

# Levels of spatial planning, Preparatory Land Use Plan, Sustainable Development. The Stuttgart Example

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**State Capital Stuttgart, Germany**

**Mumbai, May 29th, 2015**





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2. Levels of spatial planning in Germany
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4. Sustainable management of building areas in Stuttgart
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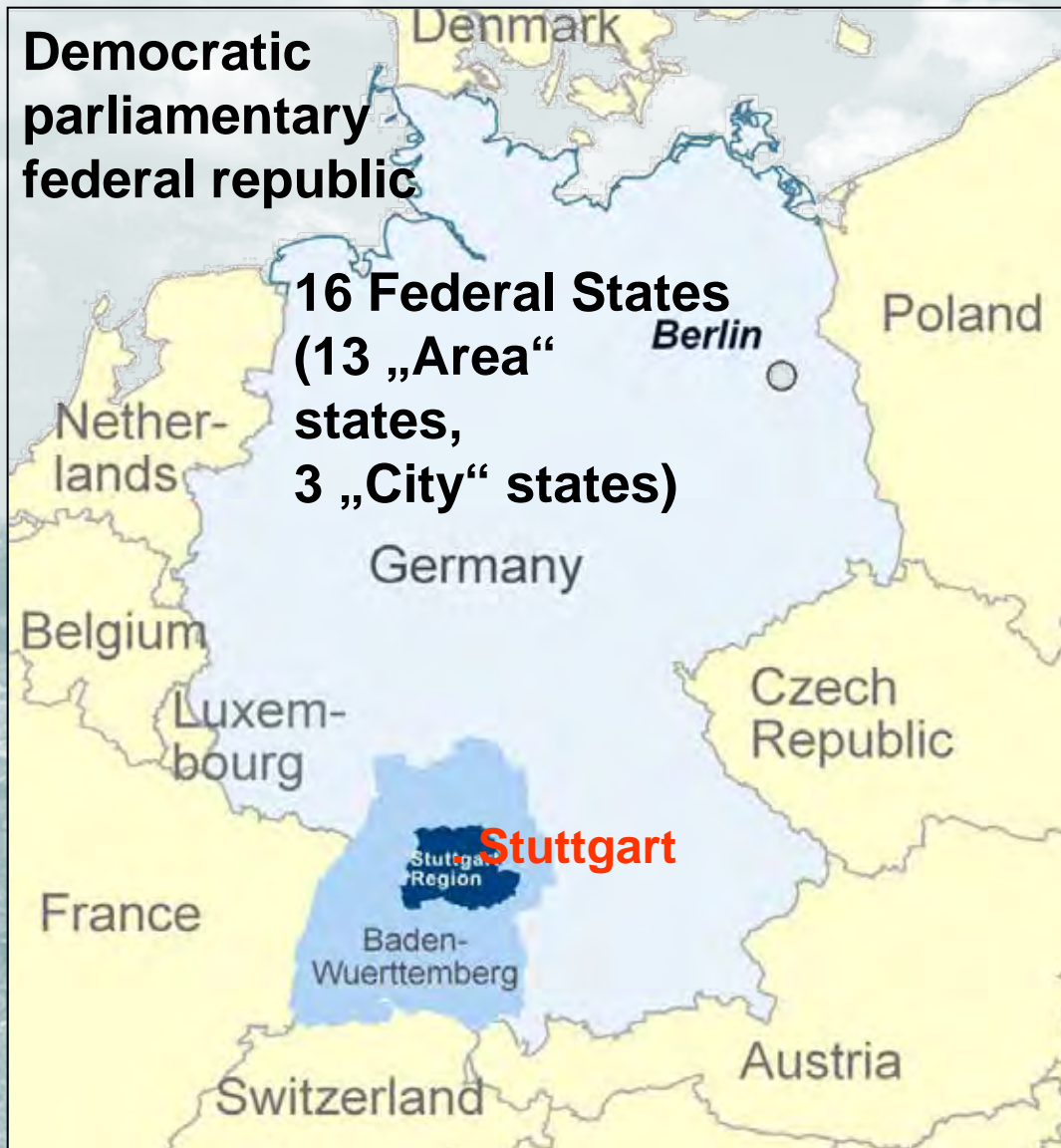




# The Greater Stuttgart Region within Europe

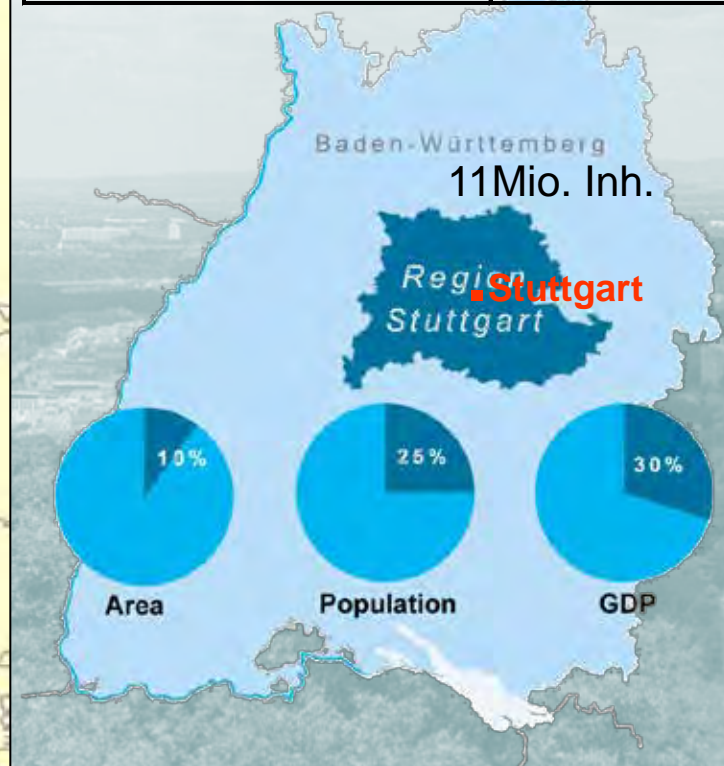
Democratic  
parliamentary  
federal republic

16 Federal States  
(13 „Area“  
states,  
3 „City“ states)



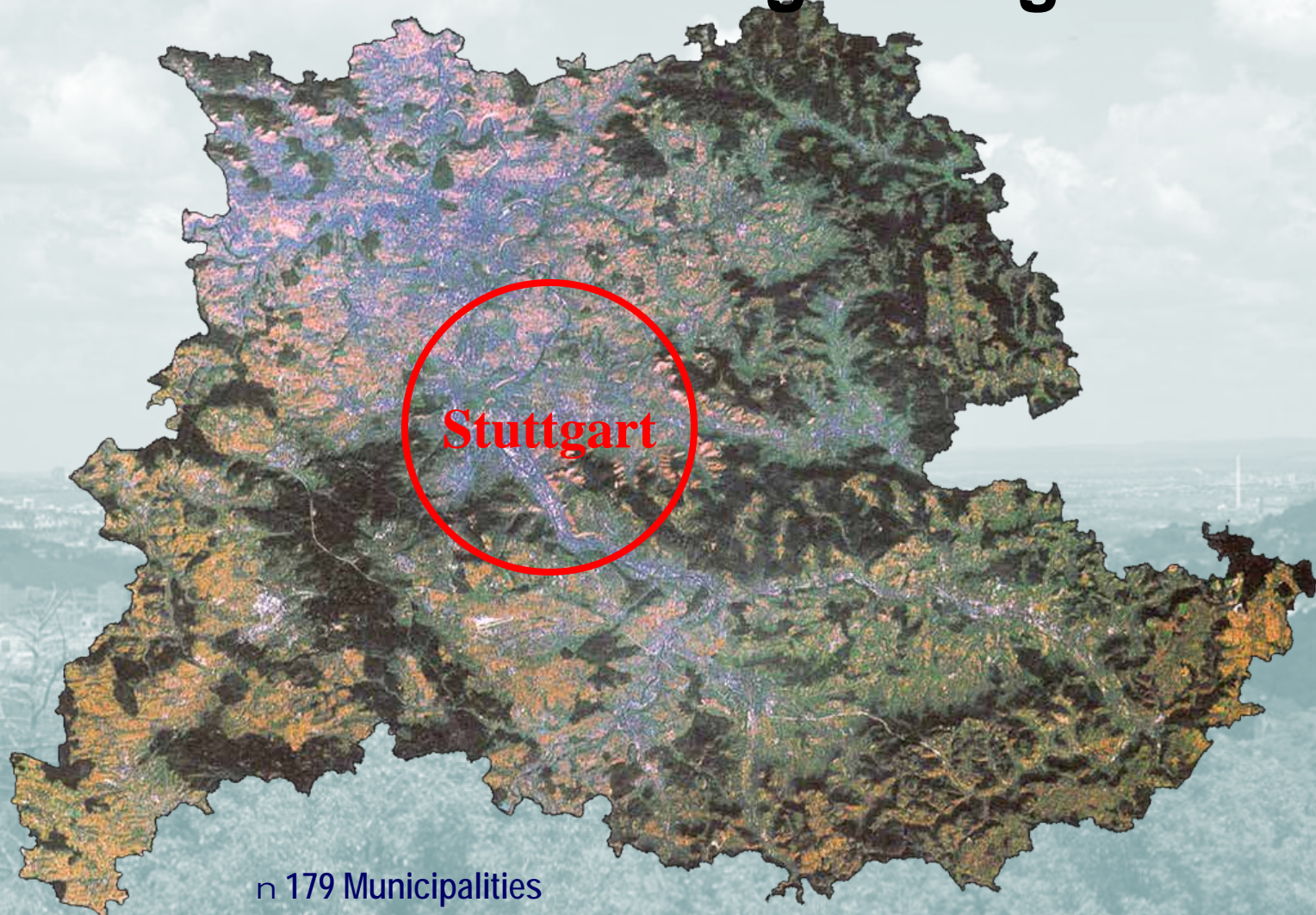
Germany:

