Data Collection of Geographic Names in the BEV

Department of Landscape Information
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Contents

- General workflow of capturing geographic names
- BEV’s Topographic Basic-Models
- Categories of geographic names and responsibilities
- Analog era („ÖK50 era“)
  - Initial data capturing
    - Preparation
    - Field work
    - Processing
  - Updating
- Digital era („KM50 and DLM era“)
  - Initial data capturing (phase 1)
  - Initial data capturing (phase 2)
  - Updating
- Position of names
- Georeferencing
Data Capturing of Geographic Names – General Workflow

Prefield Preparation → Going to the fields → Initial contacts

→

Processing field work results and checking completeness of work → Interviewing in the field → Interviewing at home, school or office
BEV’s Topographic Basic-Models – KM50R
BEV’s Topographic Basic-Models – DLM (1)

Object ranges

| 1000 Traffic | 2000 Settlement | 3000 Land use | 4000 Hydrography | 5000 Land cover | 6000 Terrain | 7000 Names |

Object groupes

- 7100 names of settlement
- 7200 names of area
- 7300 names of mountain
- 7400 names of glacier
- 7500 names of hydrogr.

Object types
BEV‘s Topographic Basic-Models – DLM (2)

Ausschnitt der realen Welt

Modellierung der diskreten Geo-Objekte (Situation)

LEGENDE

Pm  Punkte
Ln  Linien
Pm  Polygone
  geometrischer Stützpunkt
  topologischer Knoten

Objektorientiertes
Digitales Situations-Modell (DSM)
## BEV’s Topographic Basic-Models - Comparison

<table>
<thead>
<tr>
<th>Topographic „Basic-Model“</th>
<th>Digital Landscape Model [DLM]</th>
<th>Cartographic Model 1:50.000 [KM50]</th>
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<tbody>
<tr>
<td><strong>Type of data model</strong></td>
<td>➢ Not bound to a scale</td>
<td>➢ bound to the scale 1:50.000</td>
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<tr>
<td></td>
<td>➢ object-oriented</td>
<td>➢ signature-oriented</td>
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<td></td>
<td>➢ vector data</td>
<td>➢ raster data</td>
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<tr>
<td><strong>Mode of saving the names</strong></td>
<td>➢ Data base</td>
<td>➢ File system</td>
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<tr>
<td><strong>Position of the names</strong></td>
<td>➢ Each name is positioned by a pair of coordinates (no information about the extension of a line or area)</td>
<td>➢ Different versions of name placement (spacing and orientation of the names give us the information about the extension)</td>
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<tr>
<td><strong>Information about quality and quantity</strong></td>
<td>➢ Data base</td>
<td>➢ qualities: font type, font colour, font weight ➢ quantities: font size</td>
</tr>
</tbody>
</table>
Categories of Geographic Names (1)

1) Names of settlement
2) Other geographic names
   - Names of area
   - Names of mountains
   - Names of glacier
   - Names of hydrography
Categories of Geographic Names (2)

1) Names of Settlement
   - spelling: in accordance with the gazetteer of STATISTICAL
     AUSTRIA (Austrian Office for Statistic)
   - Names have an official character
   - On the strength of cartography only a part of these names can
     be placed in the topographic base map ÖK50

2) Other geographic names („non settlement names“)
   - Only names are gathered, which are really in use in this region
     by the population
   - Non settlement names are „official names“, insofar as they are
     part of official papers
   - So they are binding for the international cartography
Geographic Names - Responsibilities

- STATISTIC AUSTRIA
  - BEV
    - Names of settlement
    - Names of area
    - Names of mountain
    - Names of glacier
    - Names of hydrography
  - Hydrographic Central Office
  - Nomenclature Commissions
Workflow for Data Capturing (Analog Map-era)

Initial data capturing

Preparation
different sources >
Lettering sheet (concept)

Field work
capturing & verification
- names of settlement (municipality)
- other geogr. names (persons familiar with place)

Processing
Lettering sheet (result)

Basis for names of the topographic map ÖK50

data updating (area-wide)

