

TRENDS.EARTH

tracking land change

CONSERVATION
INTERNATIONAL



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CONSERVATION
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PEOPLE & NATURE

mission

Building upon a strong foundation of **science**, partnership, and field demonstration, CI empowers societies to responsibly and sustainably care for nature, our global biodiversity, for the well-being of humanity.

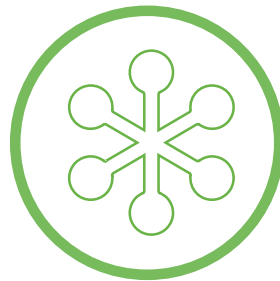


OUR FOCUS



PRIORITIES

WHERE IS THE
NATURE THAT
PEOPLE NEED?



STRATEGIES

HOW CAN WE BEST
CONSERVE NATURE
FOR PEOPLE?



IMPACTS

WHAT ARE THE
IMPACTS OF
CONSERVING
NATURE?

Tool to supports Land Degradation Neutrality

- Identification of degrading lands
- Can set baselines, and track progress towards LDN
- Leverages cloud-computing technology
- Allows use of best-available local information

Supports all three components of SDG Indicator 15.3.1



Land Productivity



Land Cover



Carbon Stocks

TRENDS.EARTH

tracking land change

The screenshot displays the Google Earth Engine interface. At the top, the search bar contains "gef.land.degradation". The main map area shows a satellite view of Ethiopia with a semi-transparent overlay of land degradation data. The data is color-coded: red for degradation, green for improvement, and yellow for stable but stressed areas. A legend in the bottom right corner of the map window provides a key for the colors.

Layers Panel (Left):

- LAND DEGRADATION (SDG INDICATOR 15.3.1, 2001-2015)
 - SDG Indicator 15.3.1 (combining productivity, land cover and soil organic carbon)
- CHANGES IN PRIMARY PRODUCTIVITY
- CHANGES IN LAND COVER
- CHANGES IN SOIL ORGANIC CARBON
 - Soil organic carbon (degradation)
 - Soil organic carbon (2015)
 - Soil organic carbon (2001)
- OTHER LAYERS
- BASEMAP

Legend (Bottom Right):

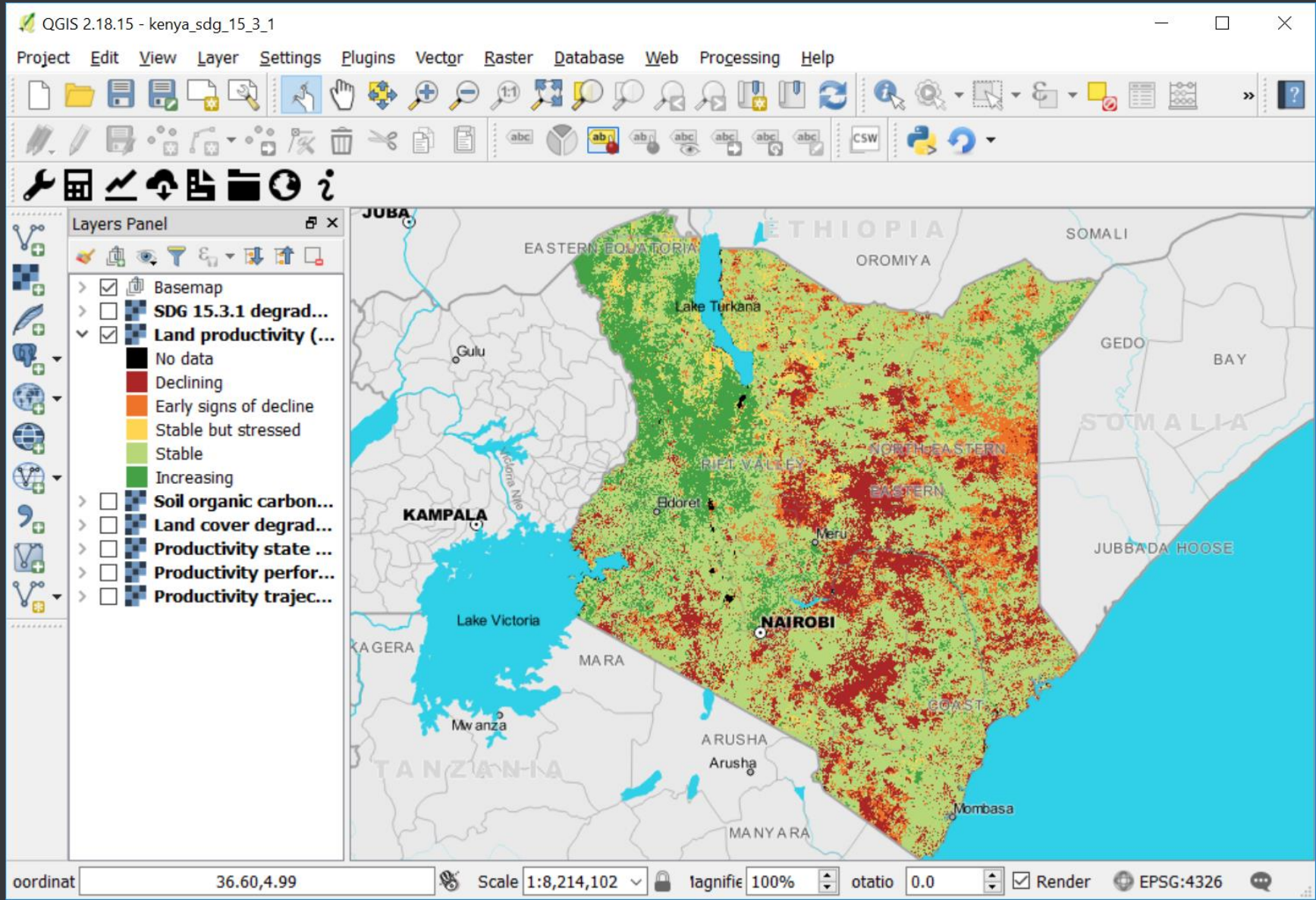
- SDG 15.3.1 degradation indicator**
 - No data
 - Degradation
 - Stable
 - Improvement
- Land productivity (Trends.Earth)**
 - No data
 - Declining
 - Early signs of decline
 - Stable but stressed
 - Stable
 - Increasing

Map Window (Bottom Right):