population	82 Mio inh.
density of population	230 inh./km <sup>2</sup>
population in cities	73 Mio inh
Urbanisation	88,91%





# The Greater Stuttgart Region



n 179 Municipalities  
n 2.7 mio. Inhabitants (Mumbai Metropolitan Region 18,4 Mio)  
n 3.654 km<sup>2</sup>  
n 718 Inhabitants/km<sup>2</sup>



# View on Stuttgart

594,000 inhabitants (**Mumbai 12,5 Mio**)

460,000 workplaces

Square dimension 207 km<sup>2</sup> (**603 km<sup>2</sup>**) (2914 inh./ km<sup>2</sup> (**20680 inh./ km<sup>2</sup>**))

Altitude above sea-level: 207– 549m (**11 m**)



# Facts and figures

## City of Stuttgart

- Centrally Located in Germany and Europe
- Good accessibility to highways, rail network, airport and water route:

## Stuttgart Main Station

164 long distance trains p.d.  
426 short distance trains p.d.  
200.000 travellers and visitors p.d.

## Stuttgart Airport

~ 400 take offs and landings p.d.  
~ 10 mio. passengers p.a.  
~ 20.290 t air freight p.a.

## Stuttgart Port

~ 2.7 tons freight p.a.



# Facts and figures

## *Economic Data*

Business Location Stuttgart Region

- About 160,000 registered companies
- 1.5 million economically active people
- GDP: 110 billion EUR
- R&D expenses by the companies: 7.5% of GDP
- High international competitiveness: more than 60% of turnover in manufacturing is generated abroad
- Low unemployment rate: 4.2% (01/2015)



# Facts and figures

## Important Company Headquarters

Business Location Stuttgart Region

**STIHL**

**SCHULER**



**PORSCHE**

 **Thieme**



**THALES**



**DAIMLER**



**metabo**  
work. don't play.



**märklin**

**celesio**  
the healthcare group



 **DEKRA**

**Bauknecht**

 **KÄRCHER**

**FESTO**

**BOSCH**

 **MAIRDUMONT  
MEDIA**

**MAHLE**

*Driven by performance*

**ALLGAIER**

**STUTTGART**





# Facts and figures

## Basis Public Transport in Stuttgart (City)

§ Organisation: Public Transport Authority (SSB),  
Regional Public Transport Association (VVS)

- § Since end of 70ies continuous expansion
- § First Light Railway in 1985
- § Passengers: ~ 500.000 p.wd.
- § LRT: 16 lines, 209 km route-length
- § Buses: 54 lines, 672 km route-length
- § 815 stops and stations
- § 70% of citizens very comfortable with PT



Source: SSB / VVS

























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## Levels of spatial planning in Germany





# Planning in European Context



Basic goals of principles of countries spatial organisation taking account of European Union spatial policy and setting a framework for the states legal regulations affecting local plans.

Transnationale Kooperationsräume mit Beteiligung Deutschlands 2007 - 2013



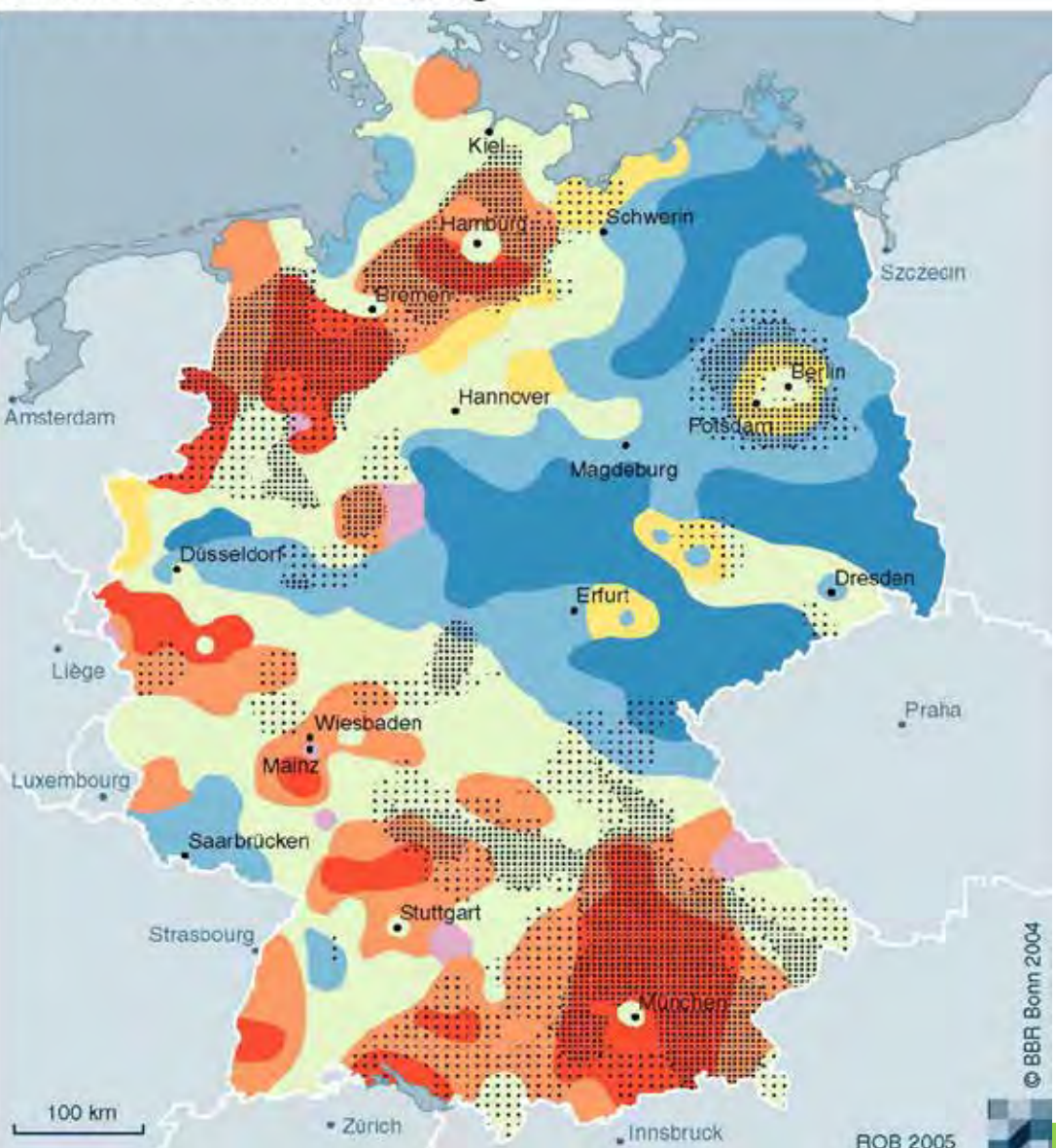
Nordsee  
Ostsee  
Nordwesteuropa  
Zentraleuropa  
Alpen



