

Global Development Assistance GDA - Urban Sustainability

Accelerating Impact

ESA's GDA Urban | Earth Observation for Urban Development

Presented by Gregor Herda | GAF AG

Cities4Biodiversity First Deep Dive Learning, 7 April 2022

Implemented by:



Partners:



AUSTRIAN INSTITUTE
OF TECHNOLOGY





*Unlock the full benefits of Earth Observation-based information through the **mainstreaming** of EO into development operations and financing, and **skills transfer** to IFI and client state stakeholders*

We provide Earth Observation products and services

ESA will carry out **Knowledge Development** activities (i.e. information products, user-oriented analytics tools) that answer specific development operational needs of World Bank projects and clients.

Informational content

- Knowledge material
- Methodologies
- Documentation on workflows

Valued added products

- Geospatial data products
- Earth observation analyzed data outputs

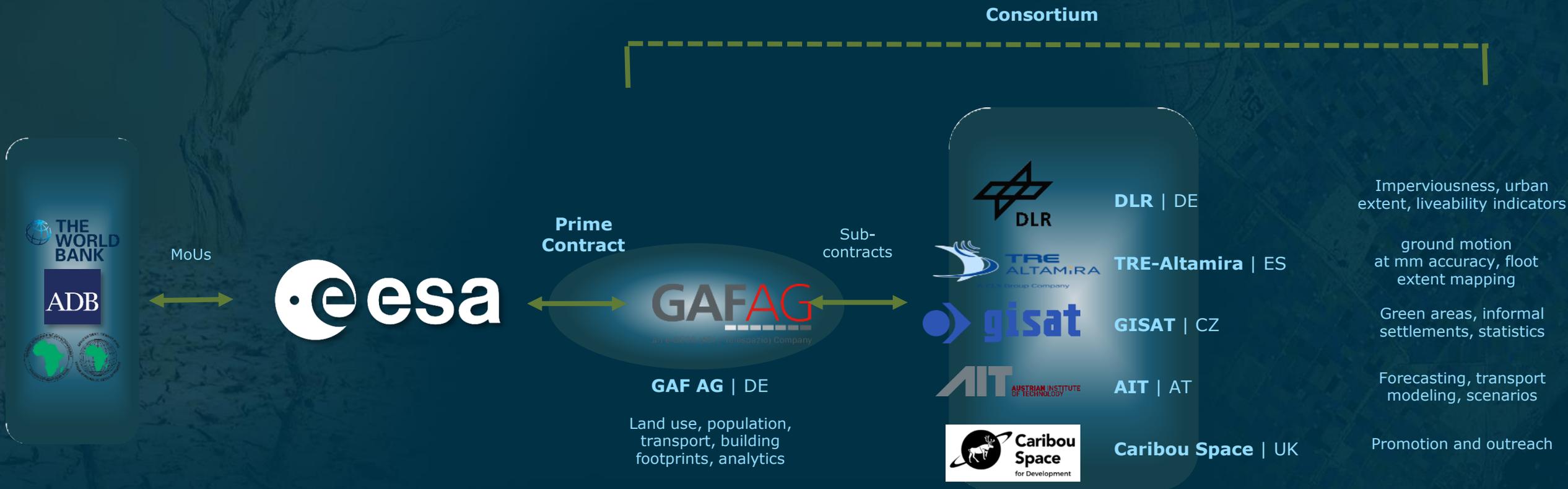
User-oriented analytical tools

- Online web platforms
- Cloud processing environments

The GDA program covers the following thematic clusters:

-  *Disaster Resilience* – kicked off in September 2021
-  ***Urban Sustainability*** – kicked off in February 2022
-  *Climate Resilience* – kicked off in December 2021
-  *Fragility, Conflict, Security* – kicked off in January 2022
-  *Marine Environment & Blue Economy* – to be kicked off in Q2 2022
-  *Agriculture* – to be kicked off in Q2 2022
-  *Clean energy* – to be kicked off in Q3 2022
-  *Water resources* – to be kicked off in Q4 2022

GDA Urban: Who We Are



The following **categories/types of activities** have been identified as some of the use cases in which specific EO product/information technical developments shall be used and assessed for impact.

Land accounting and territorial development

Building footprints , heights and other attributes

Predicting deprivations in housing and basic services, by mapping slums and informal settlements

Supporting Nature-Based Solutions (NBS) in cities

Characterising urban areas in terms of livability and health-related issues

Supporting the planning and building of transport networks

Effectiveness analysis of urban master plans

Socioeconomic indicators

The projects supported will be selected on the following three main criteria:

Innovative

The request corresponds to **innovative services or products that require customization** and therefore are not already and readily available through commercial entities