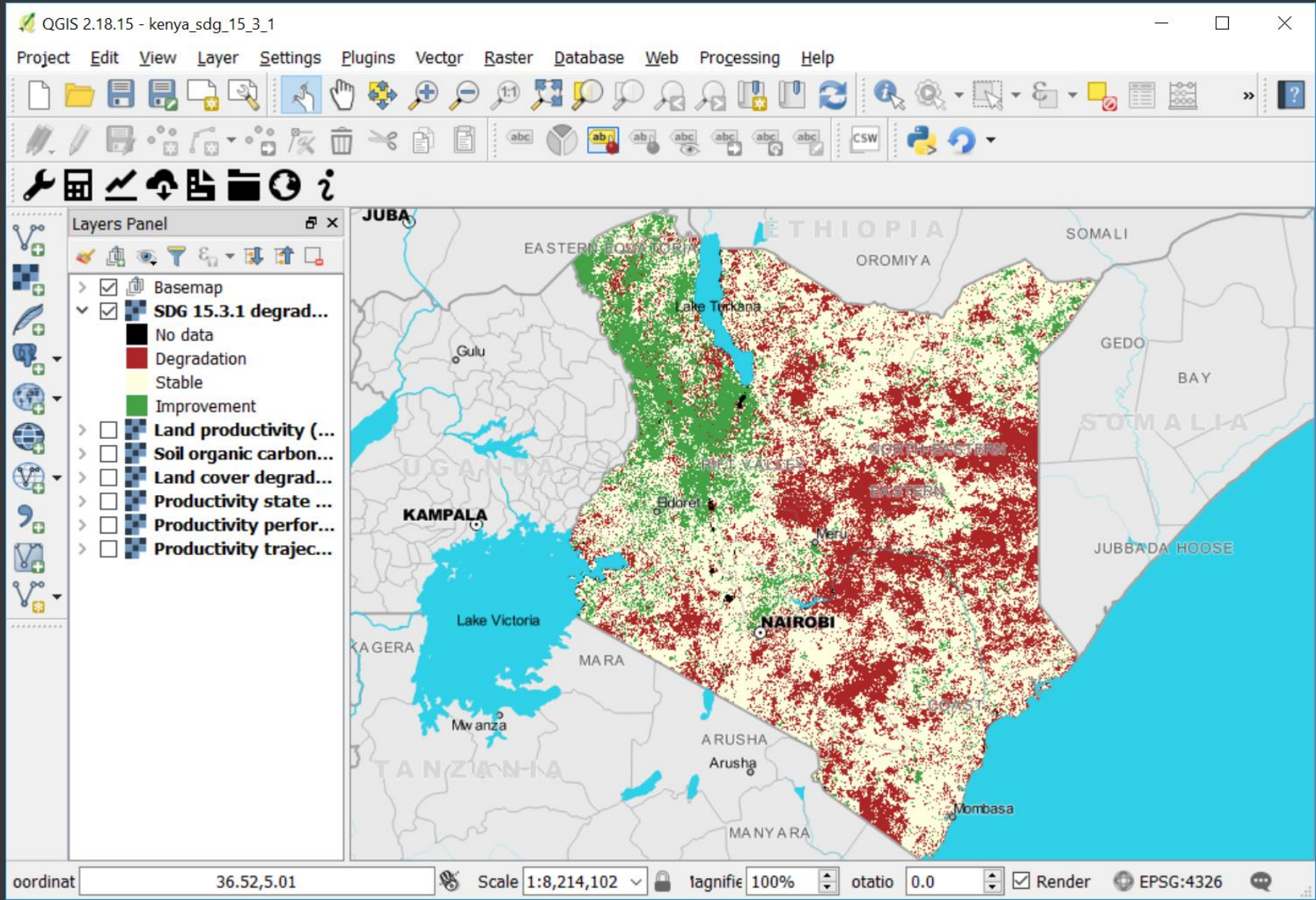
- Project: Q6621817 - ETH Map
- Layers Panel:
 - Basemap
 - Lake
 - River
 - Coastline
 - City
 - Disputed border
 - Sub-national border
 - National border
 - Ocean
 - SDG Layers
 - Land productivity (Trends.Earth)
 - SDG 15.3.1 degradation indicator

Map coordinates: 32,620,12,255. Scale: 1:5,299,757. Magnifier: 100%. Rotation: 0.0. Render: EPSG:4326 (OTF).

TRENDS.EARTH - Changes in land productivity



TRENDS.EARTH - SDG 15.3.1



TRENDS.EARTH - SDG 15.3.1

QGIS 2.18.15 - kenya_sdg_15_3_1

Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Help

Layers Panel

AutoSave Off | uganda_table.xlsx - Repaired - Excel | Mariano Gonzalez-Roglich

File Home Insert Page Layout Formulas Data Review View Help | Tell me what you want to do | Share

A3 | Summary of SDG 15.3.1 Indicator

Trends.Earth SDG 15.3.1 summary table		
Summary of SDG 15.3.1 Indicator		
	Area (sq km)	Percent of total land area
Total land area:	204,548.3	100.00%
Land area improved:	55,585.7	27.17%
Land area stable:	98,038.5	47.93%
Land area degraded:	50,041.8	24.46%
Land area with no data:	882.3	0.43%

The boundaries, names, and designations used in this report do not imply official endorsement or acceptance by Conservation International Foundation, or its partner organizations and contributors. This report is available under the terms of Creative Commons Attribution 4.0 International License (CC BY 4.0).

For more information on Trends.Earth, see <http://trends.earth>, or contact the team at trends.earth@conservation.org.

