



Country Use Case of EO for SDG Indicator	
SDG Indicator/Sub-indicator	SDG Indicator 11.2.1: "Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities"
Country or region	Colombia
Status (please check)	<input type="checkbox"/> being used in official SDG Indicator reporting <input type="checkbox"/> being verified or tested by country <input checked="" type="checkbox"/> studying feasibility
Earth Observation Data Used and its links	Sentinel Satellite Imagery https://developers.google.com/earth-engine/datasets/catalog/COPERNICUS_S2_SR
Additional/ Other Data Used and its links	Inventory of public transport stops: - Trunk Stations of the Georeferenced MEGABUS Transport System https://www.datos.gov.co/Transporte/Estaciones-MEGABUS/grat-rk69 - Zonal bus stops of the Integrated Public Transport System https://datosabiertos.bogota.gov.co/dataset/5ba19d20-06af-4c04-b50c-8ecb9472327d?external=True - Transmilenio Stations for Bogotá D.C. https://datosabiertos.bogota.gov.co/dataset/e1f5f61f-09d3-4d6a-87cc-b703357a4f81?external=True - Zonal bus stops of the Integrated Public Transport System - Bogotá D.C. https://datosabiertos.bogota.gov.co/dataset/96af93ec-6cfa-4c29-97fc-15ac0b5b8704?external=True# - Collective Public Transport Stops https://geomedellin-m-medellin.opendata.arcgis.com/datasets/paradas-de-transporte-p%C3%BABlico-colectivo
Description of data access, processing, and analysis, including methodology that was developed, associated tools or applications, and how these are applied to compute SDG Indicator	<p><i>The inventory of public transport stops was made; However, few cities in Colombia have transportation systems with officially recognized stops.</i></p> <p><i>The selection of transport stops was made, using the information available on OpenStreetMap; however, the total number of geo-referenced stops does not even reach 50% of those that actually exist.</i></p>
Work flow	<p><i>The workflow was extracted from what is contained in the Metadata available: updated July 19, 2016</i></p> <pre> graph LR A[Definition of the study universe: urban agglomerations] --> B[Image classification (Random Forest): capture of training and validation samples] B --> C[Spatial analysis to delimit the urbanized area of cities] C --> D[Inventory of public transport stops] D --> E[Create 500m radius service area] E --> F[Estimation of the proportion of the population with convenient access to public transport] </pre>

<p>Lessons learned, any gaps, key issues and recommendations</p>	<p>Lessons learned:</p> <ul style="list-style-type: none"> - Earth observation data is a very valuable source of information for determining the area of cities and their urban expansion. - Google Earth Engine is a platform that has an updated catalog of satellite images and processing algorithms, in the cloud, freely accessible, through which users generate their routines. The use of this platform has allowed DANE to optimize the time in the digital processing of satellite images. <p>Any gaps</p> <p>Few cities in Colombia have transportation systems with officially recognized stops.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> - It is essential that there is a synchronization of the versions (updates) between the metadata published on the web portal of the United Nations Statistics Division https://unstats.un.org/sdgs/metadata/ and those published by the custodian agencies. - It would be convenient to include in the metadata the links to the tools and learning material that has been developed and that facilitates the calculation of the indicators. - It would be convenient to develop a tool through which the DEGURBA (Degree of Urbanization) methodology is implemented and that allows countries to define their universe of cities. - It would be important to highlight that the different data sources must be from the same year of capture, for example, if the satellite images were taken in 2015, the population should also be that of 2015.
<p>Supporting material about this use case. Include links, publications, etc.</p>	
<p>Collaboration with other agencies - agency names and activities</p>	
<p>Name(s) and email address of individual(s) involved in this effort. Please note the principal point(s) of contact (POCs).</p>	<p>National Administrative Department of Statistics – DANE Sandra Moreno smorenom@dane.gov.co, DANE Technical Director of Geostatistics Carlos Durán cadurang@dane.gov.co, Coordinator of the Research and Development Group of the Geostatistics Department.</p>