Demand driven

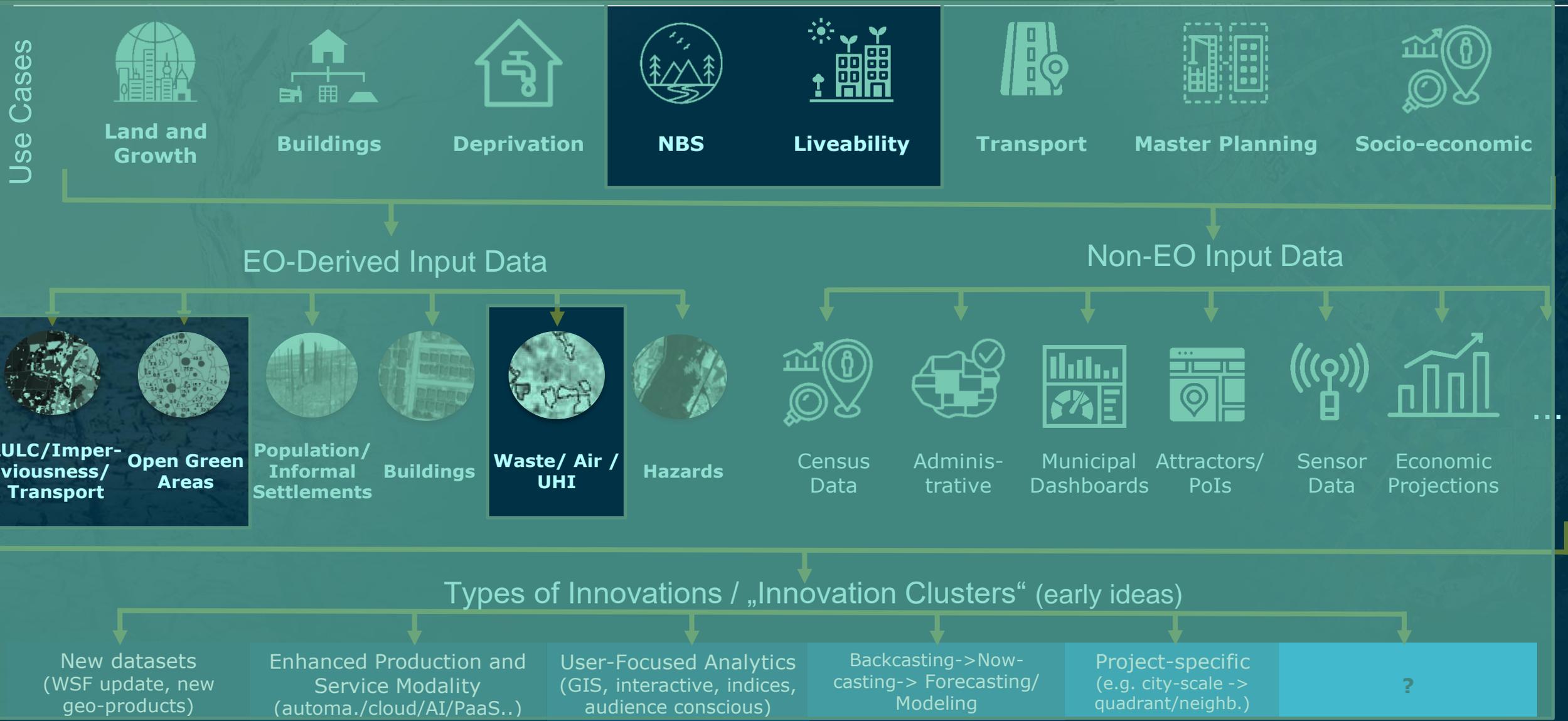
The need is **demand driven** and has been clearly expressed by one, or preferably several, IFI teams or local authorities with an interest for the same tools or products

Uptake

The service or product requested has significant potential for **operational uptake and adoption** in client countries (i.e. aligned capacity building or skills transfer activities)