Preparation
different sources >
Lettering sheet (concept)

Field work
verification & capturing
- names of settlement (municipality)
- other geographic names (persons familiar with place)

Processing
Lettering sheet (result)
Initial Data Capturing
Main Tasks for the Topographers

- Capturing names as dialect (phonetic) spelling
- Identification and localisation
  - Where is the related object
  - Labeling objects with the correct name
- Extracting names for the scale 1:50.000
- Selecting the correct font type and font size
Preparation in the Office

- Collecting and clearly arranged buildup of the names, based on different sources
- Extraction of all for the topographic map 1:50,000 (ÖK50) estimated useful names from the different documents and inscription in the base map with the scale 1:25,000
- Results of the preparation in office: „lettering sheet“ (Schriftübersicht)
  - lettering sheet is prepared separately for each field sheet (mapping unit, 1/8 of a maps sheet ÖK50-BMN = „old map“)
  - The sources of the names are written in different designations and colours
  - lettering sheet is the most important document of the names for the topographer in the field
  - With the help of different versions of names the topographer receives informations of how solid the different name sources are
Sheet Line System – ÖK50

ÖSTERREICH

old system

new system
Sheet Division of the Field Sheets

ÖK50-BMN ("old map")
- field sheet (1/8): 80–120 names
- map sheet: 640–960 names

ÖK50-UTM ("new map")
- field sheet (1/12): 55–85 names
- map sheet: 660–1020 names
Data Sources (1)

- Law gazettes of Austria and federal provinces (if they concern to geographic names)
- Gazetteer (Ortsverzeichnis) of Austria, updated version or printout of digital data
- 2. Topographic surveying of Austria > Topographic map 1:144.000
- 3. Topographic surveying of Austria
  - Original mapping results in the scale 1:25.000
  - Provisorily edition of the ÖK50
- 4. Topographic surveying of Austria > with all archived documents
- Cadastral map (scaled down to 1:10.000)
  - Authority for reed names
  - Names of hydrography are also contained
  - Names of isolated objects
Data Sources (2)

- Hydrographic Register of Austria
  - Editor: government department for agriculture and forestry
  - Use of the hydrographic names, if there are no discrepancies to the local usage

- Maps of the Austrian Alpine Association (Alpenverein AV)
  - Very important source for mountains
  - Maps with original scale 1:25.000 > contain a lot of names (more than the ÖK)
  - These names are edited by experts and well-known scientists
  - The conformity with alpine literature is often given
  - The complete conformity of the names in the ÖK50 und AV-maps fails, because there is a different view of the spelling of names which are spoken in dialect
Data Sources (3)

- Touristic maps, map of walks of private cartographic publishing companies
- Maps of forestry: these maps are often first available during the field work
- Literature of local history und alpine literature (books of hiking and climbing)
- Register of refuges of the Alpine Association
- Brochure of tourism and cartographic panorama
- Railway guide of the Austrian National Railways: Information for the names of railway stations and halts
### Gazetteer of Austria

#### Data Sources – Names of Settlement

- Old version (more details)

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Abb. 3: Ausdruck aus dem Ortsverzeichnis

#### New version (less details)

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Data Sources – Other Geographic Names

Cadastral Map
Data Sources – Names of Hydrography

Hydrographic Register

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<tr>
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<th>GEBIET</th>
<th>FLÄCHE (km²) DES GEBIETES DER ORDNUNG</th>
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Data Sources
Railway Guide of the Austrian National Railways
Field Work
Generally Purpose

- The purpose of the ÖK50-Initial data capturing fieldwork is:
  - To check and complete the results of the photogrammetry
  - To classify object according to the legend of the ÖK50
  - Cartographic generalisation for the scale 1:50,000

- Result: a map concept, where the contents of the ÖK50 is fixed by the topographer

- The capturing of geographic names is a very important part of the activities during the field work
Field Work
Working on Names of Settlement

- These names are basically accepted from the gazetteer > additionally checks in the field are done