SDG 15.3.1 | Productivity | Soil organic carbon | Land cover | UNCCD Reporting

Ready | 100%

The impacts

- 142 countries trained
- > 1,200 users registered
- > 25,000 analysis performed



United Nations
Convention to Combat
Desertification





EARTH OBSERVATIONS FOR THE
SUSTAINABLE DEVELOPMENT GOALS



Supporting sustainable cities SDG 11.3.1

Conservation International: Mariano Gonzalez-Roglich, Alex Zvoleff, and Monica Noon

NASA: Lahouari Bounoua, Eric Brown De Colstoun, Stephanie Uz, and Kavvada, Argyro





Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable

Target 11.3: By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries

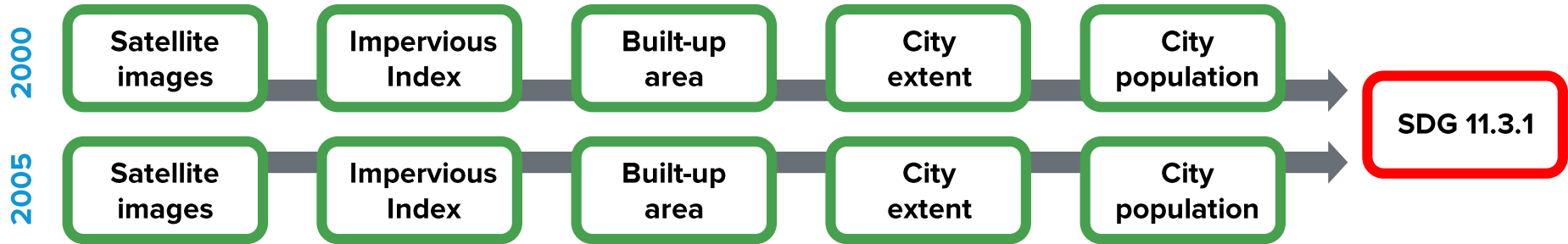
Indicator 11.3.1: Ratio of land consumption rate to population growth rate

Data needs: Urban extent
Population data

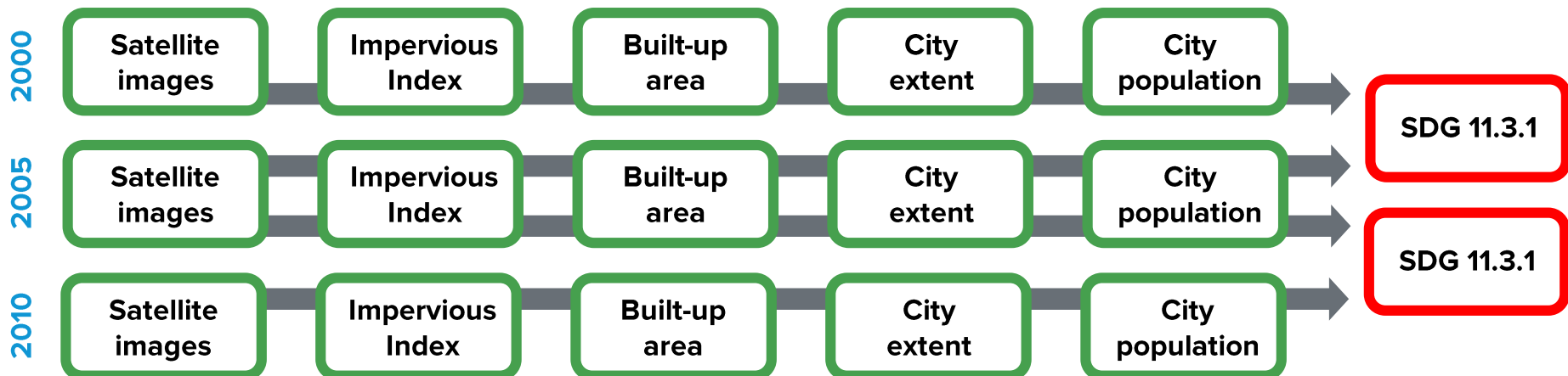
How to calculate SDG 11.3.1?



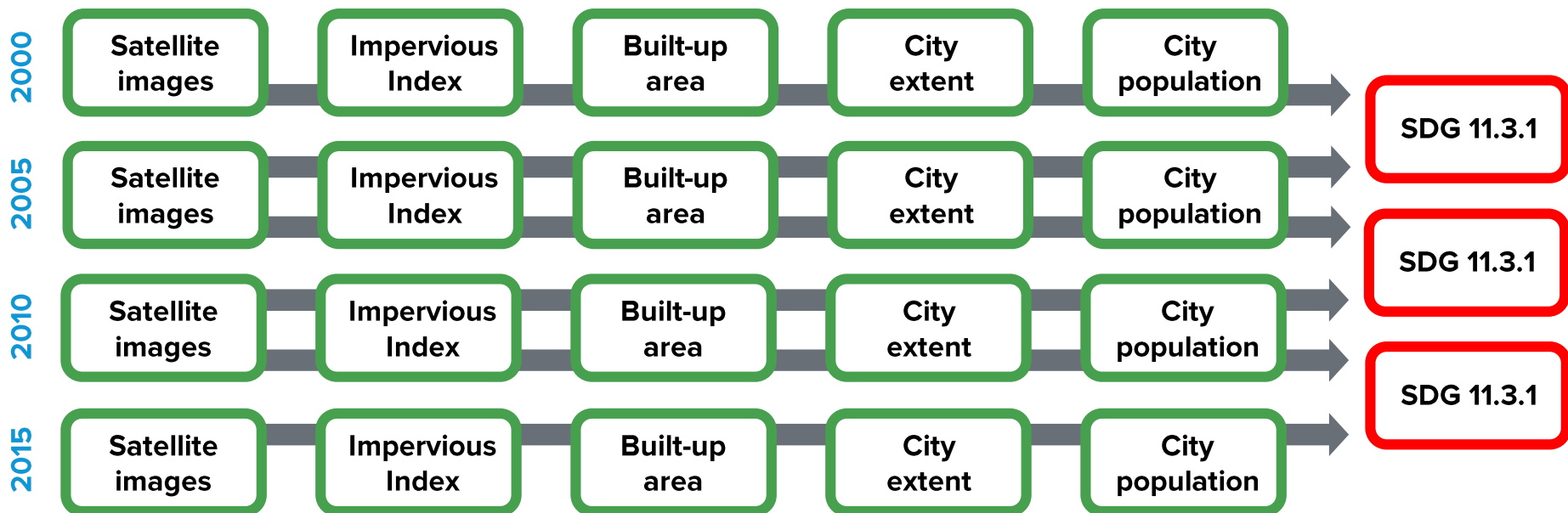
How to calculate SDG 11.3.1?