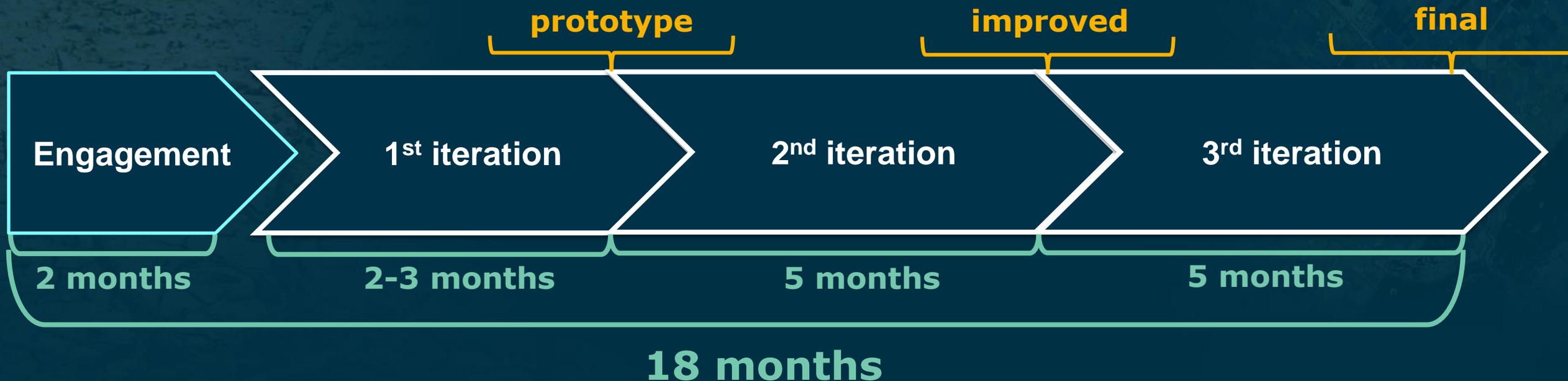
GDA Urban: From Use Case to Innovation

Innovative



18 months support through an agile approach

- **2 months engagement phase** aiming at identifying projects / programs to be supported
- **18 months support** organized in smaller **iteration cycles** of around **5 months**.
- **Agile approach** with continuous exchange with the team and feedback loops.



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Mapping Green Areas for City Resilience

Presented by Gregor Herda | GAF AG in collaboration with GISAT

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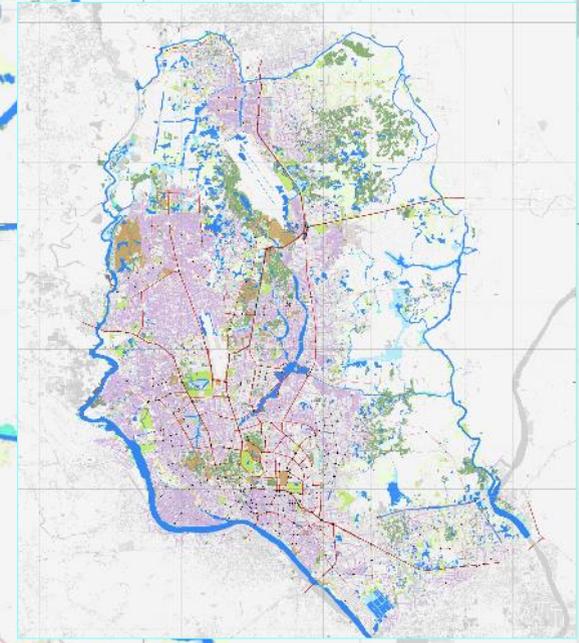
Caribou
Space
for Development

The Problem(s) Earth Observation-derived Geospatial Solutions are well-suited to solve

- **Data scarcity:** persistent challenge to consistently and efficiently map existing open and green areas
- **Resource scarcity:** costly in-situ surveys often no option for resource-constrained local authorities in developing countries
- **Generating insights:** challenge of turning EO-derived information into easily comprehensible, actionable insights for diverse audiences – “*So what?’ moment*”

City-wide public spaces inventory based on EO

- Dhaka (BD)
- Karachi (PK)
- Lima (PE)
- Bamako (ML)
- Fallujah (IQ)
- Ramadi (IQ)



Dhaka - Green and Open Areas (GOA)

Orange	Square - Neighbourhood	Light Green	Green - Linear, Green - Linear
Light Orange	Square - Pocket	Dark Green	Green - Linear, Fossil & Woodland
Yellow	Square - Suburban	Light Green	Green - Other
Light Green	Other open space	Dark Green	Green - Sport & Leisure
Blue	Market / Open sky	Dark Grey	Inaccessible potentials (IP)
Light Blue	Waterfront	Light Purple	Streets with public space potential
Light Green	Park - Neighbourhood	Light Purple	Residential fabric streets

Transport network

- Thick red line: Main road
- Thin red line: Primary
- Thin orange line: Secondary
- Thin black line: Tertiary

