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## SUSTAINABLE INFRASTRUCTURE, ENVIRONMENTAL AND RESOURCE MANAGEMENT FOR HIGHLY DYNAMIC METROPOLISES

STAKEHOLDER-MEETING KIGALI 09. NOVEMBER 2016
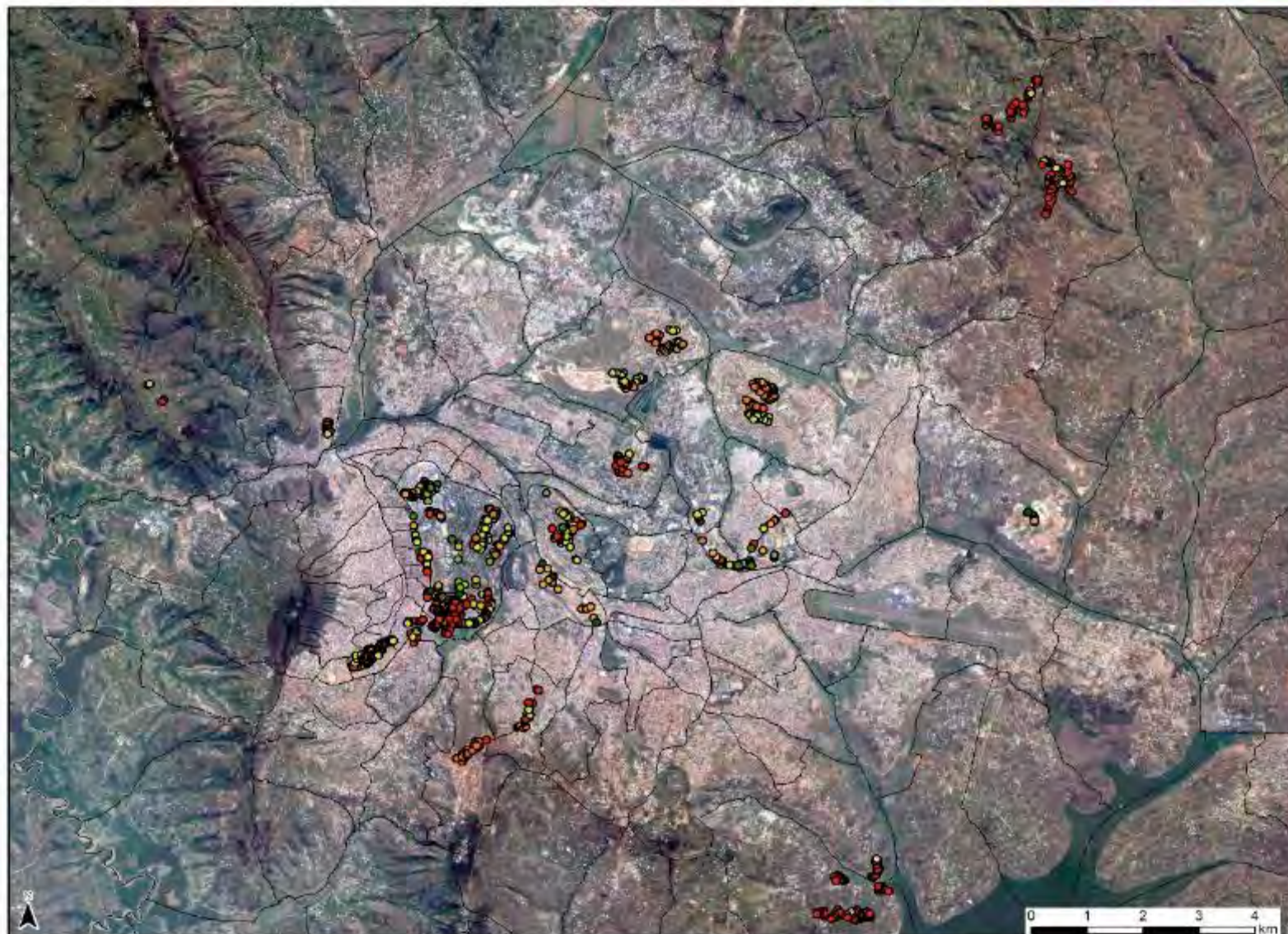
SATELLITE REMOTE SENSING ANALYSES

- Urban Structure Types (USTs)

- Building Archetypes (identifiable from satellite images)

