Showcase on SDG 11.3.1 Land Consumption

Policy context

According to the *"World Population Prospects 2019: Highlights"* report, prepared by the United Nation's Department of Economic and Social Affairs Population Division, the world's population is expected to grow by 10% in 2030 (from 7.7 billion to 8.5 billion), while urban areas are expected to absorb virtually all the future growth of the world's population. This rapid urban growth poses challenges to the implementation of the urban development agenda that seeks to make cities and human settlements inclusive, safe, resilient and sustainable (SDG 11). Taking this into account, information on human settlements is of crucial importance for both disaster risk reduction, crisis management and the sustainability and resilience of cities. Measuring the progress towards the SDG 11 implies creating a consistent set of cities for national level reporting, as well as reporting on national urban progress in a systematic manner of time.

To attain sustainable development, and effectively address demand for basic services in cities, it is important to understand in which way, and how fast a city/urban area expands, against its rate of population change. It has been proven that "compact" cities, use land more efficiently and are better at providing public goods and basic services at a lower cost (i.e. such cities consume less energy, manage waste better etc). On the other hand, sprawling cities experience increased demand for mobility, increased energy consumption, environmental degradation, increased cost of providing basic services per capita (water, sanitation, drainage) and so forth. Indicator 11.3.1 "Ratio of land consumption rate to population growth rate", provides necessary and timely information to decision makers and stakeholders in order to project demand for public goods and services and identify new areas of growth. Furthermore, the 11.3.1 indicator is connected to many other indicators of the SDGs: 11.7.1 (Public space), 11.a.1 (Regional Development Plans); 15.1.2 (Forest area), 8.1.1 (City Product per Capita); 8.2.1 (Growth rate per employment); 8.5.2 (Unemployment Rate) and 11.6.1 (Solid Waste Collection).

Built-up Area, besides its use in the computation of Land Consumption, is also included in the computation of the SDG indicator 11.7.1 "Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities", and can thus be considered as an Essential Variable. One of the most prominent variables in computing the SDG indicators, that can be measured with EO data (11.3.1, 11.7.1, 11.6.2), is the variable of the Built-up Area, which is inextricably linked with the definition of the urban extent. On March 2019, the United Nation's (UN) Working Group on Data integration of the Sustainable Development Goals Indicator 11.7.1, suggested that there is a need for a clear definition regarding the EV of the "Built-up Area" mainly, due to difficulties on identifying which categories (built areas, open public spaces and more) should be included in the definition. Moreover, the Working Group suggested that built-up areas should be measured as artificial land.
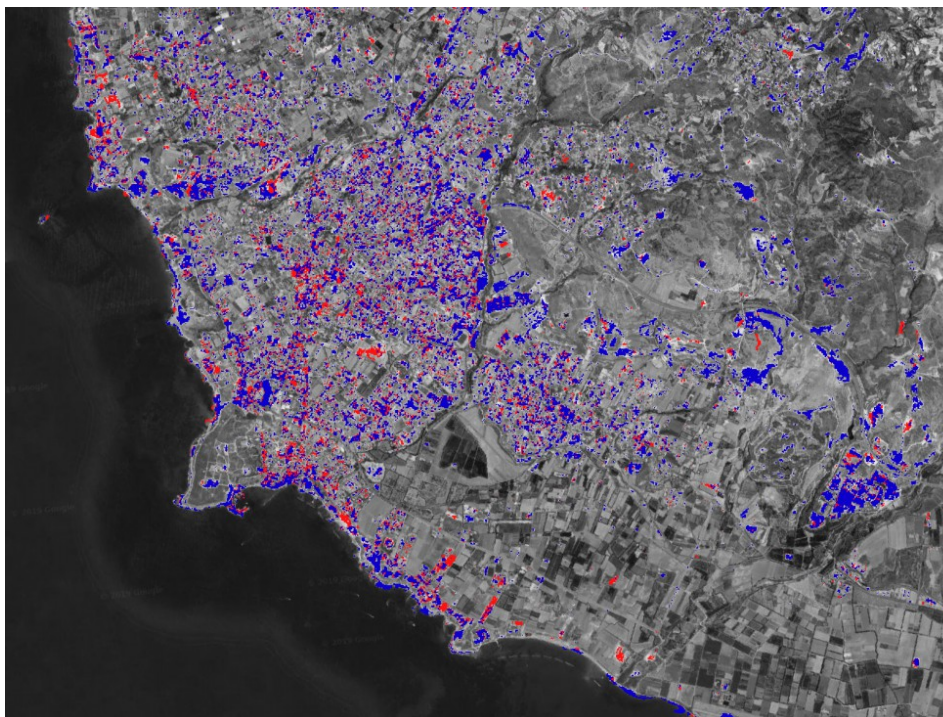
Figure 1: Built-up Area in Paphos, Cyprus, as calculated by the EV algorithm. Built-up area in 2016 is indicated in blue, whereas changes made in built-up area in 2019 are indicated in red.

Showcase description

GEOEssential	Land Consumption
Spatial Extent	Local
Dashboard link	To be included when available
Temporal Extent	2015-2020
EVs used	Built-up Area
Inputs	Sentinel-2 imagery
Outputs	Land degradation indicators
Targeted Policy	SDG 11.3: By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
Targeted indicators	11.3.1: Ratio of land consumption rate to population growth rate
Main Process	VLAB - https://vl.geodab.org/
Level of development	60%
GitHub code	To be included when available
Outputs endpoint	To be included when available
Partner(s)	AUTH
Contact person	patias@auth.gr (AUTH)