- If the name written in the gazetteer is incorrect > in the municipality a special document (data entry form for names) must be completed
Field Work
Working on Names of Settlement

- Contents of the data entry form:
  - Old and new geographic name
  - Statement to the new names or modified names
  - Ratification of the name changes by official seal of the municipality and by the signature of the mayor or an agent of him

- After the STATISTIC AUSTRIA has noticed the name document > the new or changed names of settlement are accepted in the gazetteer as well as in the Austrian Topographic Map 1:50.000 (ÖK50)

- This approach protects the conformity between the names of the gazetteer and the ÖK50 to a large extent
## Data Entry Form for Names

<table>
<thead>
<tr>
<th>Aufnahmeplz.</th>
<th>Verifikator</th>
<th>Gemeinde</th>
<th>Alter Stand</th>
<th>Neu</th>
<th>Nähere Angaben zu geänderten bzw. neuen Namen</th>
<th>Erläuterung</th>
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Die Gemeinde bestätigt die in Spalte 2 bzw. 3 eingetragenen Angaben und wünscht die Berücksichtigung der Änderungen in der Siedlungswiderruf bzw. im Ortserkundung.
Field Work
Data Entry Form for Names (Discription)

- column 1: in front of the names (old status) the following abbreviations must be put for the correct identification:
  - OG: OrtsGemeinde (municipality)
  - O: Ortschaft (locality)
  - Ob: Ortschaftsbestandteil (part of locality)

- column 2:
  - recording of all the namens which changes
  - recording of new names (then column 1 will be blank)
  - deleting names (reason must be registered in column 3)

- column 3: details of the changes, which are listed in column 2
  - legal basis (the provisions of national, regional and local law)
  - date the changing becomes effective
  - reason, for the deleting of a name

- column 4: notation of execution of the STATISTICS AUSTRIA. Specification of details, if the reasons for changing have not been noticed
Field Work
Working on other geographic names

- Principle for the topographer (working according to the technical instructions)
  - Ask persons which are familiar to the place (foresters, teachers, pastors, members of Alpin clubs, farmers...)
  - Capture only names, which are really in use in this area
  - Unknown names, which are part of the lettering sheet (Schriftübersicht) must not be captured
  - No name is to be taken in without being checked
- Defining the position and the boundary of the name
- To differentiate the categories of names it is important to select the correct font type (for example: area-names and names of mountains have a different font type)
- Consolidated findings are noted in the lettering sheet (Schriftübersicht)
- Concept of the lettering sheet will still be prepared during the field work
  - Overview of the captured names
Office Treatment – Data Processing

- Editing and fair drawing of all field work results by the topographer
- Drawing a lettering sheet for the fixing of all geographic names
  - Names and elevation numbers are closely connected, so they are charted on the same transparent paper
  - Selection of the names for the final scale 1:50,000 (paying attention to the maximal number of names)
  - Correct allocation of the names by drawing a position mark which gives the following information:
    - Pointer to the related object
    - spreading of the name
  - Definition of font type and font size
    - Putting the according name number under the pointer
- Petition to the respective nomenclature commission (Nomenklatur-bzw. Ortsnamenkommission) to give a statement on the captured non settlement names
Initial Data Capturing – Lettering Sheet
Updating

The need for updating names: day to day changing of the landscape
- New names are coming into being
- Names are relating to other objects
- Names are forgotten
- There are reasons to change the diction of names

Preparing for field work: Similar to the Initial data capturing of names >
Creating of a lettering sheet (concept for each mapping unit)

Field work:
- Municipal offices are the first contact point for updating geographic names
- If the information of the municipal offices are to short > frequenting appropriate persons, which are name experts in their regions
- Necessary changes of names are mapped in the lettering sheet
- This transparency is the basis for the cartographic editing afterwards
- Statement of the nomenclature commission (non settlement names)
- **BEV has the final decision** about the fixing of the non settlement names
Updating lettering sheet with foot path marking and spot elevation
Data Capturing of Geographic Names

graphical results

Initial data capturing

Data updating
Visualisation of the names in the topographic map 1:50,000

Map extract (3 x 3 km = 9 km²)