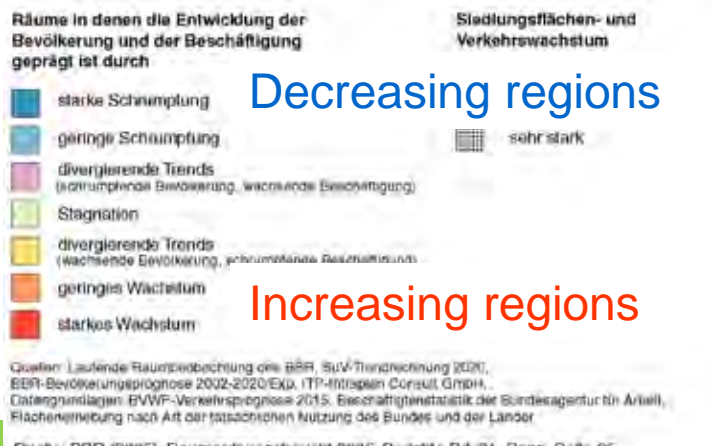
# Federal spatial planning report

Principles and guidelines for spatial Planning as well as guiding principles for spatial development

## Trends der Raumentwicklung



## Population projection for Germany





# System of planning in Germany

Plan legally binding

Plan not legally binding

The planning system according to the federal building code and to the state planning act



City-wide

City-wide

planning

planning area

planning area

Germany has a decentralized planning system with the planning jurisdiction on the municipal level (local planning autonomy – but municipal planning shall be brought into line with the aims of planning on state and regional level)



Plan legally binding

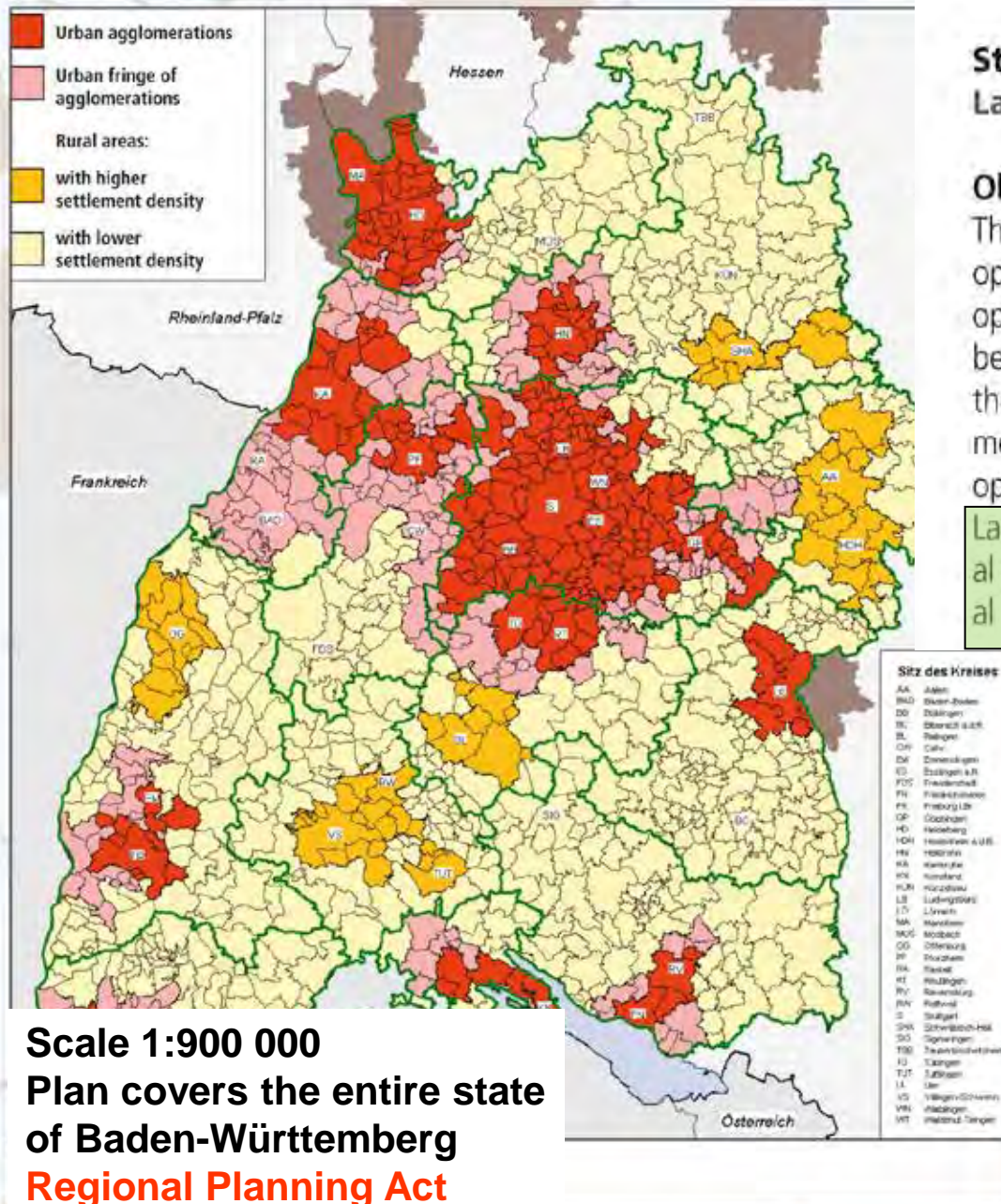
Plan not legally binding

## System of planning in Germany





# STATE DEVELOPMENT PLAN



## State Development Plan Landesentwicklungsplan

### Objective and content

The Landesentwicklungsplan (LEP) "State Development Plan" specifies the goals of spatial development for the entire state of Baden-Württemberg. In particular, it maps the central places and their catchment areas, superordinate development corridors as well as the borders in between open spaces and densely populated areas. The

Landesentwicklungsplan is subdivided into general policies and objectives on the state and regional level and into sectoral plans.

**Representation of the desired spatial and structural development for the territory of the state. The plan includes comprehensive, statewide aims of spatial planning for 1110 municipalities within 12 regions.**