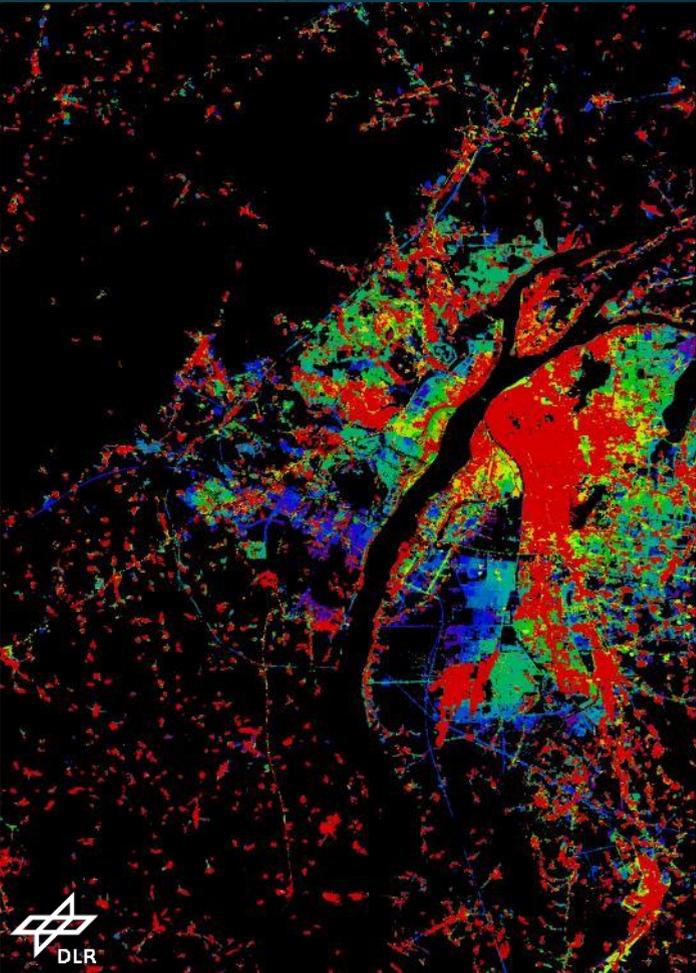
Neighbourhood accessibility

- Black dot: 1
- Black dot: 4
- Black dot: 5

Step 1 | Understanding the Urban Context



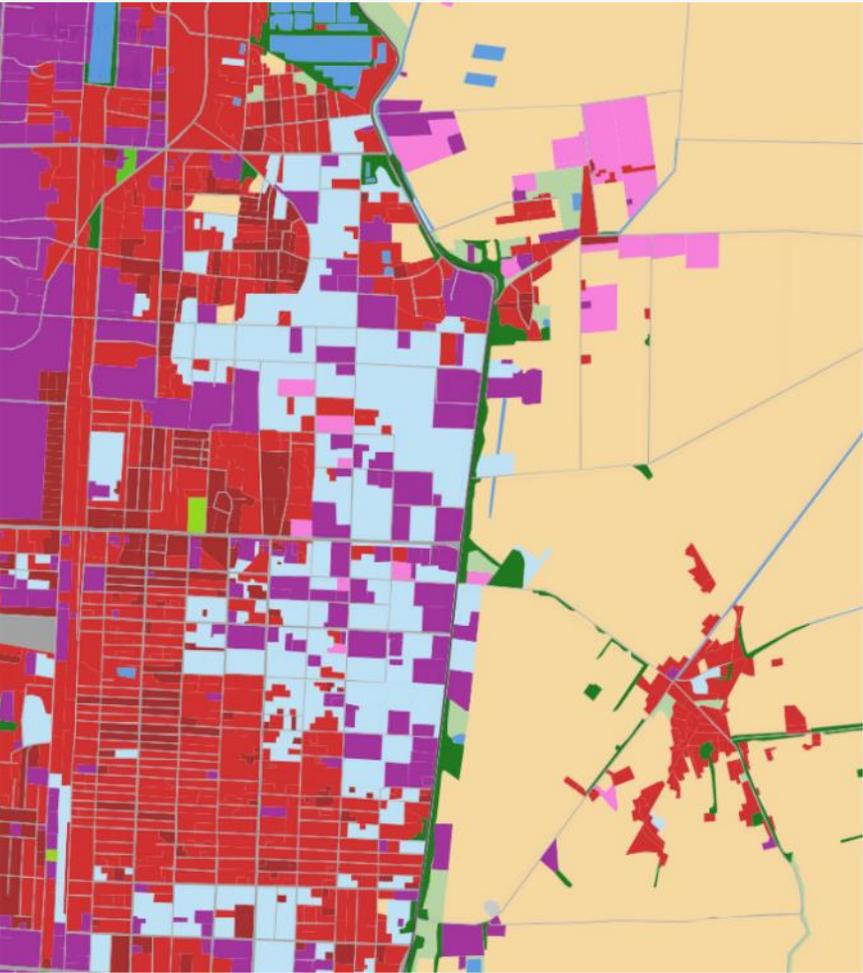
Evolution



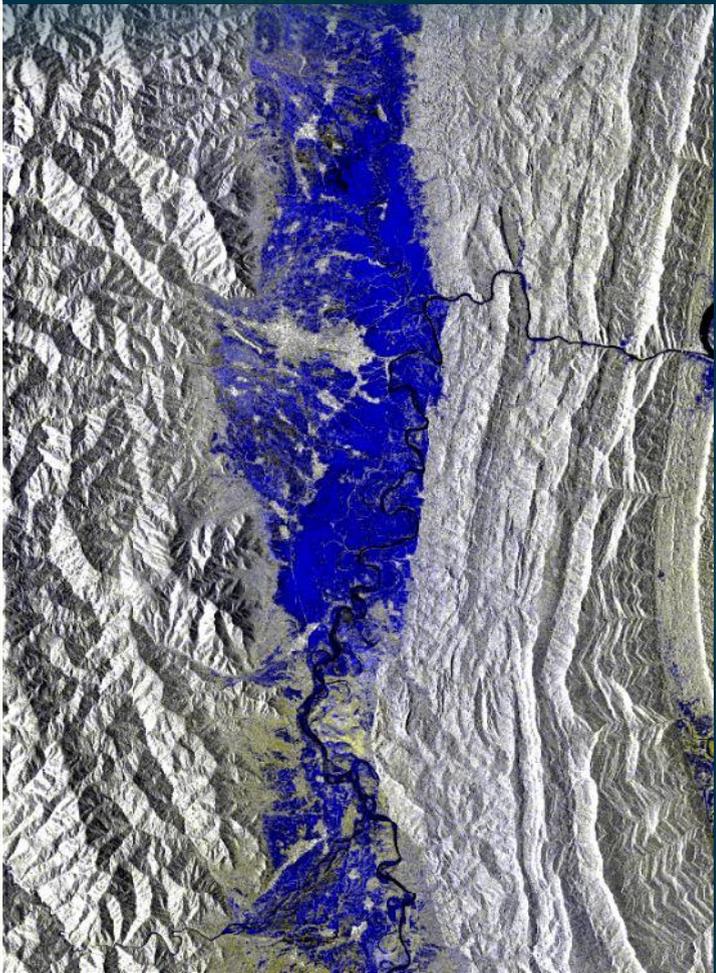
