

## Densely populated area (experimental statistics)

Densely populated area (hereinafter – the DPA) is a distinct population cluster independent from administrative and territorial division and it is populated by at least 50 persons living or working in buildings that are located no more than 200 meters from each other. DPAs are calculated on 1 January 2019 (considering both place of residence and work), 1 March 2011 and 31 March 2000 (at Population and Housing Census moment, considering only place of residence), and in future it has been planned to recalculate DPAs every five years. Statistics is published based on the borders in force at the respective moment and on every year as of 2016.

Definition of DPA is based on the definition of locality stipulated by the Commission Implementing Regulation (EU) 2017/543 of 22 March 2017<sup>1</sup> (hereinafter– the Regulation). The Regulation defines that locality is *a distinct population cluster, that is an area defined by population living in neighbouring or contiguous buildings*. Estimation of the DPAs is based on the locality definition criteria c) which states that *such buildings may (..) constitute a group of buildings, none of which is separated from its nearest neighbour by more than 200 meters*.

The groups are estimated by dissolving buffer zones which, in turn, are calculated for:

- 1) buildings in the cadastre – inhabited buildings (coordinates of usual residences intersect buildings from the cadastre) and uninhabited residential buildings (codes in the Classification of Types of Constructions<sup>2</sup> that start with 11);
- 2) coordinates of usual residences that do not intersect buildings from the cadastre;
- 3) the data on 2019 regarding buildings from the cadastre where local kind-of-activity units are located (coordinates of local kind-of-activity units intersect buildings from the cadastre) and all other industrial, commercial and public buildings (codes in the Classification of Types of Constructions that start with 12, excluding 1271 and 1274) based on the data at the beginning of 2018;
- 4) the data on 2019 regarding coordinates of local kind-of-activity units that do not intersect buildings from the cadastre, based on the data at the beginning of 2018.

Usual residence coordinates are taken from the experimental statistics (refer to the [usual residence in Latvia metadata](#)), whereas polygons of buildings from the cadastre are taken from National Real Estate Cadastre Information System (hereinafter – the NRECIS) managed by State Land

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<sup>1</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32017R0543>

<sup>2</sup> <https://likumi.lv/ta/id/299645-buvju-klasifikacijas-noteikumi> (in Latvian)

Service (hereinafter – the SLS). In respect to the years 2000 and 2011, the data on buildings from the cadastre are taken from the 2014 dataset, as older data are not available. NRECIS does not store historical information, thus there are no data about buildings that were demolished before 2014. Information about the building commissioning year is used to filter buildings that were not built at that moment, however in some records this information is missing, therefore such records are used only for estimates of 2019.

The groups created are clipped based on the state border (SLS data) in force at the respective moment. To make estimates on 2000, the data of 2006 are used, as it was the oldest information available.

To avoid from connecting DPAs separated by water, hydrology polygons (without roads) available in the topographic map (scale 1:10 000) of Latvian Geospatial Information Agency (hereinafter– the LGIA) are erased. To make estimates on 2000 and 2011, the 3<sup>rd</sup> cycle data of the topographic map are used, on 2019 – a combination of 3<sup>rd</sup> and 4<sup>th</sup> cycle (currently not having full coverage). The first data of the 3<sup>rd</sup> cycle reflect situation on 2011, and in some areas actual situation has changed.

Isles having area under or equal to an area of a circle having a radius of the buffer distance (100 meters) and not crossing state border are dissolved with the DPAs.