Area of low name density

Area of high name density
Workflow for Building-up the Database of Names (Digital era)

Initial Data Capturing

Phase 1 (1989-1993)
Collecting the names contained by the ÖK50 (without georeferencing)

Phase 2 (1995-1996)
Allocate names to the according features by digitising the position (georeferencing)

Updating

Continuous Update
mainly for updating names of settlement (regulations)

Area-wide Update (cycle of 7 years)
For all name categories (collected during the topographers fieldwork)

DLM – Object range
7000 names
Initial Data Capturing – Phase 1 (a)

- 1989 –1993: digital data collection of the digital names contained by the Austrian Topographic Map ÖK50 (scale 1:50,000), using only a simple personal computer
- Storage of about 114,000 names in a database (dBase) with the following attributes:
  - Administrative district
  - Font (font type and font size according to the catalogue of cartographic signatures of the ÖK-50)
  - Height above sea level (if the name is assigned to an elevation number in the ÖK50)
## Initial Data Capturing – Phase 1 (b)

<table>
<thead>
<tr>
<th>Suchparameter: martin</th>
<th>Seite 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>ÖK A-Blatt</td>
<td>Bezirk</td>
</tr>
<tr>
<td>Martinsbichl</td>
<td>92 / 1-S</td>
</tr>
<tr>
<td>St. Martin bei Lofer</td>
<td>92 / 3-N</td>
</tr>
<tr>
<td>St. Martin bei Lofer</td>
<td>92 / 4-N</td>
</tr>
<tr>
<td>St. Martin am Tennenengebirge</td>
<td>126 / 1-N</td>
</tr>
<tr>
<td>St. Martinbl.</td>
<td>126 / 1-S</td>
</tr>
<tr>
<td>Hst. Niedernfritz-St. Martin</td>
<td>126 / 1-S</td>
</tr>
<tr>
<td>Martininberg</td>
<td>157 / 3-N</td>
</tr>
<tr>
<td>St. Martin</td>
<td>157 / 3-N</td>
</tr>
<tr>
<td>Martiner Berg</td>
<td>157 / 3-N</td>
</tr>
<tr>
<td>St. Martiner Aineckht.</td>
<td>157 / 3-N</td>
</tr>
</tbody>
</table>
### Field sheet

ÖK50-GK

[15' x 15']

**Initial Data Capturing – Phase 1 (b)**

#### Microsoft Access - [ÖK 38 - Namen-Ersterfassung : Tabelle]

<table>
<thead>
<tr>
<th>NAME</th>
<th>BLATT</th>
<th>SCHRIFT</th>
<th>HÖHE</th>
<th>V_BEZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absdorf</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td>319</td>
</tr>
<tr>
<td>Adalberast</td>
<td>5</td>
<td>7</td>
<td>0</td>
<td>313</td>
</tr>
<tr>
<td>Adletzberg</td>
<td>8</td>
<td>6</td>
<td>211</td>
<td>319</td>
</tr>
<tr>
<td>Ahrenberg</td>
<td>7</td>
<td>6</td>
<td>0</td>
<td>321</td>
</tr>
<tr>
<td>Aigen</td>
<td>5</td>
<td>6</td>
<td>0</td>
<td>313</td>
</tr>
<tr>
<td>Alaunb.</td>
<td>2</td>
<td>15</td>
<td>0</td>
<td>301</td>
</tr>
<tr>
<td>Almefeld</td>
<td>4</td>
<td>11</td>
<td>0</td>
<td>313</td>
</tr>
<tr>
<td>Alte Haid</td>
<td>1</td>
<td>11</td>
<td>0</td>
<td>313</td>
</tr>
</tbody>
</table>
Initial Data Capturing – Phase 2 (a)