WSFEvolution

- 2015
- 2014
- 2013
- 2012
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- 2010
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- 1985

Assets



Risks

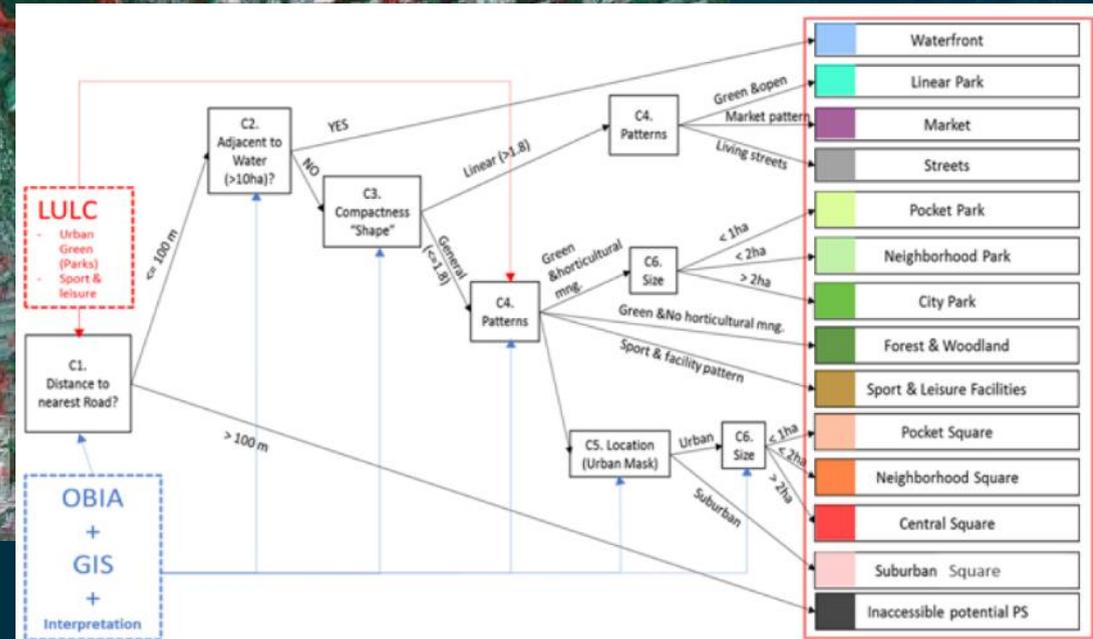
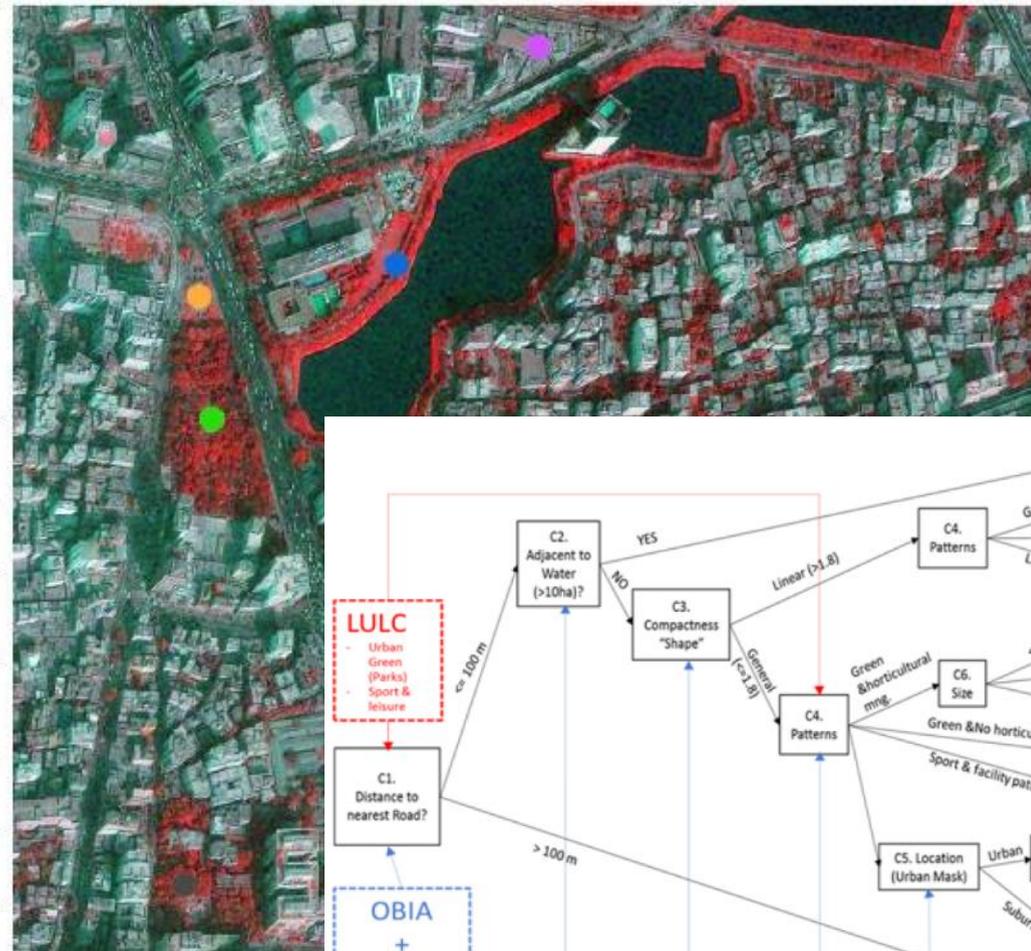