Scale 1:900 000

Plan covers the entire state  
of Baden-Württemberg

**Regional Planning Act**  
**State Planning Act**



Plan legally binding

Plan not legally binding

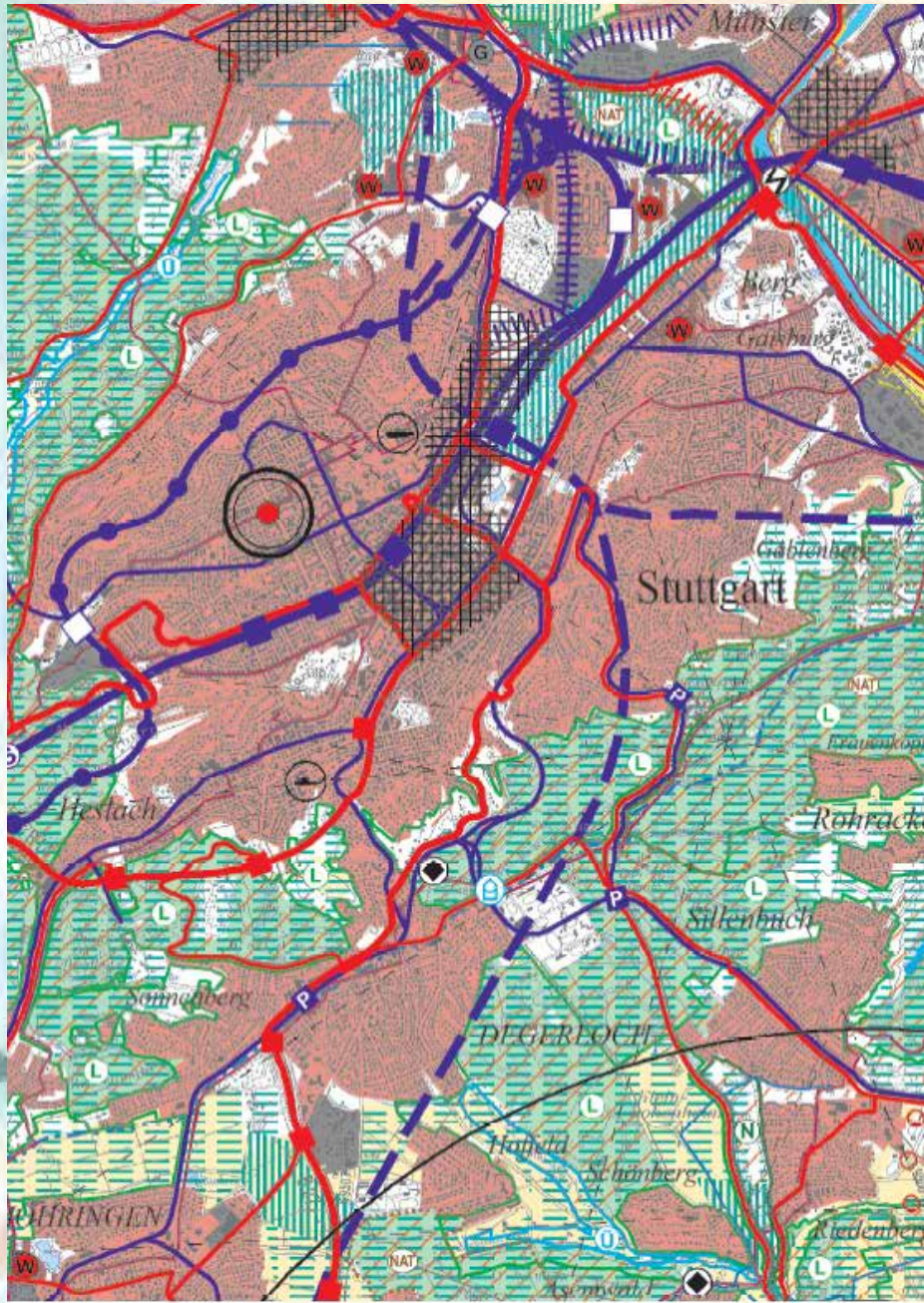
# System of planning in Germany



Abb. N.Baumüller



# REGIONAL PLAN



## Regional Plan Regionalplan

### Objective and content

In the Regionalplan "Regional Plan", contents of the Landesentwicklungsplan "State Development Plan" are adopted and contextualized for the area of the Greater Stuttgart Region. As the Regionalplan transfers contents of state sectoral planning onto the regional level, it can be seen as a link between state and municipal planning.

The Regional Plan is subdivided into the following parts: goals, basic principles, recommendations and written statements for the development of settlements, green belts, and infrastructure.

It outlines the regional structure of land uses and governs the spatial order to coordinate the development of settlement and recreational uses with transportation and infrastructure networks and public facilities. An underlying basic planning principle is the concept of development corridors