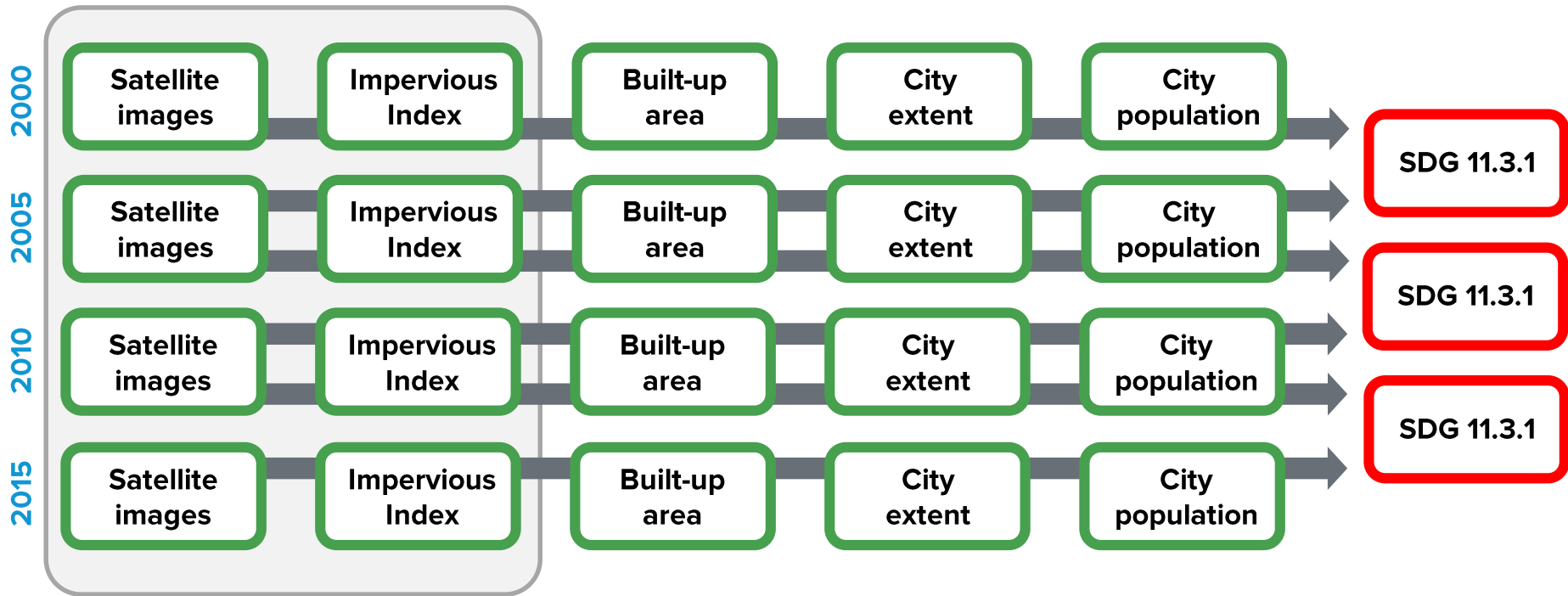
How to calculate SDG 11.3.1?



How to calculate SDG 11.3.1?



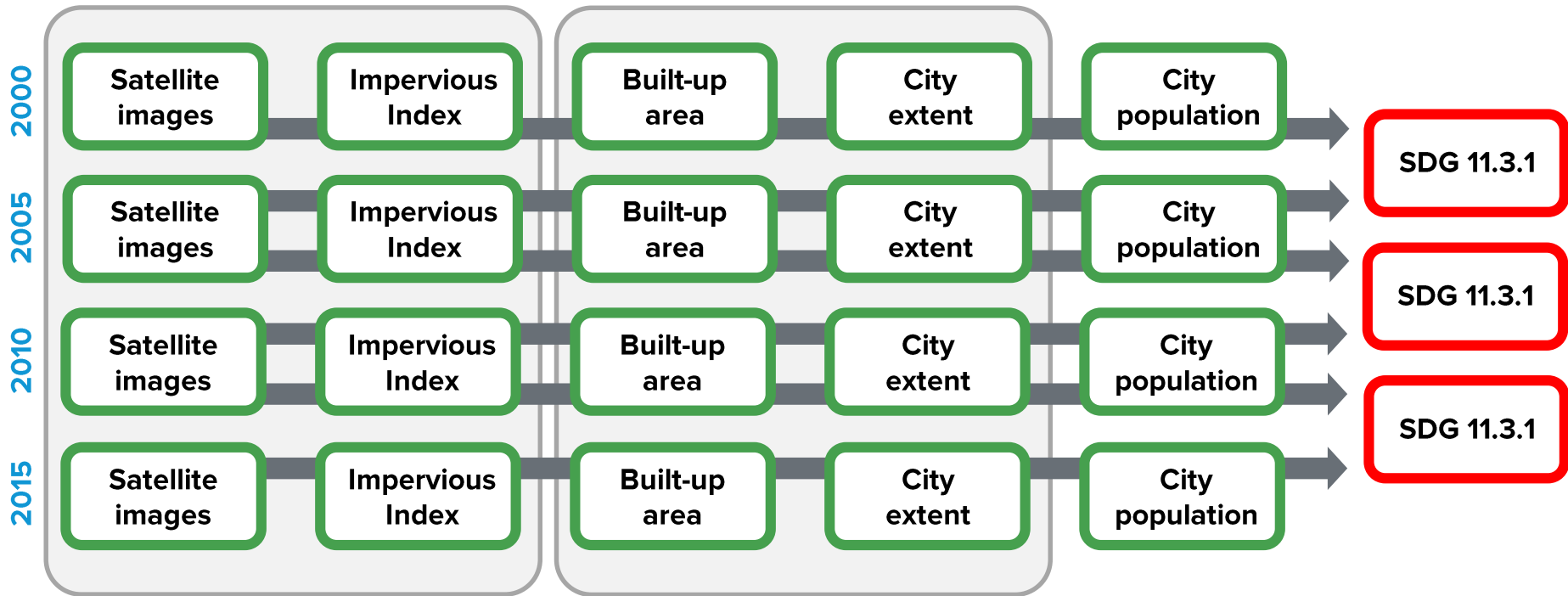
How to calculate SDG 11.3.1?



Pre-computed

2.3 M Landsat scenes
1.15 Petabytes of data

How to calculate SDG 11.3.1?

