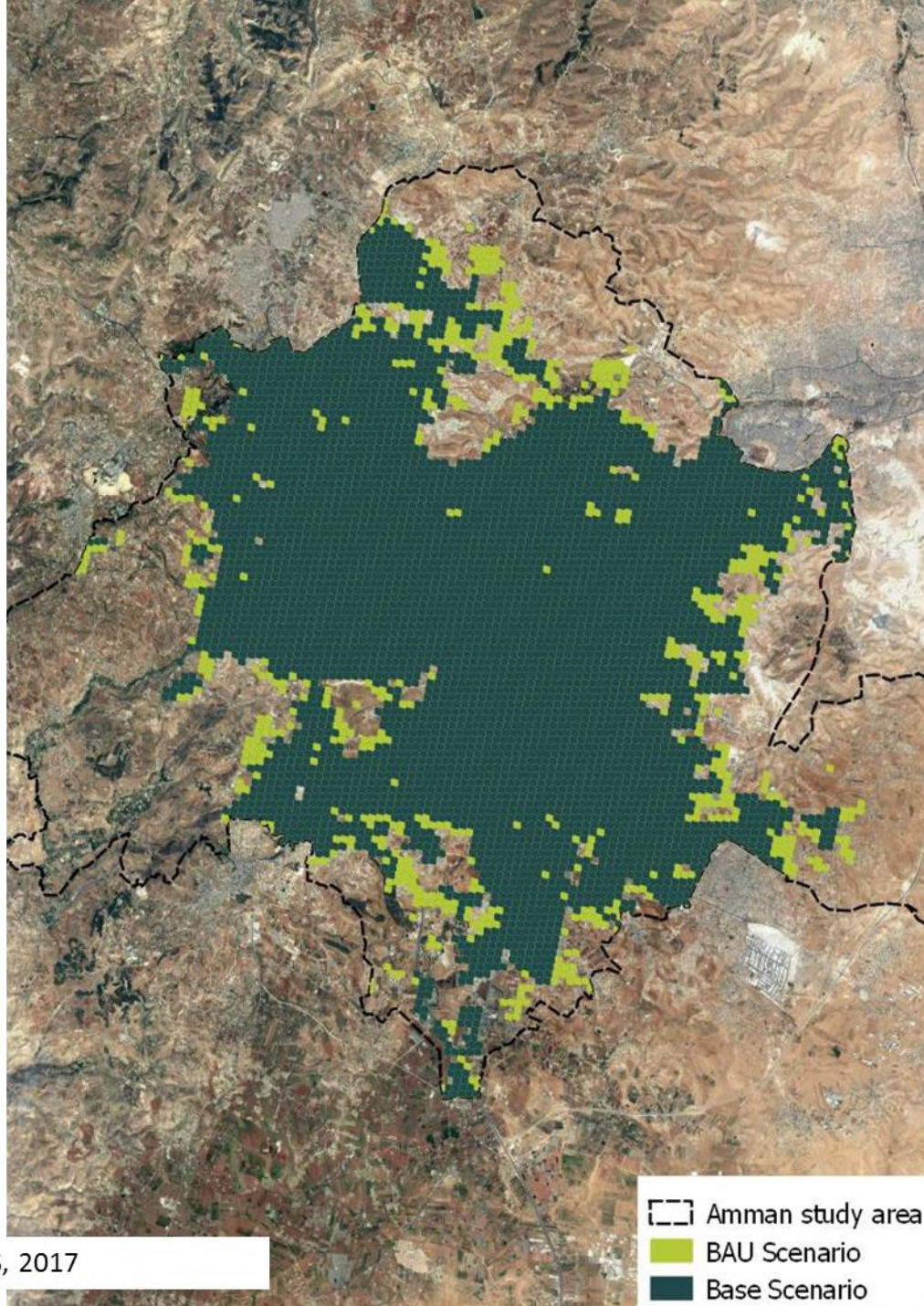
Land Use Changes in Amman

BAU vs Compact

Urban Growth Scenarios offered basis for policymaking.

California, Mexico City, Amman, West Bank and Gaza, Abidjan

Source: World Bank, 2017; CAPSUS, 2017



Mexico City

Urban growth
Scenarios informed
policy choices.