- Open Space / Vegetation / Agriculture

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Nyarugenge

Airport

N
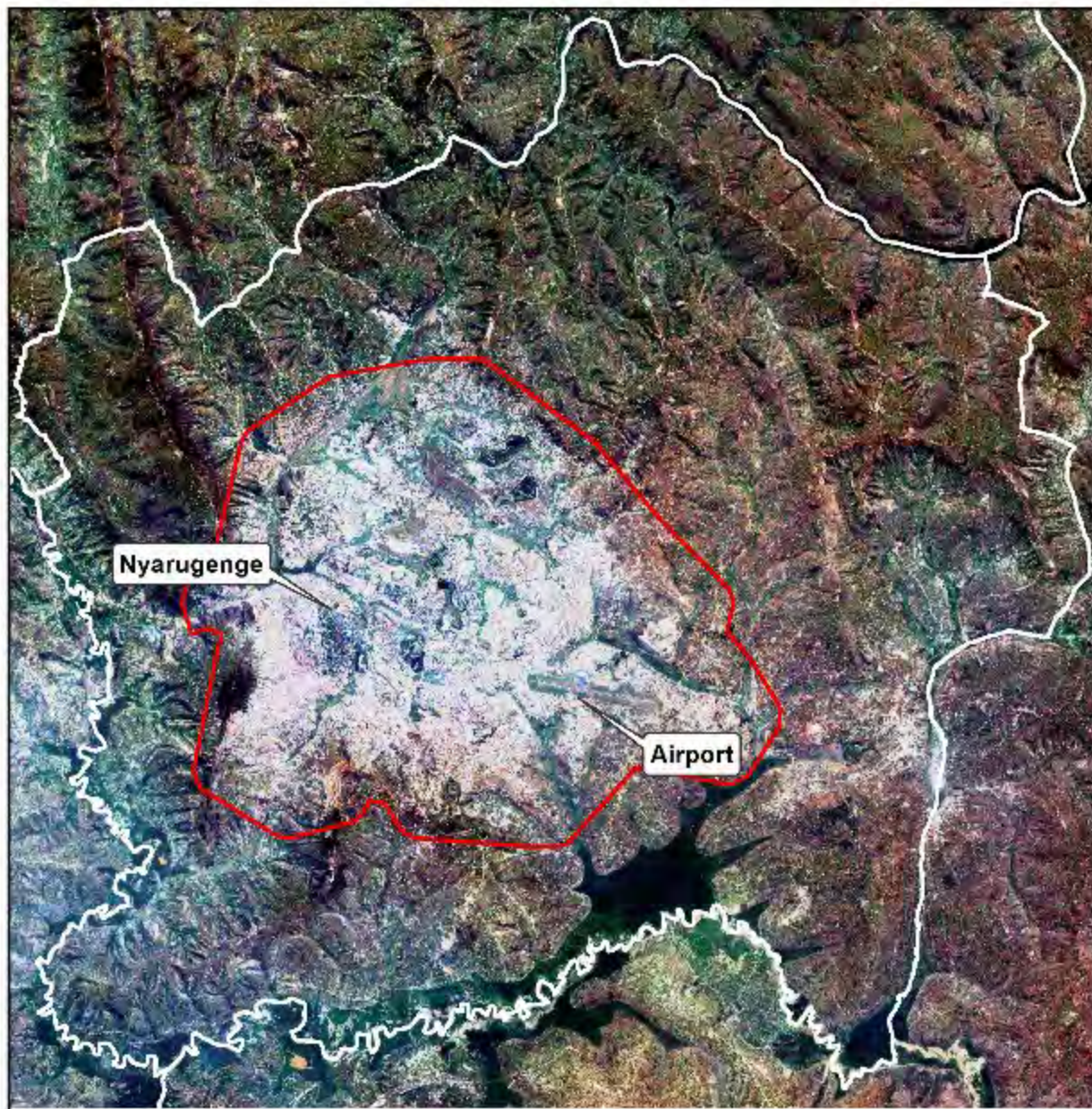
■ Province / City Boundary
■ Pléiades order area

0   5   10 km

Reference Data Collection

Building types

- ● rudimentary
- ○ villa
- ● luxuryvilla
- ○ hall
- ● localtype
- ● modernapartment
- ○ outbuilding
- ● special
- ▢ Cell Boundary

1074 building reference points collected during field work 11/2014, 06/2015 and 11/2015.

The boundaries are provided by the National Institute of Statistics Rwanda.

The underlying satellite image is a RapidEye scene (2015-07-14). The RapidEye data has been contributed on behalf of the German Aerospace Center (DLR) through funding of the German Ministry of Economy and Energy.