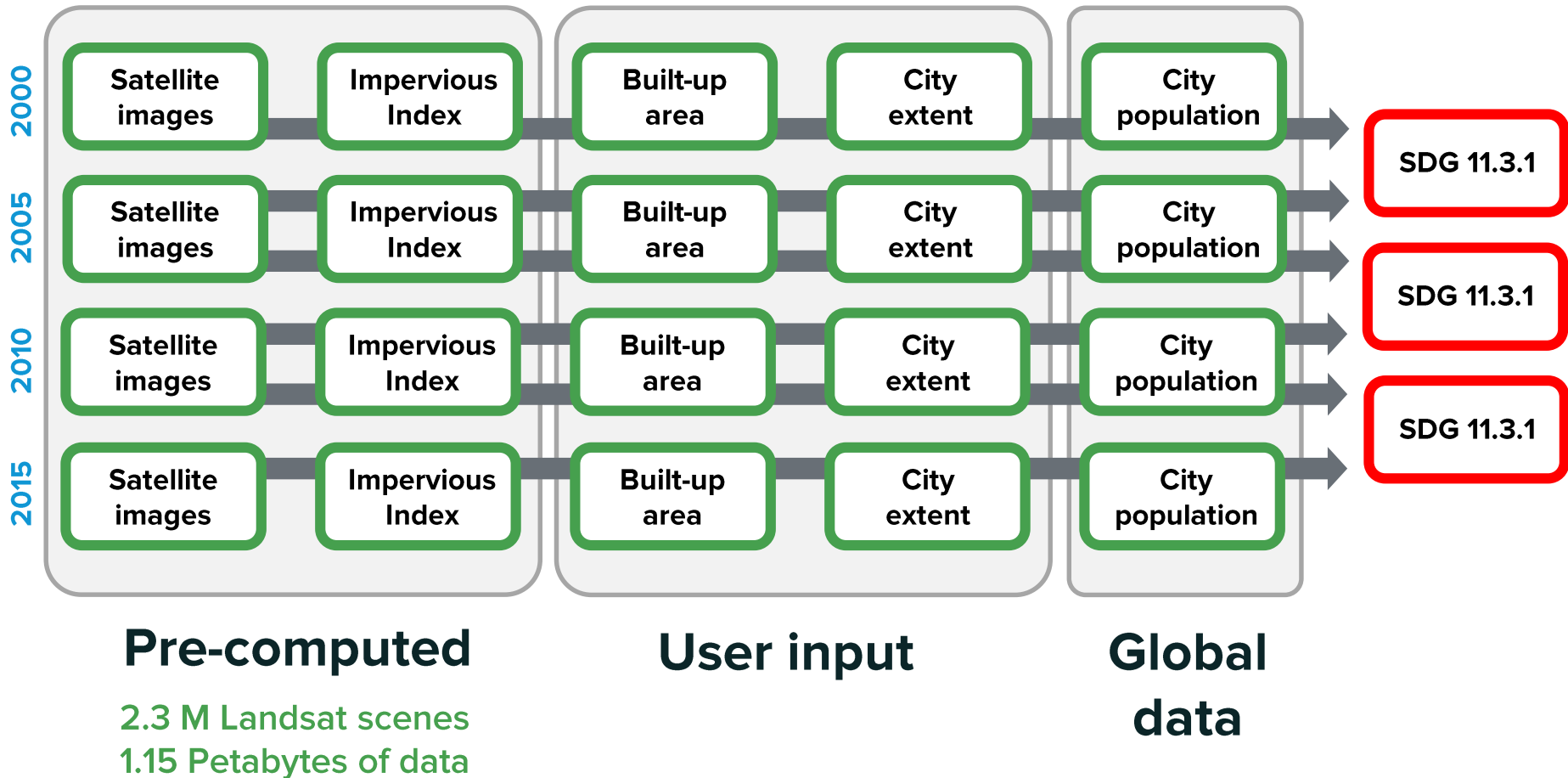


Pre-computed

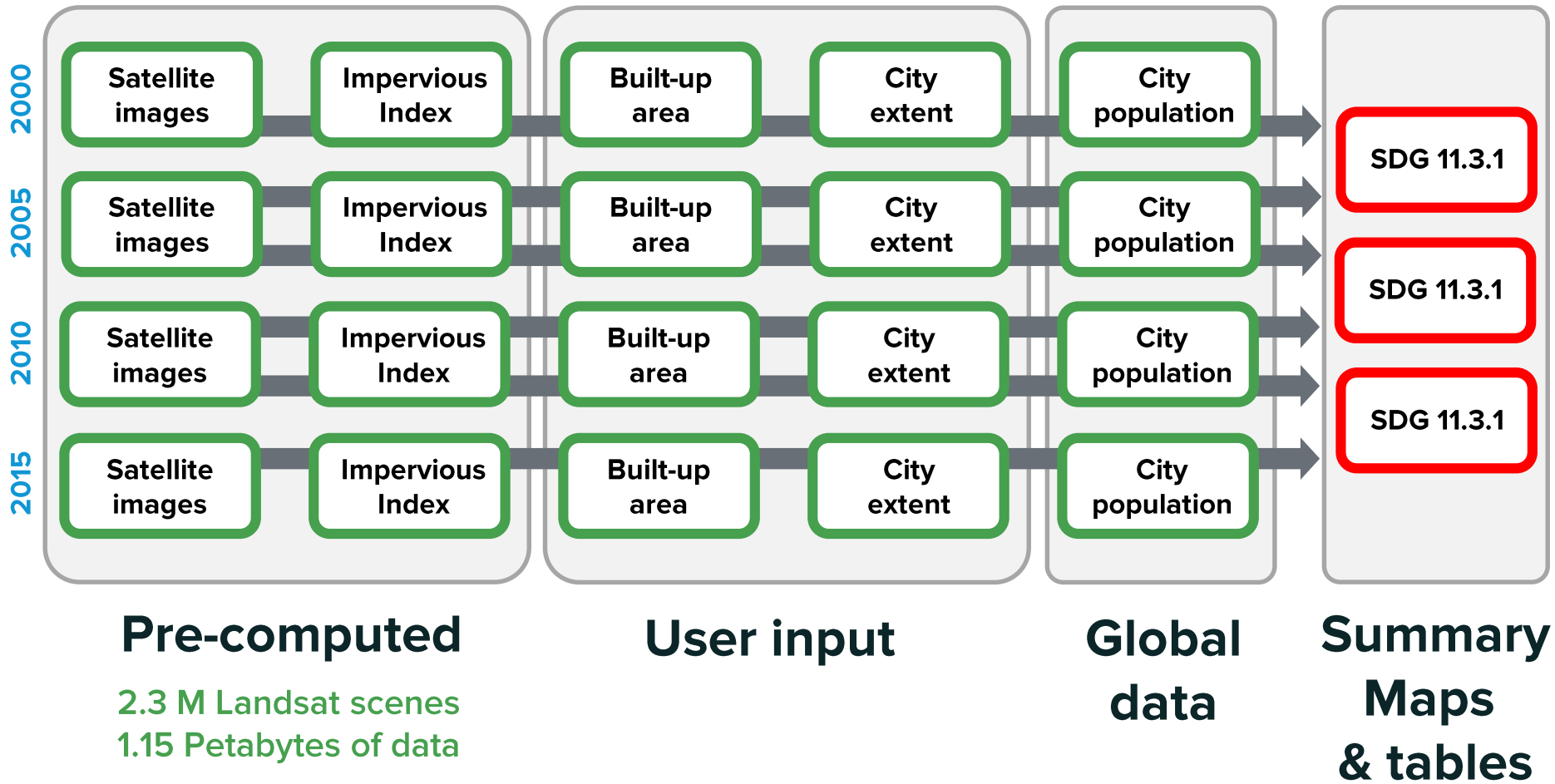
2.3 M Landsat scenes
1.15 Petabytes of data

User input

How to calculate SDG 11.3.1?