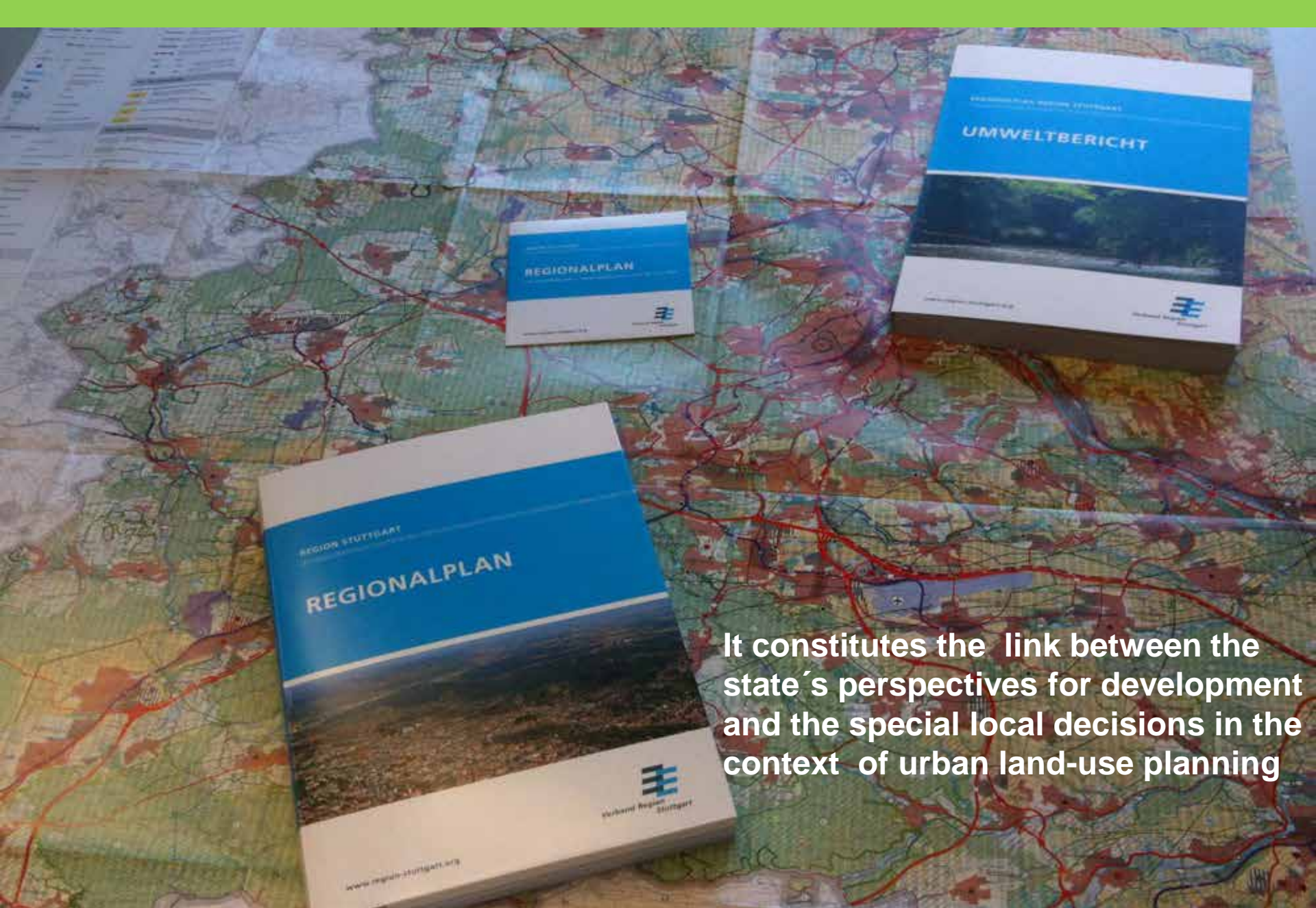
**Scale 1:50 000**

**Plan covers the Greater Region  
Stuttgart (3654 km<sup>2</sup>, 2,6 Mio Inh.)**

**Legal basis:**

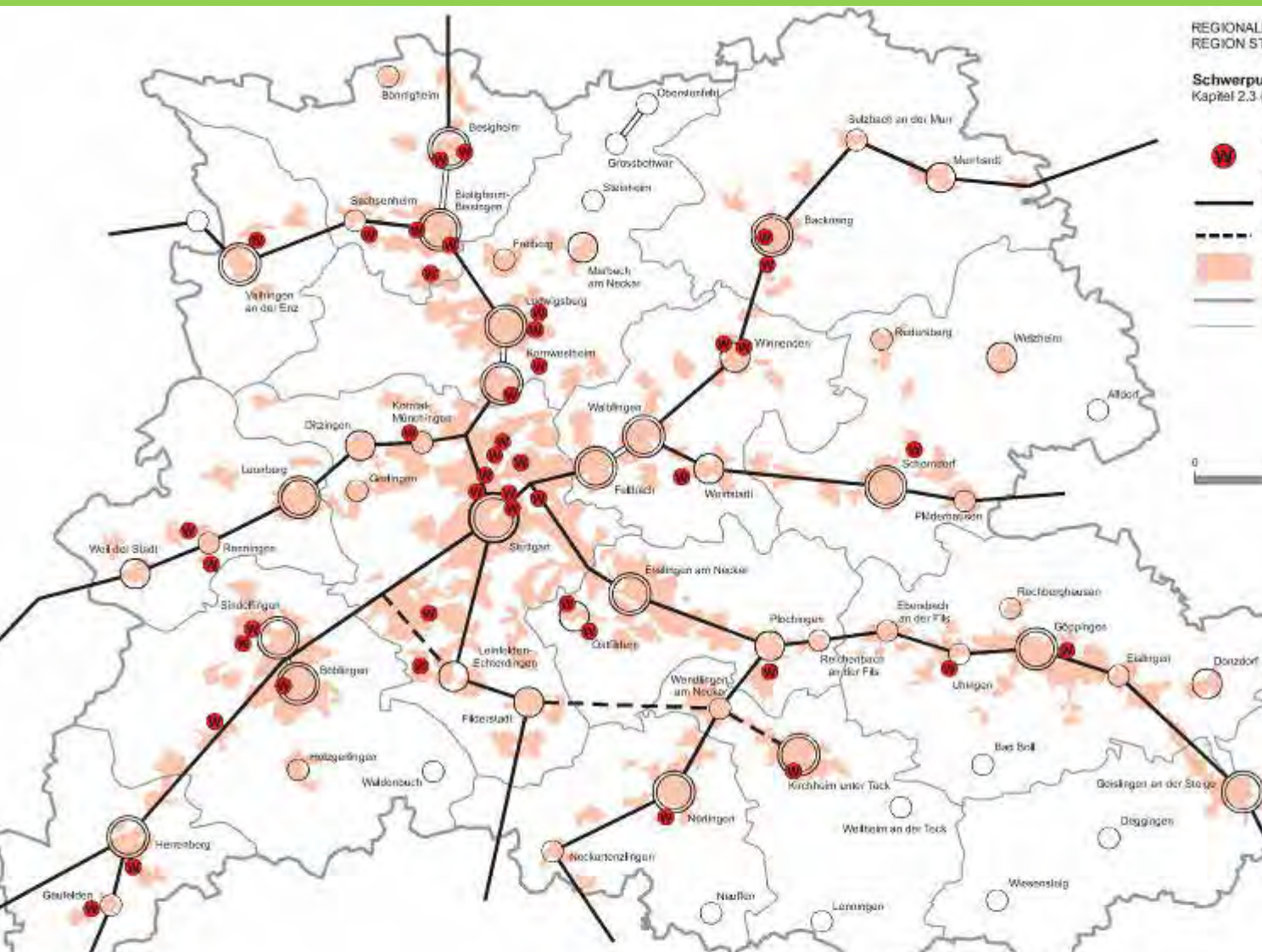
**Regional Planning Act  
State Planning Act**





It constitutes the link between the state's perspectives for development and the special local decisions in the context of urban land-use planning





**Schwerpunkte für den Wohnungsbau**  
Kapitel 2.3 (Z) - Tabelle

- Regionalbedeutsamer Schwerpunkt des Wohnungsbaus (Gebietsscharfe Darstellung in der Raumnutzungskarte)
- Entwicklungssache des Landesentwicklungsplans 2002
- Regionale Entwicklungssache
- Siedlungsbereiche der Entwicklungssache
- Regionsgrenze
- Mittelbereichsgrenze

0 5



**EINLADUNG**

[www.region-stuttgart.org/raum-fuer-zukunft](http://www.region-stuttgart.org/raum-fuer-zukunft)

**RAUM FÜR ZUKUNFT**

DER REGIONALPLAN 2020 IN DER DISKUSSION



SIE HABEN DAS WORT.

[www.region-stuttgart.org](http://www.region-stuttgart.org)