Map compiled by: Felix Bachofer
Version: 2015-12-03

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Kigali Land Cover
RapidEye

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Boundary

⬜ City of Kigali

Land Cover

🟥 Settlement / Dwellings

⬛ Asphalt

🟨 Open Soil

🟧 Reddish Soil

🟦 Open_Water

🟩 Scrub- / Woodland

🟩 Dry / Sparse Vegetation

🟩 Green Vegetation
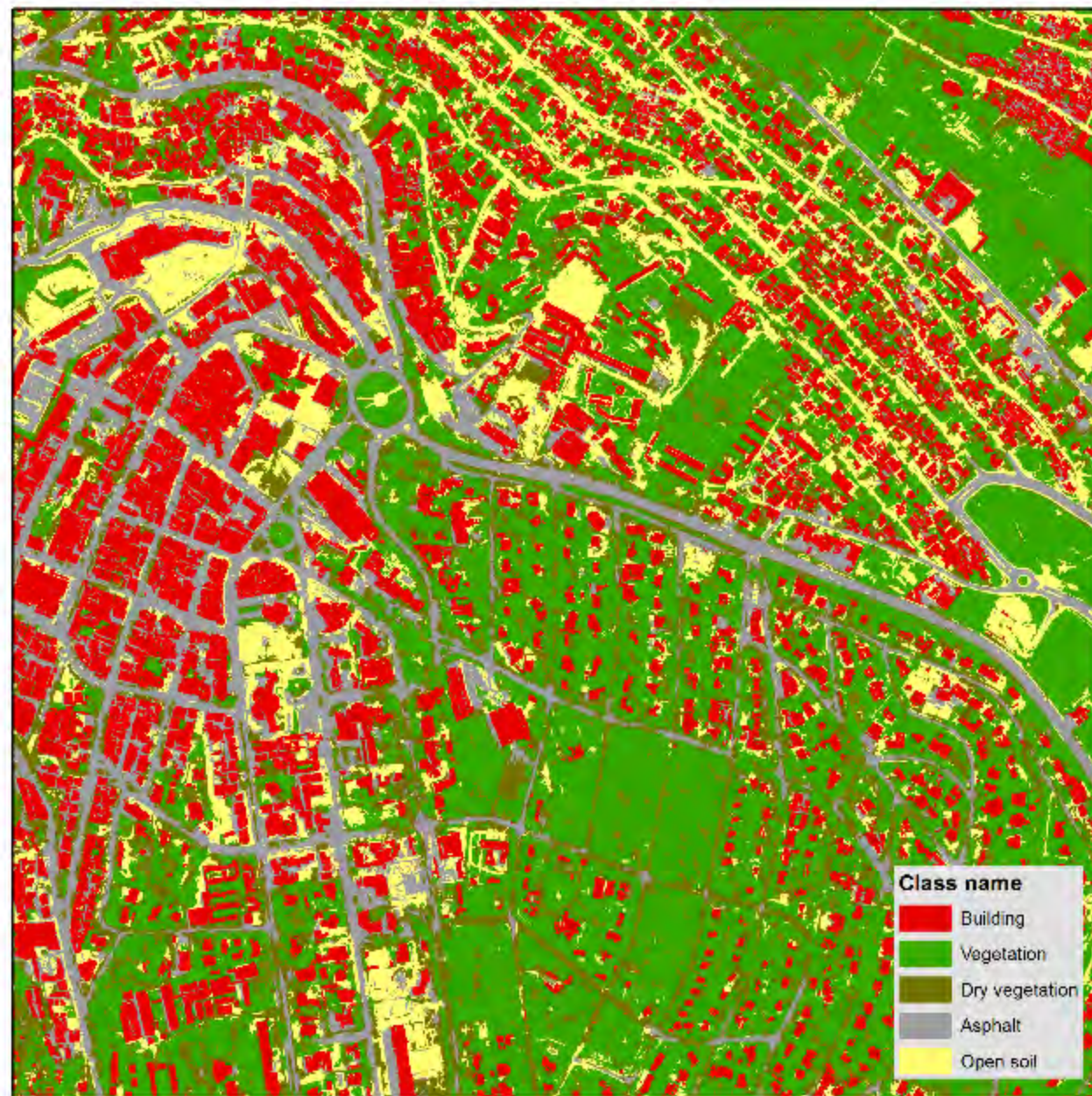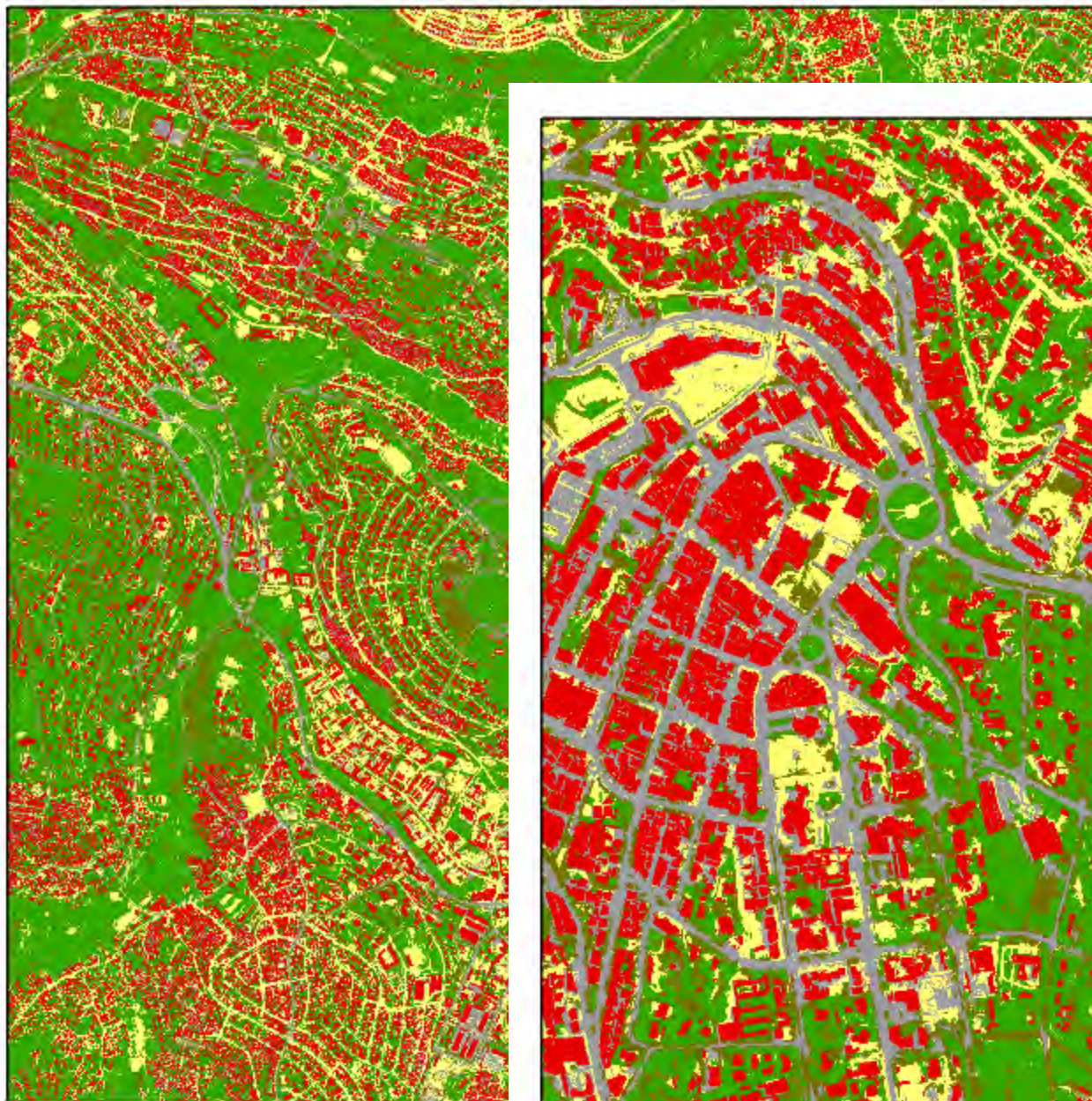
Underlying RpidEye scene (2015-07-14) has been contributed on behalf of the German Aerospace Center (DLR) through funding of the German Ministry of Economy and Energy.