How to calculate SDG 11.3.1?



Trends.Earth Urban Mapper

Earth Engine Apps Experimental

Kampala, Uganda

Trends.Earth Urban Mapper

Layers Map Satellite

Impervious Surface Index (0-100)
(higher values reduce urban area)

Night Time Lights Index (0-100)
(higher values reduce urban area)

Water frequency (0-100)
(higher values increase urban area)

Trends.Earth 30m data-set

- Built-up before 2000
- New built-up by 2005
- New built-up by 2010
- New built-up by 2015
- Water (JRC Global Surface Water)

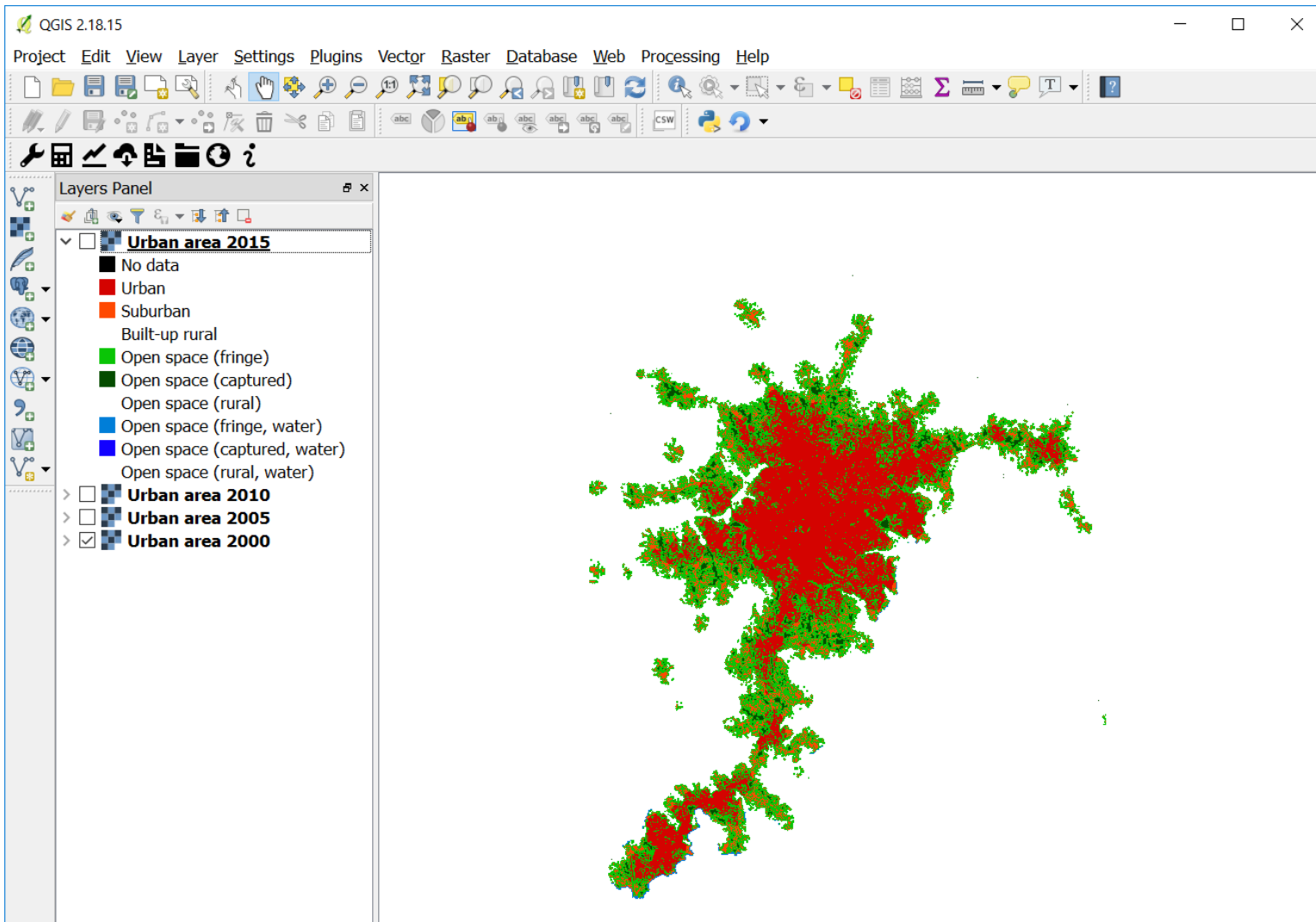
This is a Conservation International tool developed in collaboration with NASA. It is still under development, so please do not distribute externally. Contact: trends.earth@conservation.org.