- 1995 –1996: Georeferencing the names in the national coordinate system
- Assigning the name to a feature after defining a suitable feature position, which is done by the topographers using the ÖK25V
  - Church for a populated place (if possible)
  - Highest place for a mountain name
  - Center of the extent of the name in the map, if an accurate localisation is not possible or does not exist
  - For hydrographic names a point lying on the relevant hydrographic feature and near the name in the map
- „OnScreen“-Digitising of the feature positions
- The result is stored in an ORACLE-database
Initial Data Capturing – Phase 2 (b)

- Capturing of about 115,000 geographical names
- Based on the name source of the ÖK50
- Each name was assigned a position and several attributes
- Some Names were NOT digitised:
  - All abbreviations (e.g. Fb., SG, Stb., etc.)
  - Names that are not proper names (z.B. stadium, bath, golf course etc.)
- Initial data acquisition was finished 1996
- Update of data
  - Periodic update with 7-year cycle, done by topographers
  - Continuous update for important changes
Initial Data Acquisition – Phase 2 (3)

ÖK50 – map sheet 38 Krems/Donau

Names of the ÖK50 map sheet 38
- Names of settlement
- Names of area
- Names of mountains
- Names of hydrography

detailed cutout

- Parapluiberg/7305(20)/319/0
- Böckbild/7124(7)/319/0
- Theyernbach/7504(15)/319/0
- Galgenleiten/7305(20)/319/0
## Overview of the different cases of name-positions

<table>
<thead>
<tr>
<th>Position</th>
<th>Accurate</th>
<th>Less accurate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Names of settlement</td>
<td>- main church, main chapel (settlements)</td>
<td>- main crossroad</td>
</tr>
<tr>
<td></td>
<td>- center of object (isolated building)</td>
<td>- chapel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- center of built-up area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- center of the name placement in KM50</td>
</tr>
<tr>
<td>Names of area</td>
<td>X</td>
<td>- center of the area</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- center of the name placement in KM50</td>
</tr>
<tr>
<td>Names of mountains</td>
<td>- trigonometric point</td>
<td>- position designed by Contour</td>
</tr>
<tr>
<td></td>
<td>- cross on summit</td>
<td>- center of the name placement in KM50</td>
</tr>
<tr>
<td></td>
<td>- spot elevation</td>
<td></td>
</tr>
<tr>
<td>Names of glaciers</td>
<td>X</td>
<td>- center of the glacier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- center of the name placement in KM50</td>
</tr>
<tr>
<td>Names of hydrography</td>
<td>- center of object (point features of hydrography)</td>
<td>- center of standing water (lakes, ponds)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- center of the name placement in KM50 of flowing water</td>
</tr>
</tbody>
</table>

>
Position – Names of Settlement

Accurate

- Main church
- Center of object (refuge)

Less accurate

- Supposed main crossroad
- Center of the name placement
Position – Names of Area

Less accurate

center of the name placement

Center of the area
Position – Names of Mountain (accurate)

cross on summit

trigonometric point

spot elevation

† Cross on summit
△ trigonometric point
× spot elevation
Position – Names of Mountain (less accurate)

center of the name placement

position designed by contour
Position – Names of Glaciers (less accurate)

- center of the name placement
- center of the glacier
Position – Names of Hydrography (accurate)

Point features of hydrography
Center of the object

waterfall

spring
Position – Names of Hydrography (accurate)

Different visualisation of a spring
1) Only with the signature (less important)
2) Signature with abbreviation (important)
3) Signature and object name (very important)
Position – Names of Hydrography (less accurate)

**Line features of Hydrography**
center of the name placement on the centerline

**Area features of Hydrography**
Center of the lake
Georeferencing

- The old national grid is still used for georeferencing:
  - Geodetic datum: MGI (Militär Geographisches Institut)
  - Projection: Gauss-Krüger-Projection (3° strips)

- Transformation to other coordinate systems
  - Universal Transversal Mercator (UTM) / WGS84
  - Geographic Coordinates / WGS84
  - Lambert conformal conical projection
Database extract – Coordinate system (1)