Step 2 | Characterisation of Public Spaces

Public-space type and subtype

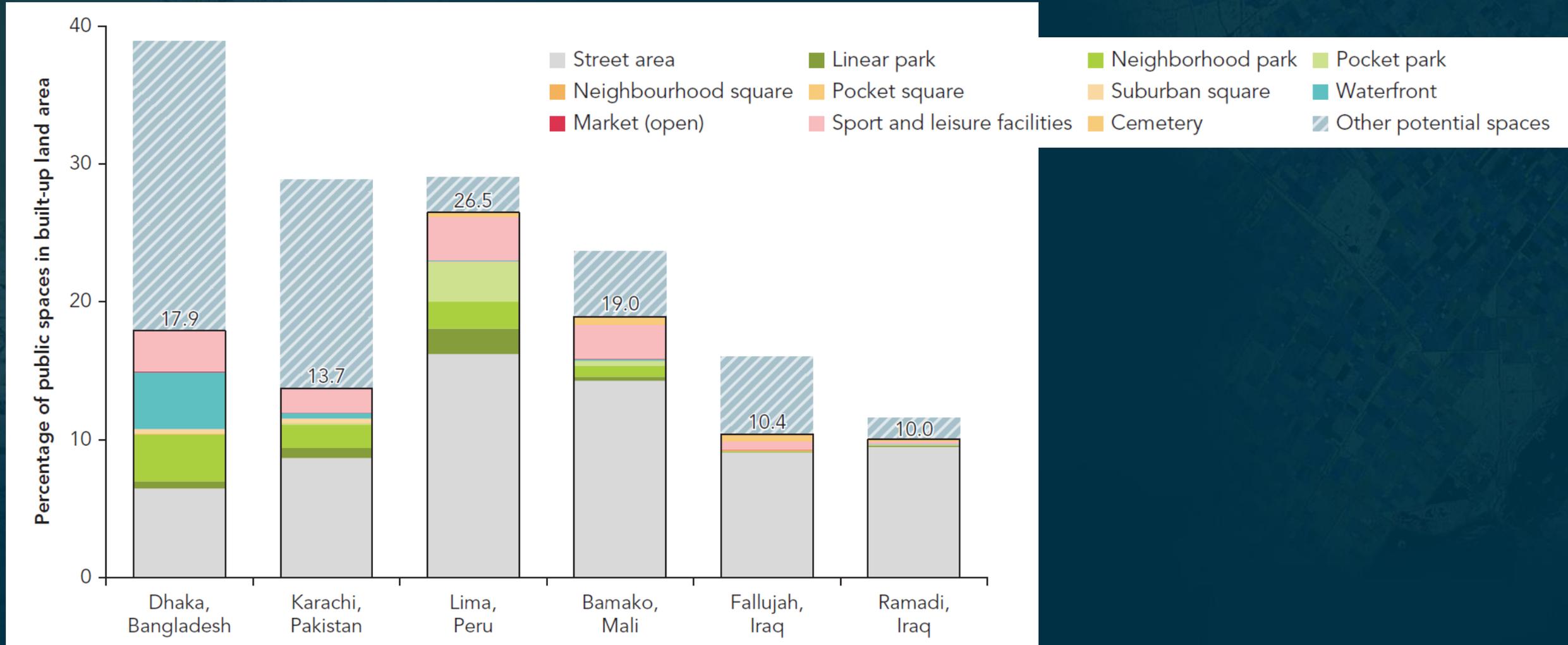
- | | |
|---------------------------|--|
| Open and green area (OGA) | <ul style="list-style-type: none"> ● Pocket square, neighborhood square, city square, suburban square ● Pocket park, neighborhood park, city park, linear green ● Waterfront ● Cemetery ● Other potential areas |
| Street * | ● |
| Facility * | <ul style="list-style-type: none"> ● Open markets ● Sport and leisure facilities |