**STUTTGART**



**Regional plan**

**Guideline for urban development of 179 municipalities**

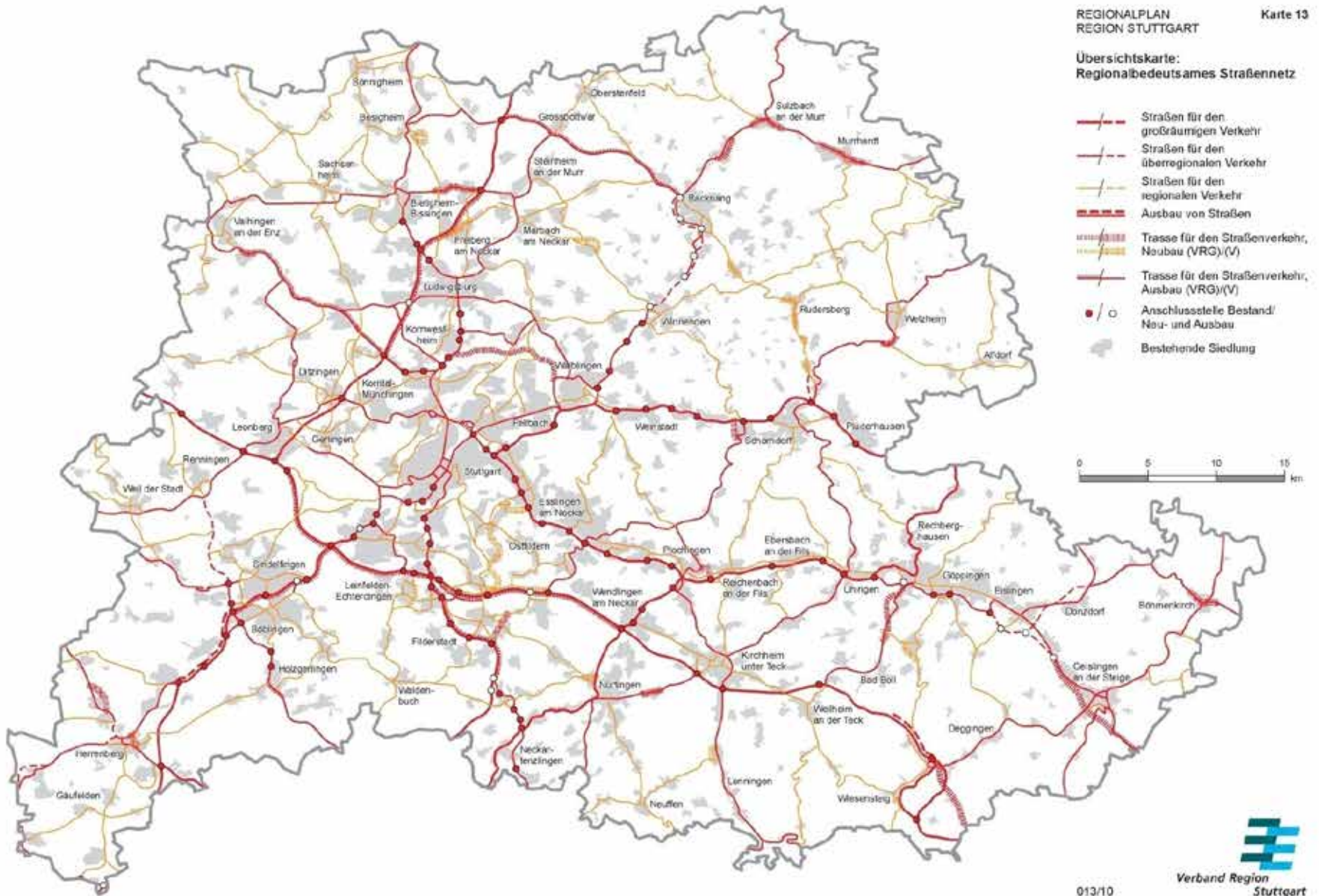


# Classified street network

REGIONALPLAN  
REGION STUTTGART

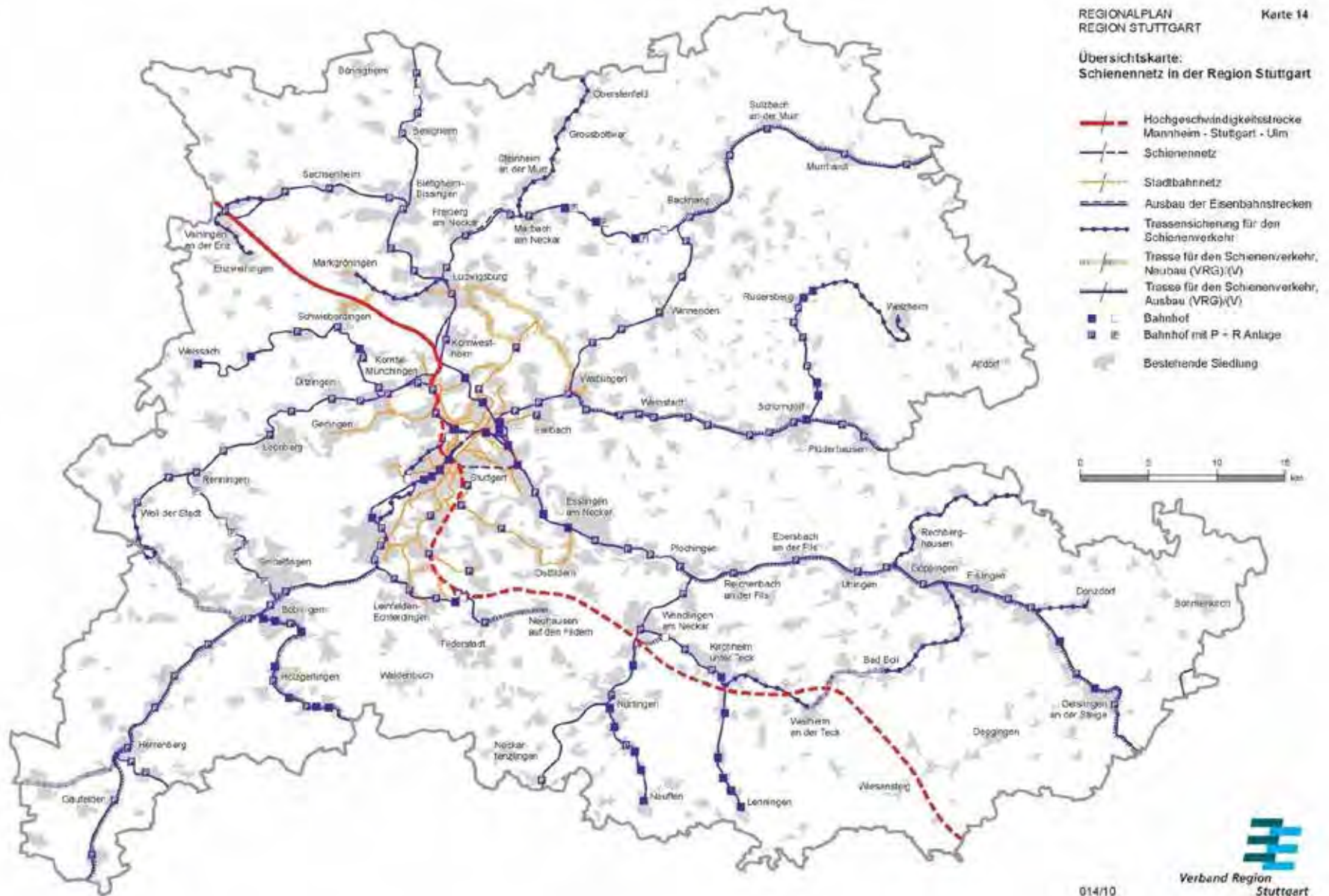
Karte 13

Übersichtskarte:  
Regionalbedeutendes Straßennetz



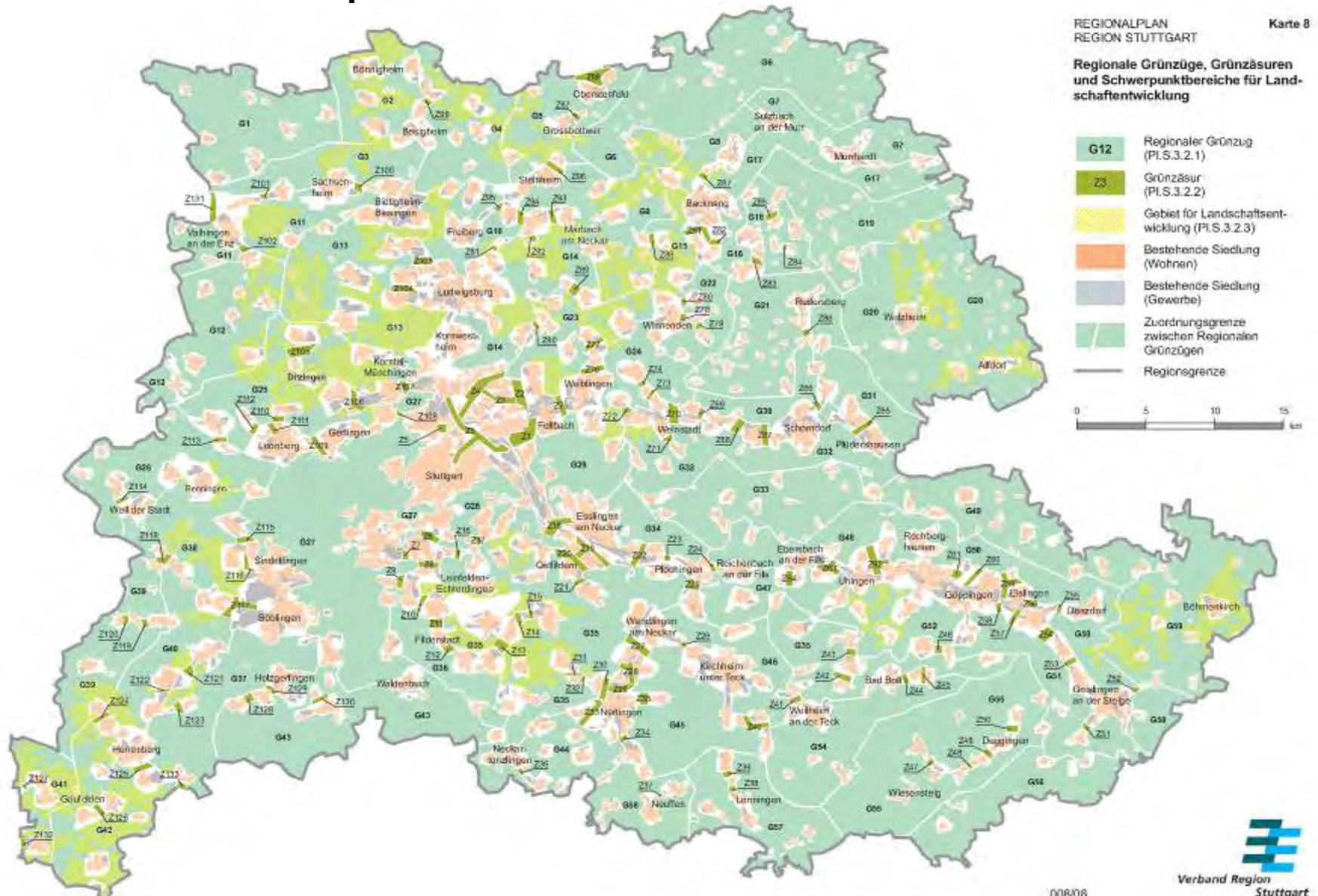
013/10

# Classified public transport network





# Basis for the Landscape Framework Plan



Regional Green Corridors terminate local decisions by state planning law

Plan legally binding

Plan not legally binding

## System of planning in Germany





# PREPARATORY LAND USE PLAN



## § 5 "Federal Building Code"

(1) The preparatory land use plan shall represent in basic form the type of land uses arising for the entire municipal territory in accordance with the intended urban development which is proposed to correspond to the anticipated needs of the municipality.

### Preparatory Land Use Plan Flächennutzungsplan

#### Objective and content

German municipal planning (Bauleitplanung) consists of two levels of planning: preparatory land use planning and legally binding local development planning at the single lot level. The Flächennutzungsplan (FNP, F-Plan) "Preparatory Land Use Plan" prepares and organizes the use of all lots located within a municipality for building and other types of use according to the prerequisites of the Baugesetzbuch (BauGB) "Federal Building Code". Usually, the planning interval is 15 years.