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0 2 4 6 8 km

Map compiled by: Felix Bachofer
Version: 2016-06-10

Class name
- Building
- Vegetation
- Dry vegetation
- Asphalt
- Open soil

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Urban Structure Types
Supervised SVM

- Compact / large
- Compact / mid-size
- Comapct/ small
- Open / large
- Open / mid-size
- Open / small
- Large (industry)
- Rural
- Unbuilt

0 0.75 1.5 3 4.5 6 km
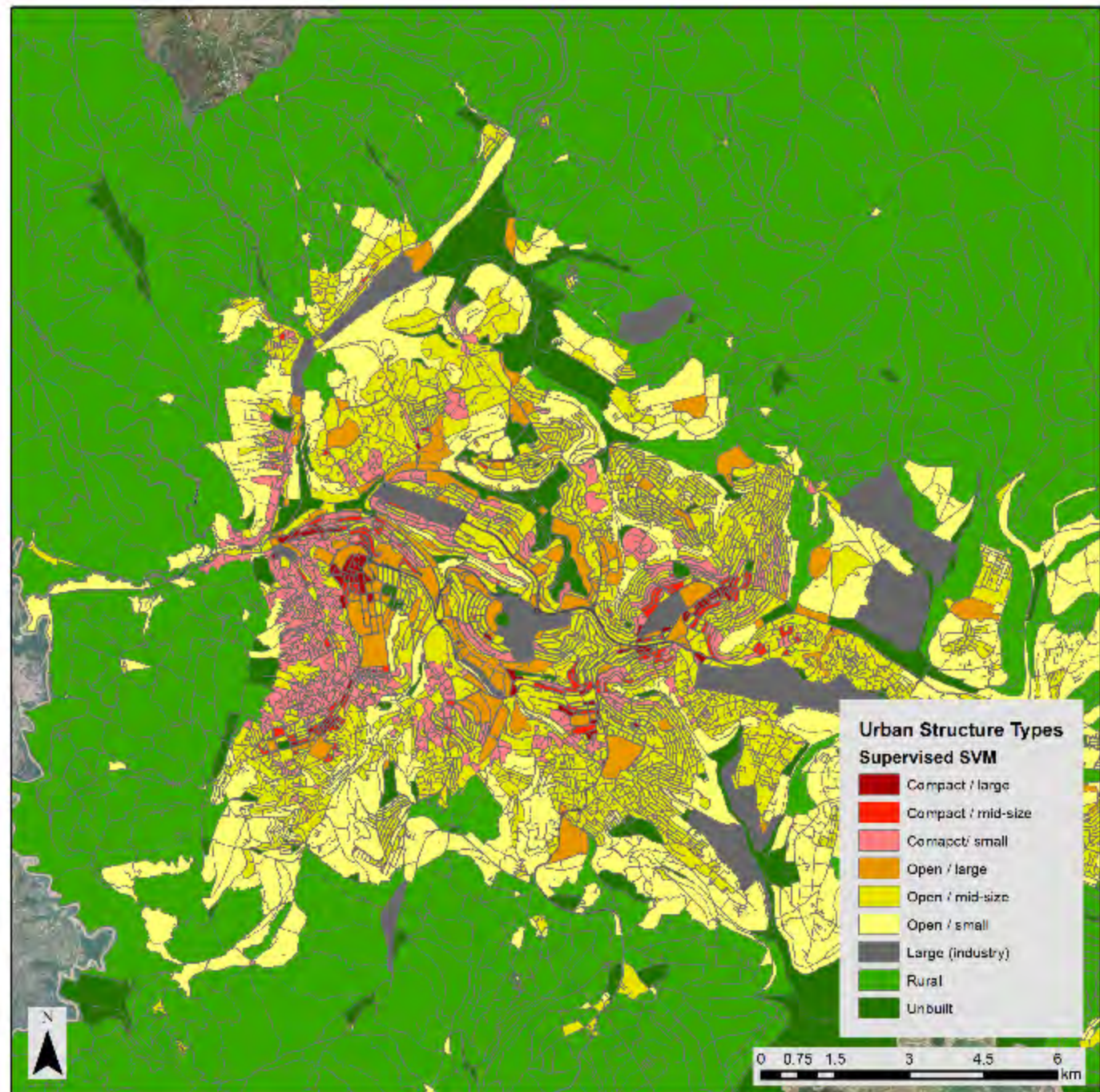
Building archetypes

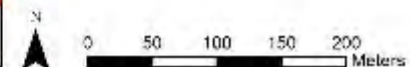**Manuscript of the results of the analysis was accepted for publication of the Journal of Rwanda**

g archetype

Single family / rudimentary building

Single / two family building (cottage/villa)

Luxury villa

CBD commercial / multi-unit building

Multi storey / apartment-type building

Hall / Warehouse

Outbuilding

0   50   100   150   200
Meters

Data Exchange / Cooperation

Partner Institution	Projects / Data
Nyarugenge Upgrading Area (Gistech)	- Building detection upgrading area - Vegetation analysis - Assessment hydrological network
Rwanda Housing Authority (RHA)	- Building change detection wetlands Kigali 2009 to 2015
Centre for GIS and Remote Sensing (CGIS) – University of Rwanda	- Preparation of a MoU - DAAD exchange - Proposal for research project

Thanks!

Murakoze!