In the Regulation, definition of locality also states that *certain land-use categories shall not be regarded as breaking the continuity of a built-up area. These categories include industrial and commercial buildings and facilities, public parks, playgrounds and gardens, football fields and other sports facilities, bridged rivers, railway lines, canals, parking lots and other transport infrastructure, churchyards and cemeteries.* As there are no criteria for how these land-use categories ensure continuity of the built-up areas, they were set. Built-up areas are merged into multipolygon if they are connected by dissolved polygons of:

- 100 meters wide buffer zones around industrial, commercial and public buildings (NRECIS data), from which hydrology polygons (without roads, LGIA topographic map in scale 1:10 000) are erased,
- elements of LGIA topographic map – parking lots, cemeteries, parks, gardens and industrial buildings (available in the 4<sup>th</sup> cycle data only) – snapped to each other if located closer than 20 meters from each other. Estimates on all periods are based on the combination of 3<sup>rd</sup> and 4<sup>th</sup> cycle data,

- buffer zones around bridges longer than 100 meters over rivers (LGIA topographic map). Estimates on 2000 and 2011 are based on the topographic map 3<sup>rd</sup> cycle data, estimates on 2019 – on a combination of 3<sup>rd</sup> and 4<sup>th</sup> cycle data.

Afterwards, multipolygons, if connected by sections of roads and railroads no longer than 100 meters, are merged. In respect to the roads, a combination of the topographic map 3<sup>rd</sup> and 4<sup>th</sup> cycle data with manual corrections and additions is used to make estimates on all periods.

As Latvia is sparsely populated, minimum number of persons in DPA is set to 50, which is lower than the smallest size of locality provided for in the Regulation (200). The DPAs in 2019 were created if the population living or working in the area accounted for at least 50 persons. Few DPAs were merged or deleted because of the poor input data quality.

The number of employees in 2019 was estimated in line with the situation at the beginning of 2018, by distributing number of employees in local kind-of-activity units (average of 2017) proportionally to the number of employees in enterprise in December 2017 (State Revenue Service data). When defining DPA borders, self-employed persons are excluded, however they are included in the number of employed persons in the DPAs created. Public organizations outside market sector and Latvian Red Cross are excluded entirely.

DPAs are identified with name LVDPAXxxx, where xxx are increasing numbers starting from 0001. DPAs are numbered in descending order according to the area thereof. Names of the DPAs are assigned in the following order:

- 1) city or town name is assigned to the DPA if the area of a DPA located within the city/town constitutes more than 50 % of the total area of all DPAs located within the city/town (SLS data are used for the borders of cities and towns);
- 2) village name from the State Address Register managed by SLS is assigned to the DPA without name if:
  - a) the area of DPA located within the village constitutes more than 50 % of the total area of all DPAs located within the village;
  - b) village has the biggest area share among all villages intersecting DPA;
  - c) DPA covers at least 1 % of the village area.
- 3) village name from the LGIA toponyms (points) is assigned to the DPA without name if only one village name is located within the DPA;
- 4) village name from LGIA toponyms is assigned to the DPA without name if multiple village names are located within the DPA, but there is only single name per the DPA part. DPA

name is taken from the village that is in the most populated part and has at least twice the population of the second most populated part;

- 5) name of Riga neighbourhood (data from Riga Open Data Portal) is assigned to the DPA without name if:
  - a) the area of DPA located within the neighbourhood constitutes more than 50 % of the total area of all DPAs located within the neighbourhood;
  - b) neighbourhood has the biggest area share among all neighbourhoods intersecting DPA;
  - c) DPA covers at least 1 % of the neighbourhood area.
- 6) name of city/town part from LGIA toponyms (points) is assigned to the DPA without name if only one name of city/town part is located within the DPA;
- 7) name of railway station from LGIA toponyms (points) is assigned to the DPA without name if only one name of railway station is located within the DPA;
- 8) in case of duplicate DPA names, name of territorial unit and, if needed, municipality in which largest DPA area is located is added;
- 9) missing names are added manually.

Code changes are based on the recommendations in INSPIRE technical guidelines on Statistical Units, Annex F.<sup>3</sup> No geometry changes are considered, all aggregations are treated as absorptions, all splittings – as exclusions.

DPAs were estimated within the framework of the grant project *Sub-National Statistics* co-financed by the European Commission. Such an estimate in Latvia is made for the first time, therefore CSB welcomes all recommendations. Contact us by writing to the e-mail address [info@csb.gov.lv](mailto:info@csb.gov.lv).

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<sup>3</sup> <https://inspire.ec.europa.eu/id/document/tg/su>