

# Data set generation:

## Identifying logistics land and data preparation

The identification of logistics facilities and their belonging estates is essentially based on the identification of estates on which logistics buildings are located. This procedure is based on Kretzschmar et al. (2021). For this purpose, data sets of estates are merged with data sets of logistics buildings. Figure 1 summarizes the procedure explained in the following.

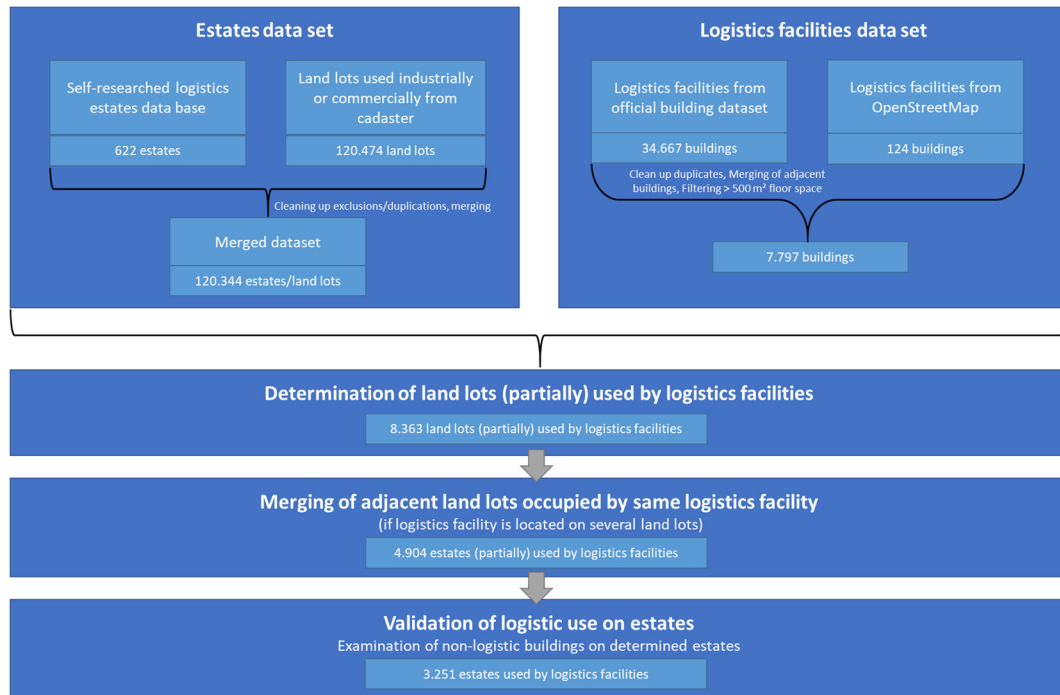


Figure 1: Identification of logistics estates

## Used data sets and their preparation

Regarding the estates, two data sets are used. On the one hand an already existing self-researched logistics estate data base created by Leerkamp et al. (2022) and contains 622 existing logistics estates that are bigger than 2 ha. As a basis for the identification of further logistics estates, land lots used industrially or commercially are utilized from the official Cadastre Information System ALKIS (source: Geobasis NRW 2020). After merging and cleaning up the two data sets, 120,344 land lots/estates remain.

The logistics buildings are extracted of two data sets. The first one is an official building dataset (source: Geobasis NRW 2021), that is freely accessible in the state of North Rhine-Westphalia. This data set also contains detailed information on the function of each building, so logistics buildings can be identified.<sup>1</sup> However, detailed consideration shows that the categorization of the building function is not consistent throughout the region, so some logistics facilities cannot be identified by the official designation of the building function.

<sup>1</sup> Selected building types analogous to Kretzschmar et al. 2021: Storage, cold storage, warehouse, forwarding building

Therefore, further logistics buildings were extracted from OpenStreetMap (source: OpenStreetMap contributors 2021).<sup>2</sup>

The first dataset is edited to this effect, that duplicates are removed, adjacent buildings are merged, and very small buildings (< 500 m<sup>2</sup> floor space, proceeding according to Busch 2013) are removed. After merging the two data sets, 7,797 logistics buildings remain.

## Identification of logistics land

The further identification of logistics land consists of three procedural steps.

The first step is the determination of land lots that are fully or partially occupied by logistics facilities (see left part of Figure 2). As a result, 8,363 land lots remain.

The second step is the generation of estates from the land lots that are (partially) occupied by logistics facilities (see top left in Figure 2). Hence, adjacent land lots, that are occupied by the same logistics facility are merged to one estate. Consequently, 4,904 estates remain, that are at least partially occupied by a logistics facility.

In the third and final step, logistics use of the estates under consideration and that have not been identified by own research is validated. For this purpose, the share of building floor space, that is used by logistics facilities is calculated for each estate (see bottom right in Figure 2). If the share is below 75 %, the estate under consideration is removed.

As a result, 3,251 logistics estates are obtained and remain for further examination.



Figure 2: Procedural steps for the identification of logistics land

<sup>2</sup> Only buildings designated as central warehouse or logistics centre considered.