1) Gauss-Krüger-Projection & Geographic Coordinates (MGI)
<table>
<thead>
<tr>
<th>RW_GAUSS</th>
<th>HW_GAUSS</th>
<th>MER</th>
<th>LÄNGE_GEO</th>
<th>BREITE_GEO</th>
</tr>
</thead>
<tbody>
<tr>
<td>-67601,910</td>
<td>215152,670</td>
<td>M34</td>
<td>33 06 35,43</td>
<td>47 04 20,74</td>
</tr>
<tr>
<td>79890,380</td>
<td>236837,240</td>
<td>M28</td>
<td>29 03 20,88</td>
<td>47 15 57,94</td>
</tr>
<tr>
<td>70733,290</td>
<td>351820,922</td>
<td>M31</td>
<td>31 57 12,71</td>
<td>48 18 04,6</td>
</tr>
<tr>
<td>-21419,040</td>
<td>295526,170</td>
<td>M31</td>
<td>30 42 50,6</td>
<td>47 47 54,71</td>
</tr>
</tbody>
</table>

2) UTM-Projection & Geographic Coordinates (WGS84)
<table>
<thead>
<tr>
<th>RW_UTM</th>
<th>HW_UTM</th>
<th>MER</th>
<th>LÄNGE_GEO</th>
<th>BREITE_GEO</th>
</tr>
</thead>
<tbody>
<tr>
<td>533570,4</td>
<td>5213263,38</td>
<td>15</td>
<td>15 26 31,784</td>
<td>47 04 19,306</td>
</tr>
<tr>
<td>680693,6</td>
<td>5237441,59</td>
<td>9</td>
<td>11 23 19,182</td>
<td>47 15 55,975</td>
</tr>
<tr>
<td>447043,4</td>
<td>5349968,66</td>
<td>15</td>
<td>14 17 09,319</td>
<td>48 18 02,507</td>
</tr>
<tr>
<td>353723,9</td>
<td>5295693,3</td>
<td>15</td>
<td>13 02 47,954</td>
<td>47 47 52,693</td>
</tr>
</tbody>
</table>

Display the **position of names** in different coordinate systems
1) Gauss-Krüger-Projection & Geographic Coordinates (MGI)
2) UTM-Projection & Geographic Coordinates (WGS84)
3) Lambert conformal conical projection (WGS84)
Database extract – Coordinate system (2)

<table>
<thead>
<tr>
<th>RW_GAUSS</th>
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<td>295526,170</td>
<td>M31</td>
<td>30 42 50,6</td>
<td>47 47 54,71</td>
</tr>
</tbody>
</table>

Gauss-Krüger-Projection (Map datum: MGI)

1) Easting
2) Northing
3) Meridional Zone (3)
   (M28°, M31°, M34° East to Ferro = 17°40′ west of Greenwich)
4) Geographic longitude
5) Geographic latitude
Database extract – Coordinate system (3)

<table>
<thead>
<tr>
<th>1) RW_UTM</th>
<th>2) HW_UTM</th>
<th>3) MER</th>
<th>4) LÄNGE_GEO</th>
<th>5) BREITE_GEO</th>
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<td>15</td>
<td>13 02 47,954</td>
<td>47 47 52,693</td>
</tr>
</tbody>
</table>

UTM-Projection (Map datum: WGS84)

1) Easting
2) Northing
3) Meridional Zone (2)
   (9°, 15° East to Greenwich)
4) Geographic longitude
5) Geographic latitude
Database extract – Coordinate system (4)

1) Lambert conformal conical projection (Map datum: WGS84)
   1) Easting
   2) Northing

<table>
<thead>
<tr>
<th>RW_LAMB</th>
<th>HW_LAMB</th>
</tr>
</thead>
<tbody>
<tr>
<td>560159.63</td>
<td>354660.09</td>
</tr>
<tr>
<td>252950</td>
<td>375846.24</td>
</tr>
<tr>
<td>470714.89</td>
<td>489486.4</td>
</tr>
<tr>
<td>378588.03</td>
<td>433215.74</td>
</tr>
</tbody>
</table>
Thank you for your attention