Google

Map data ©2018 Google Imagery ©2018 TerraMetrics 5 km Terms of Use Report a map error

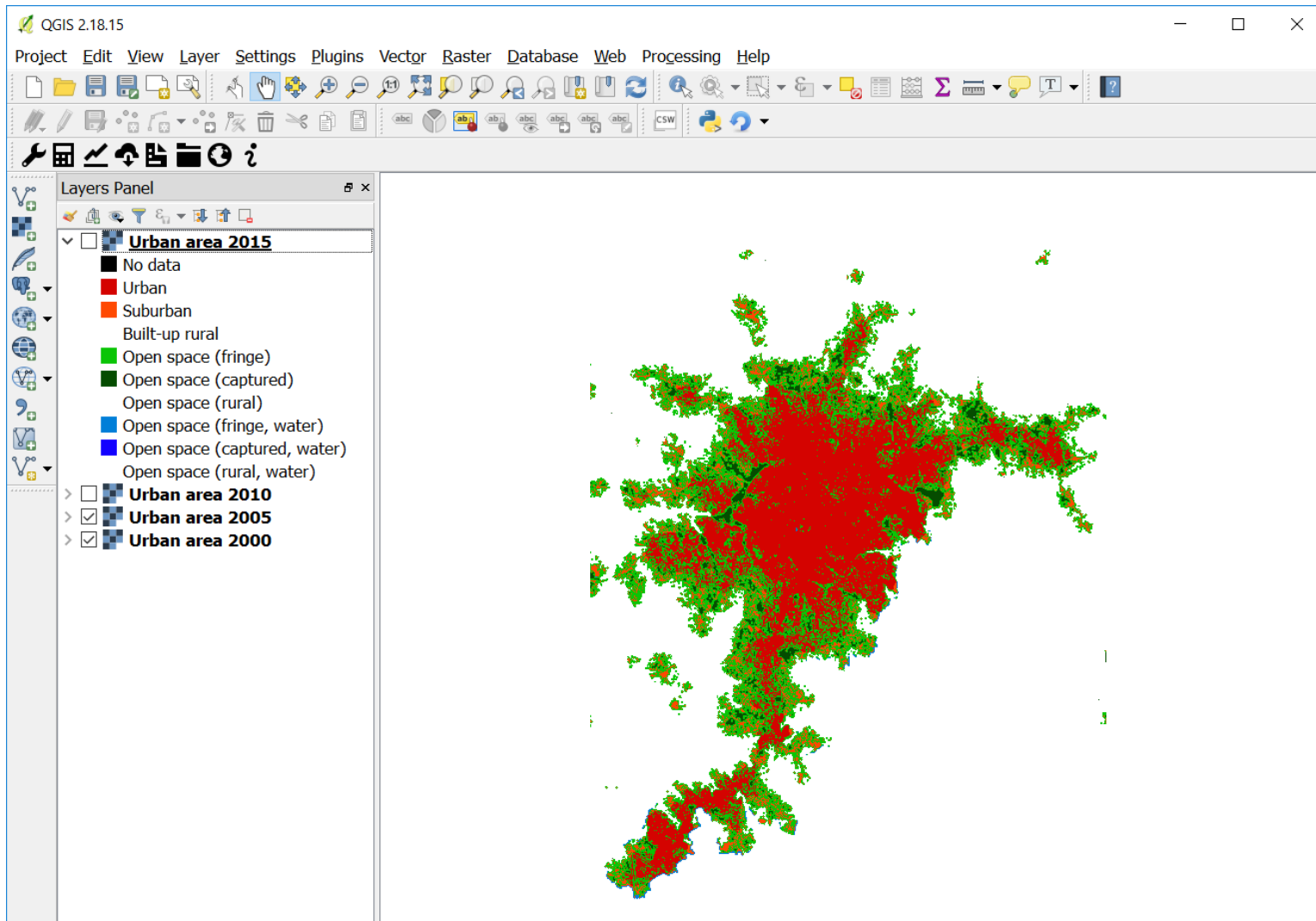
Trends.Earth in QGIS

Kampala, Uganda 2000



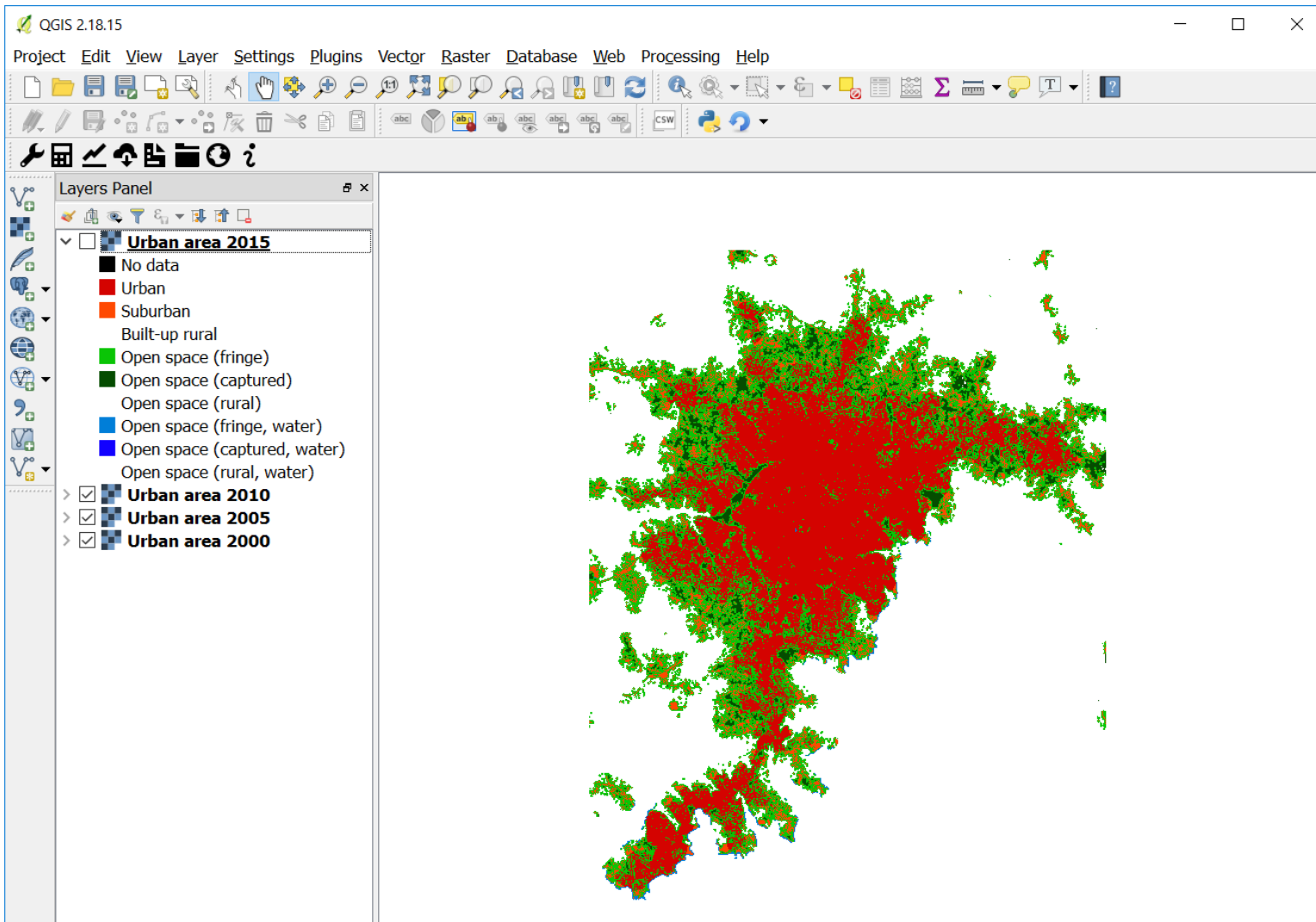
Trends.Earth in QGIS

Kampala, Uganda 2005



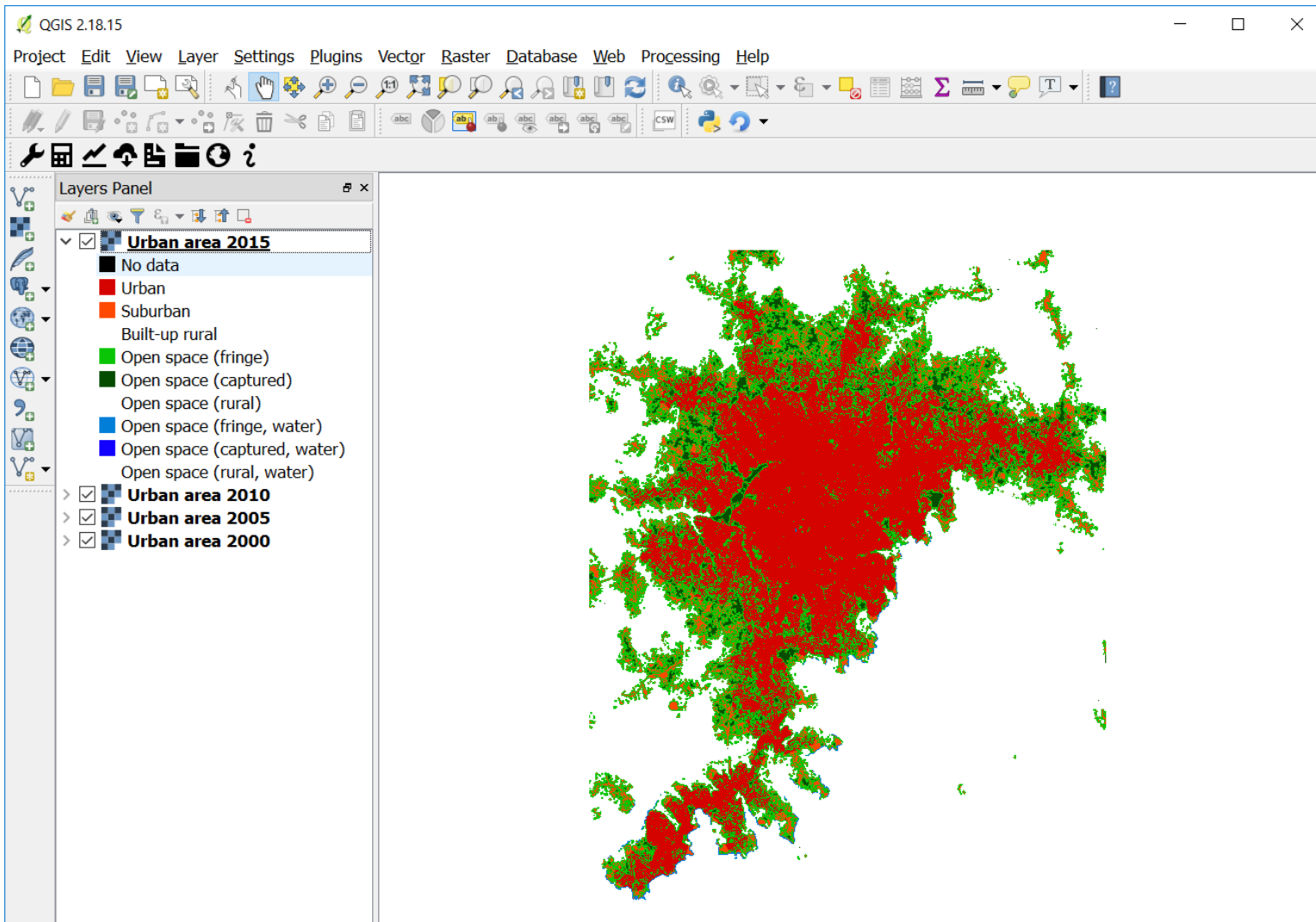
Trends.Earth in QGIS

Kampala, Uganda 2010



Trends.Earth in QGIS

Kampala, Uganda 2015



Trends.Earth in QGIS

QGIS 2.18.15

Project Edit View Layer Settings Plugins Vector Raster Database

Layers Panel

- Urban area 2015
 - No data
 - Urban
 - Suburban
 - Built-up rural
 - Open space (fringe)
 - Open space (captured)
 - Open space (rural)
 - Open space (fringe, water)
 - Open space (captured, water)
 - Open space (rural, water)
- Urban area 2010
- Urban area 2005
- Urban area 2000

kampala_table.xlsx - Rep... Mariano Gonzalez-Roglich

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A3 Summary of population growth rate and land consumption

Trends.Earth SDG 11.3.1 summary table

Summary of population growth rate and land consumption

Period	City population change	City population growth rate	City area change (sq km)	Land consumption rate	SDG 11.3.1
2000-2005	444,208	0.053964	11,936.41	0.041822	0.775
2005-2010	513,451	0.048330	12,424.12	0.035864	0.742
2010-2015	526,500	0.039791	5,268.17	0.013459	0.338

Area (in hectares) of each land class by year

	2000	2005	2010	2015	Consider this class to be part of the city?
Urban	22,585.98	30,219.43	39,896.55	45,869.17	Yes
Suburban	5,014.77	5,264.09	5,434.47	4,986.15	Yes
Built-up rural	1,299.64	1,294.18	789.90	612.27	No
Open space (fringe)	21,677.34	24,663.06	26,428.51	26,342.23	Yes
Open space (captured)	1,888.23	2,924.86	3,726.11	3,547.85	Yes
Open space (rural)	49,088.35	37,188.68	25,278.76	20,196.63	No
Open space					

SDG 11.3.1 Summary Table

Ready 80%

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