* with support of Open Street Map (OSM) dataset



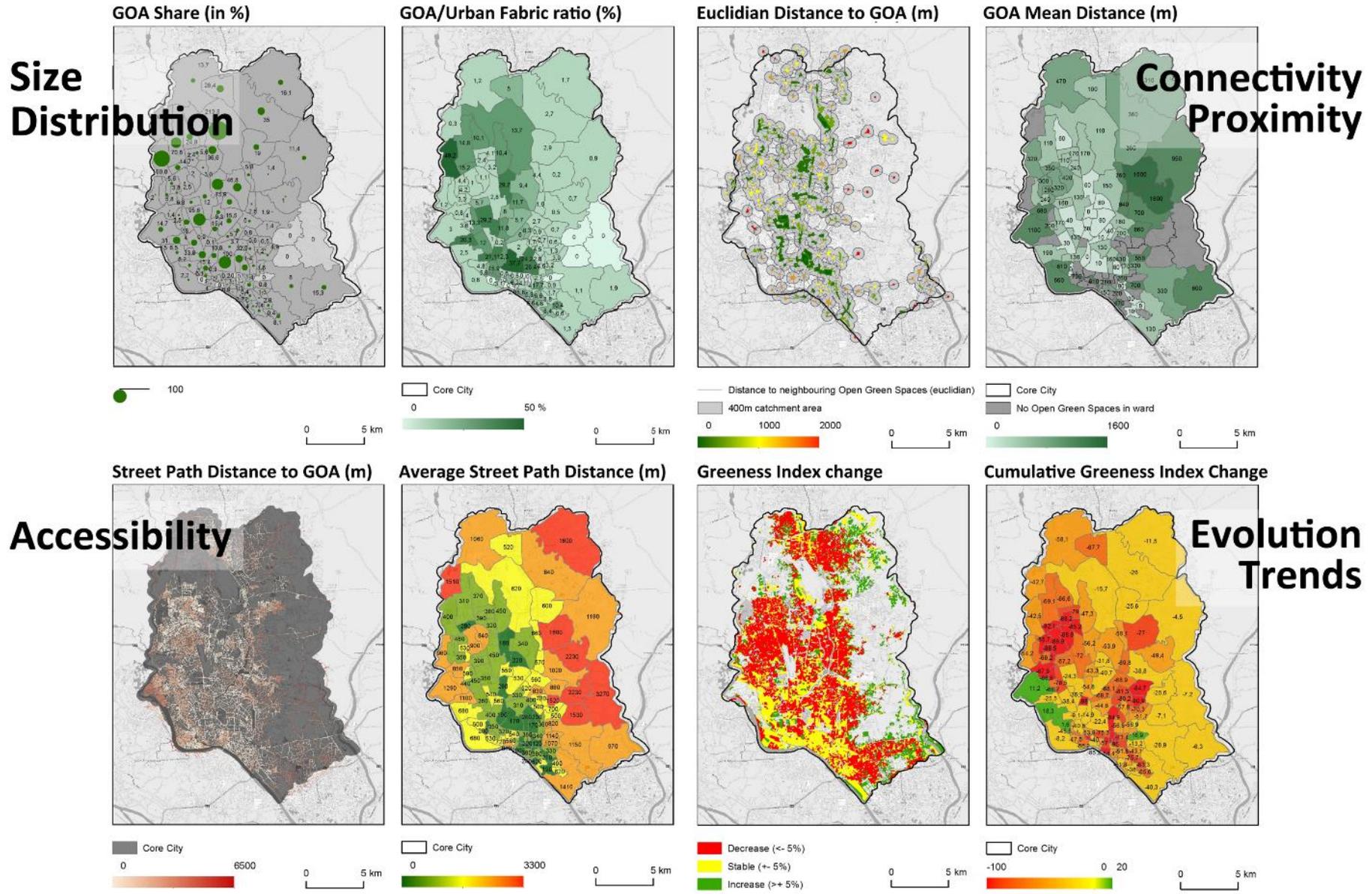
Step 3 | Basic Statistics for Stock-Taking and Benchmarking