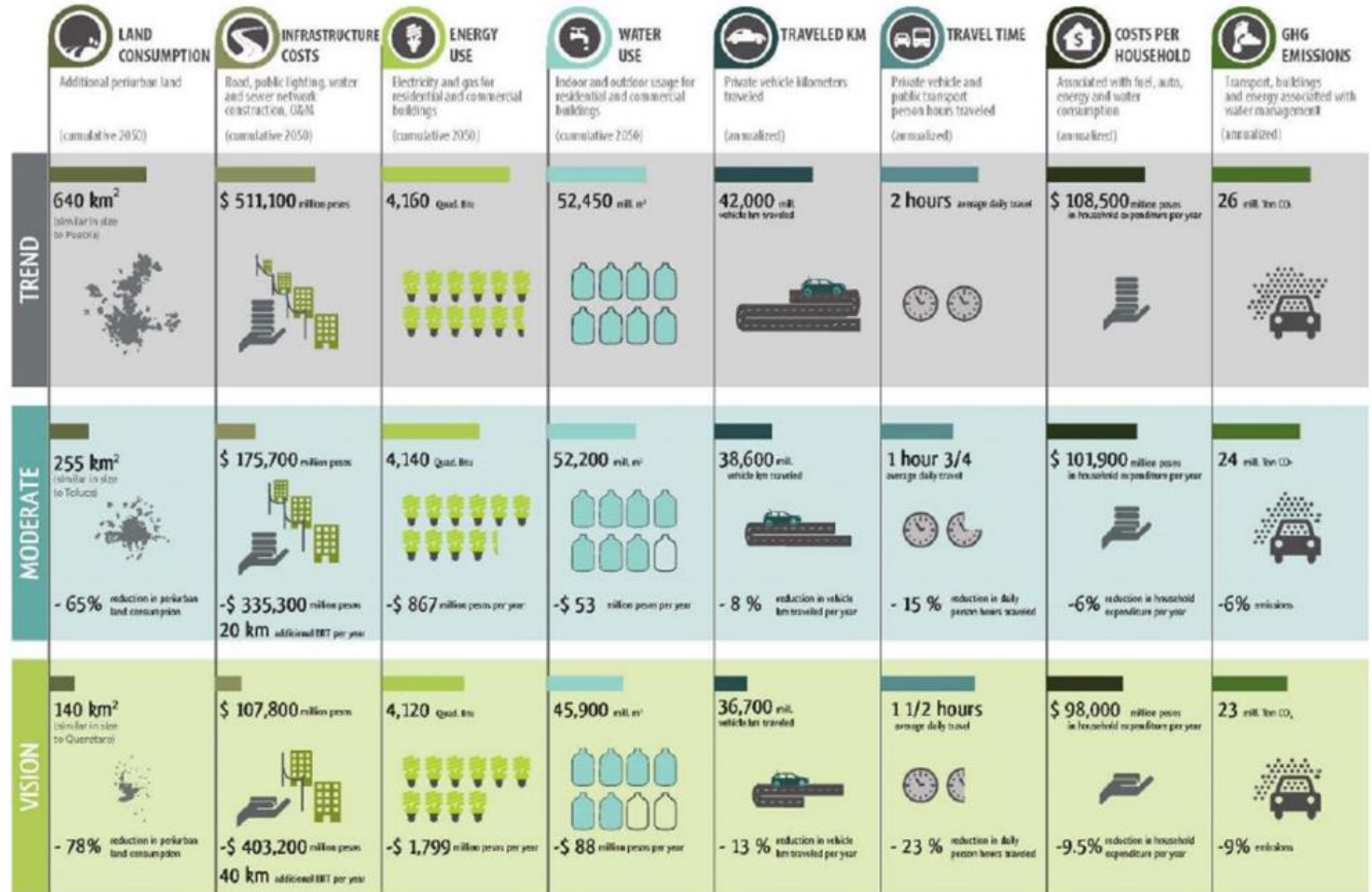


Fig 6. Mexico City RapidFire scenarios matrix (Source: Calthorpe Analytics)



Thank you!
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