**Scale 1:10000**

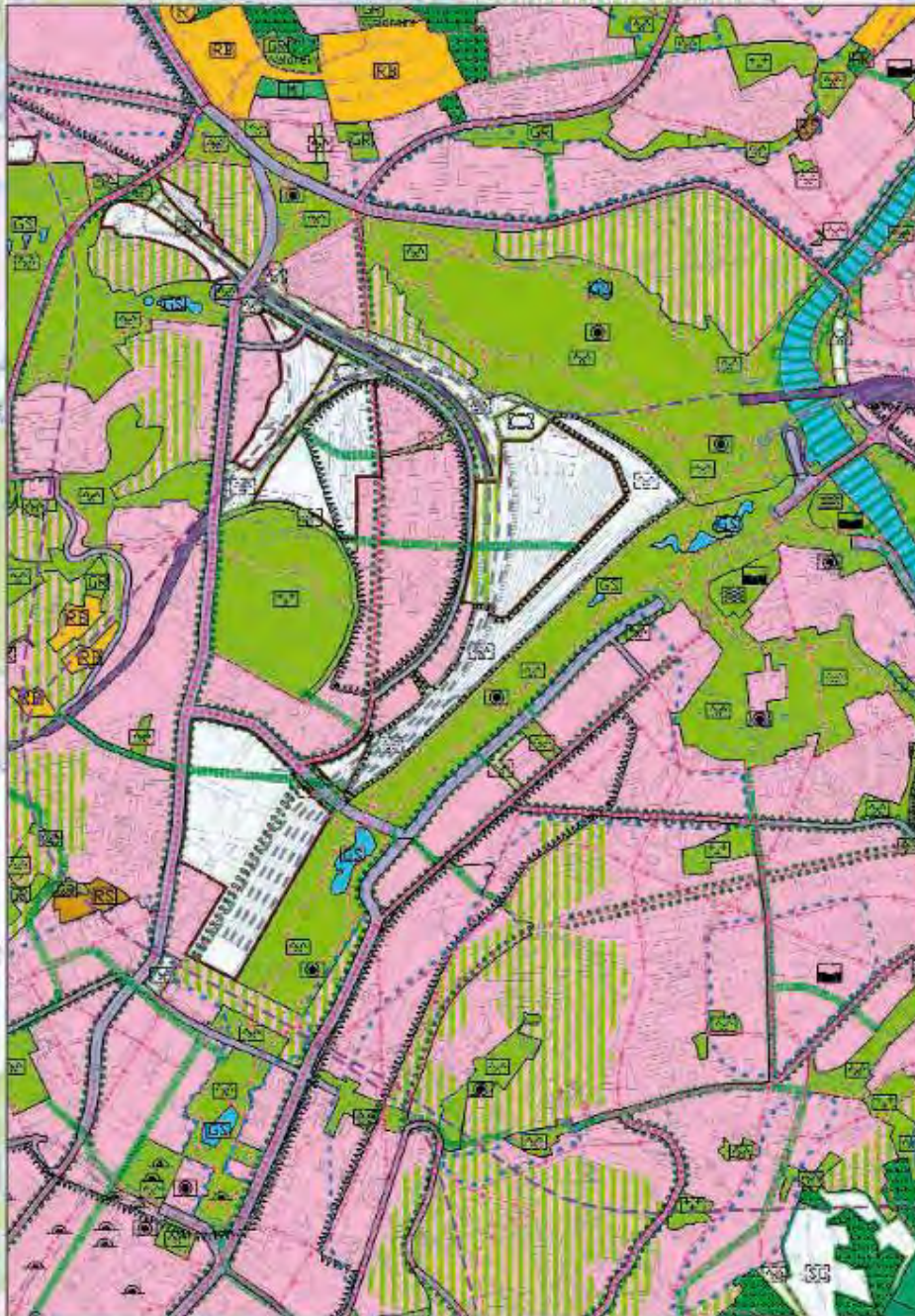
**Pan covers the entire  
municipality of Stuttgart  
(207 km<sup>2</sup>, 590,000 Inh.)**

**Legal Basis:**

**Federal Building Code**



# LANDSCAPE PLAN



## Landscape Plan Landschaftsplan

### Objective and content

The Landschaftsplan (LSP) "Landscape Plan" implements the aims of nature protection and landscape conservation and thus adds these components to municipal urban development and land use planning. When the Flächennutzungsplan was updated on July 18th 1996, the Municipal Council simultaneously decided to draw up a new Landschaftsplan. The Landschaftsplan supplements and counterbalances the provisions of the Flächennutzungsplan and elaborates on landscape as a natural life resource. It covers both settled and non-settled areas, as well as areas zoned

Essential statements of the current Landscape Plan draft (for example, the identification of areas with insufficient green spaces, the designation of green corridors within built up areas, of landscape development areas, and of zones for mitigation measures, allotment and market-gardening) entered the Flächennutzungsplan that is now binding in effect.

**Scale 1:10000**

**Plan covers the entire  
municipality of Stuttgart**

**Nature Protection Statute BW**



Plan legally binding

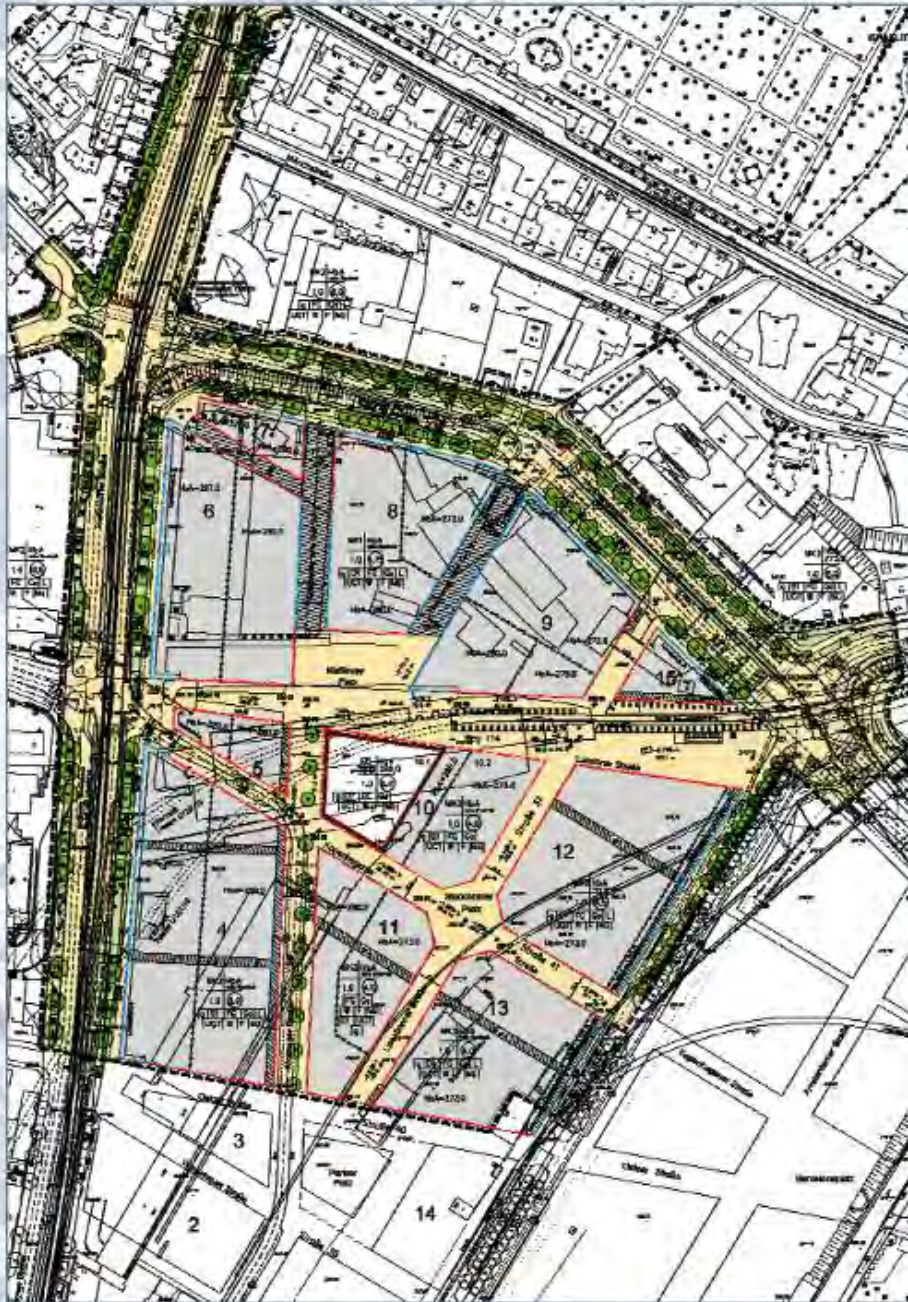
Plan not legally binding

## System of planning in Germany





# LOCAL DEVELOPMENT PLAN



## Local Development Plan Bebauungsplan

### Objective and content

The Bebauungsplan (B-Plan) "Local Development Plan" / "Legally Binding Land Use Plan" / "Zoning Map" is the second, legally-binding level of German municipal development and land use planning (Bauleitplanung). It is derived from the Flächennutzungsplan "Preparatory Land Use Plan" and safeguards the socially equitable use of land for the good of the general community.