## Column description

Variable description	Abbreviation	Aggregation of variable/ starting point	Data source
Area [ha] of logistics land identified	log_land	Area of land parcel [ha]	Own calculation
Driving distance [km] to next high-order center	dist_hoc	Centroid of grid cell	Own calculation
Driving distance [km] to next inland terminal	dist_terminal	Centroid of grid cell	Own calculation
Driving distance [km] to next motorway/trunk access	dist_motorway	Centroid of grid cell	Own calculation
Standard land value of the logistics estate 2021 [€/m <sup>2</sup> ]	Land value log	area-weighted average of the standard land value of the commercial/industrial land parcels that overlap with logistics estate identified	Own calculation based on Bezirksregierung Köln (2021)
Employment in NACE-category 49.4 (freight transport by road and removal services) on county level in 2019	494_emp_county	County level (assignment of grid cell based on centroid)	IT.NRW (2021)
Employment in NACE-category 52 (warehousing, storage and support activities for transportation) on county level in 2019	52_emp_county	County level (assignment of grid cell based on centroid)	IT.NRW (2021)
Employment in NACE-category 53 (Postal and courier activities) on county level in 2019	53_emp_county	County level (assignment of grid cell based on centroid)	IT.NRW (2021)
Establishments in NACE-category 49.4 (freight transport by road and removal services) on municipal level in 2019	494_est_mun	Municipal level (assignment of grid cell based on centroid)	IT.NRW (2021)
Establishments in NACE-category 52 (warehousing, storage and support activities for transportation) on municipal level in 2019	52_est_mun	Municipal level (assignment of grid cell based on centroid)	IT.NRW (2021)
Establishments in NACE-category 53 (Postal and courier activities) on municipal level in 2019	53_est_mun	Municipal level (assignment of grid cell based on centroid)	IT.NRW (2021)
Employees occupied in warehousing, mail and delivery, cargo handling (all NACE-categories) on county level in 2020	wmc_emp_county	County level (assignment of grid cell based on centroid)	BA (2021)

## Publication biography

Bezirksregierung Köln (2021): Bodenrichtwerte NRW 2021. Online verfügbar unter [https://www.opengeodata.nrw.de/produkte/infrastruktur\\_bauen\\_wohnen/boris/BRW/BRW\\_2020\\_EPSG25832\\_Shape.zip](https://www.opengeodata.nrw.de/produkte/infrastruktur_bauen_wohnen/boris/BRW/BRW_2020_EPSG25832_Shape.zip).

Busch, Roland (2013): Logistikimmobilienstandorte in Deutschland – Raumstrukturen und räumliche Entwicklungstendenzen. Eine quantitative Untersuchung mit Hilfe der Baufertigstellungs- und Beschäftigtenstatistik. Zugl.: Wuppertal, Univ., Diss., 2013. Münster, Westf: MV-Wissenschaft.

Federal Employment Agency (BA) (2021): Special evaluation of employee data. Employees subject to social insurance at place of work.

Geobasis NRW (2020): WFS NW ALKIS Grundrissdaten vereinfachtes Schema. Online verfügbar unter [https://www.wfs.nrw.de/geobasis/wfs\\_nw\\_alkis\\_vereinfacht?SERVICE=WFS&VERSION=2.0.0&REQUEST=GetCapabilities](https://www.wfs.nrw.de/geobasis/wfs_nw_alkis_vereinfacht?SERVICE=WFS&VERSION=2.0.0&REQUEST=GetCapabilities).

Geobasis NRW (2021): Hausumringe NW. Online verfügbar unter <https://open.nrw/dataset/3f08a580-48ec-43c1-936d-d62f89c21cc9>, zuletzt geprüft am 25.01.2022.

Kretzschmar, Daniel; Gutting, Robin; Schiller, Georg; Weitkamp, Alexandra (2021): Warenlagergebäude in Deutschland: Eine neue Methodik zur regionalen Quantifizierung der Flächeninanspruchnahme. In: *RAUMFORSCHUNG UND RAUMORDNUNG* 79 (2). DOI: 10.14512/rur.55.

Landesbetrieb Information und Technik Nordrhein-Westfalen (IT.NRW) (2021): Sonderauswertung des Unternehmensregistersystems. Anzahl der Niederlassungen in den Gemeinden von NRW in 2006 - 2019 in ausgewählten WZ-Gruppen.

Leerkamp, Bert; Thiemermann, Andre; Groß, Florian; Holthaus, Tim; Jaeger, Arwen; Janßen, Theo et al. (2022): Güterverkehrsstudie für das Gebiet der Metropolregion Rheinland. Endbericht. Hg. v. Nahverkehr Rheinland (NVR). Online verfügbar unter <https://www.nvr.de/regionale-mobilitaetsentwicklung/gueterverkehrsstudie>, zuletzt aktualisiert am 01.09.2022, zuletzt geprüft am 23.12.2022.

OpenStreetMap contributors (2021): Gebäudedatensatz Metropolregion Rheinland. Online verfügbar unter [openstreetmap.org](https://openstreetmap.org), zuletzt aktualisiert am 18.01.2021.