Existing and potential public spaces

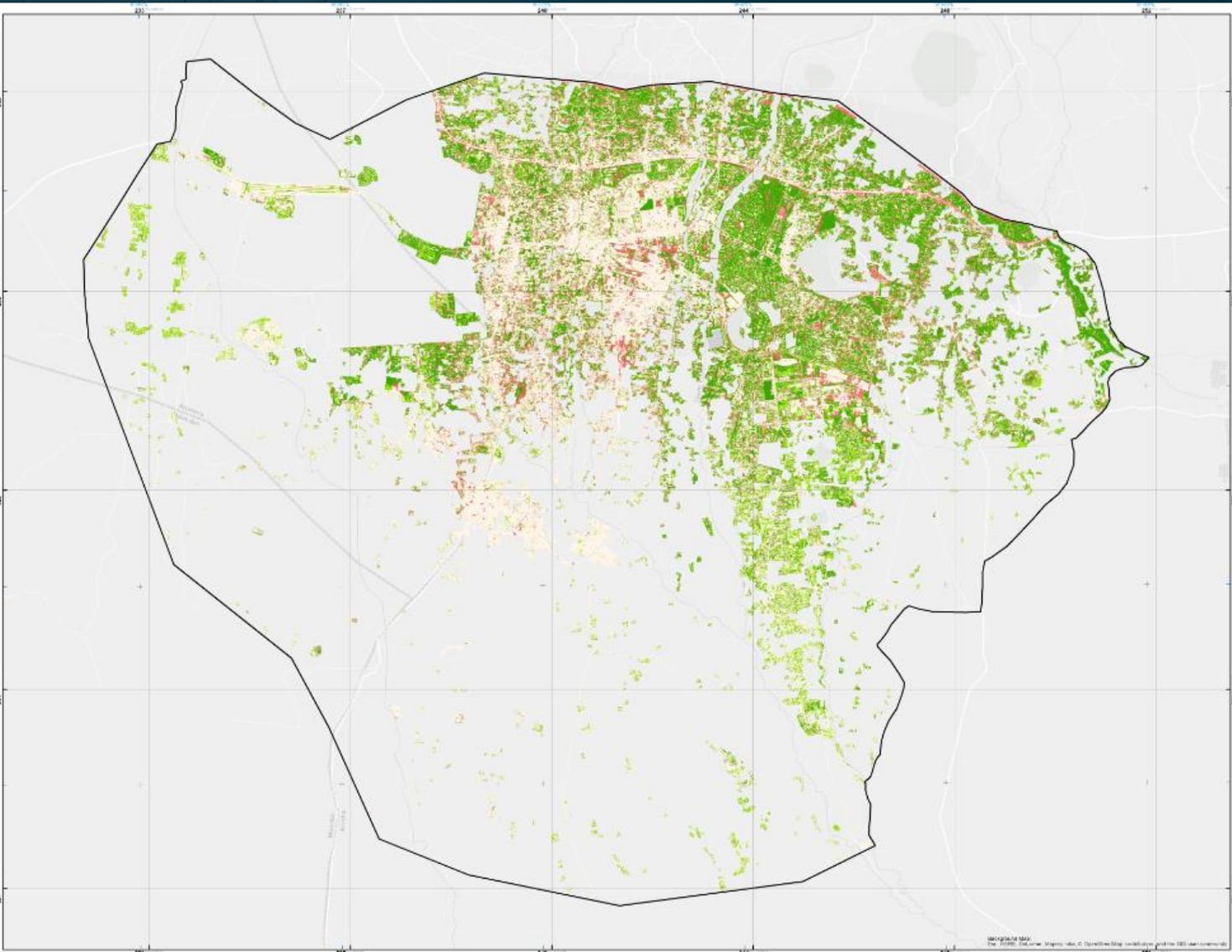


Step 4 | More Advanced City-Level Statistics

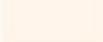
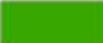
Quantity
Distribution
Typology
Network
Connectivity
Accessibility
Urbanity
Walkability
Changes



Step 5 | Understanding Green Area Change Over Time



Change Status

-  Non-Urban Green Area
-  Permanent Urban Green Area
-  Loss of Urban Green Area
-  New Urban Green Area
-  Core Urban Area

Arusha, Tanzania
@ GAF AG

These are exciting times for Supporting City Resilience through EO-based Green Infrastructure Assessments

- **Data availability:**
 - New EO constellations delivering instant data
 - Myriads of other spatial data from both conventional and unconventional sources
 - OpenData | OpenStreetMap
- **Automation:** Machine learning/Deep learning supported by cloud-based processing delivering instant information
- **Interactivity:** Web exploration platforms to deliver insights
- **YOU:** *Users who are aware of the possibilities and contribute with local knowledge*

Thank you for your attention

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powered by  **esa** in partnership with  **ADB**

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Implemented by:

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Partners:       **Caribou Space**
for Development