Whereas the Flächennutzungsplan contains the general guidelines for the urban development of an entire municipality, the B-Plan particularizes the plan at lot level and makes it legally binding.

According to the prerequisites of the Baugesetzbuch (BauGB) "Federal Building Code" as of August 2004, an Umweltprüfung (UP) "Environmental Impact Assessment" (EIA) has to be conducted during B-Plan preparation. It identifies the expected impact on the environment, described and evaluated in an Umweltbericht "Environmental Report".

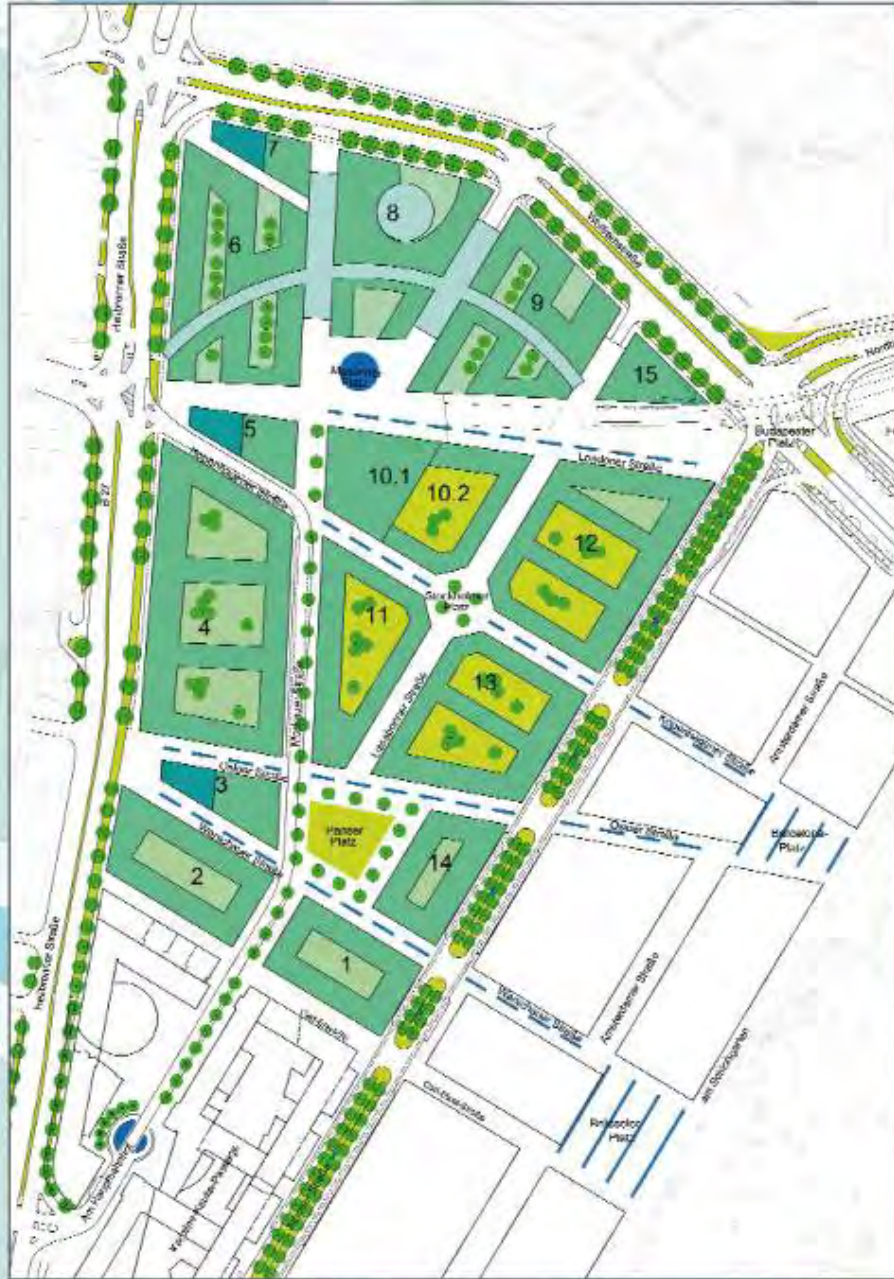
**Scale 1:500 – 1:1000**

**Territory covered by plan  
depending on project**

**Federal Building Code**



# LOCAL GREEN STRUCTURE PLAN



## Local Green Structure Plan Gruenordnungsplan

### Objective and content

The Gruenordnungsplan (GOP) "Local Green Structure Plan" / "Open Space Structure Plan" is a non-formalized, supplementary plan of the Bebauungsplan "Local Development Plan".

According to the state's "Nature Protection Statute" (NatSchG § 7 Abs. 1 and § 9 Abs. 1), municipal planning authorities are obliged to work on a Gruenordnungsplan as soon and as far as necessary to adopt, complement, alter or override current local development plans.

**Scale 1:500 – 1:1000**

**Territory covered by plan  
depending on project,  
partly exceeding the B-plan  
Territory**

**Natural Protection Statute BW**







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# The challenges and future tasks of urban development in Stuttgart

**Globalization of the economy**

**Sustainable land development**

**Preservation of the compact mixed use-European city**

**Greater Region: intercommunal solutions required**

**Social and economic polarization of society**

**Trend back in town: creating urban living offers**

**Demographic changes and spatial disparities**

**Climate change: 2 ° C target and adaptation strategies**

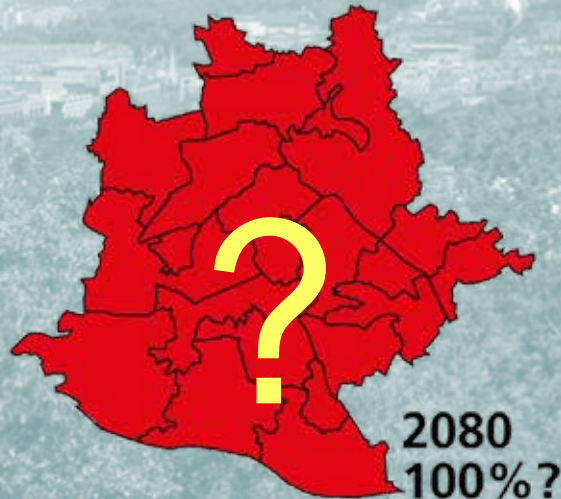
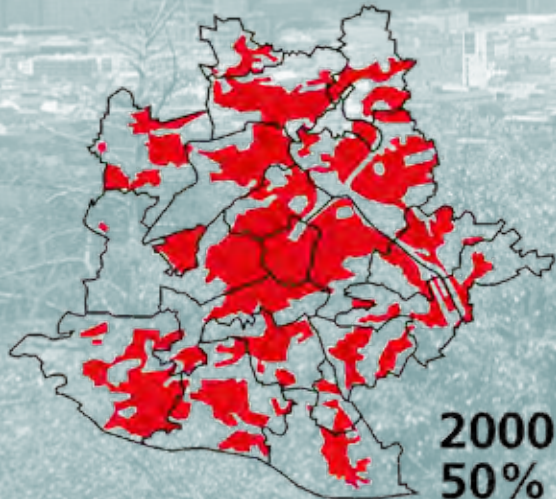
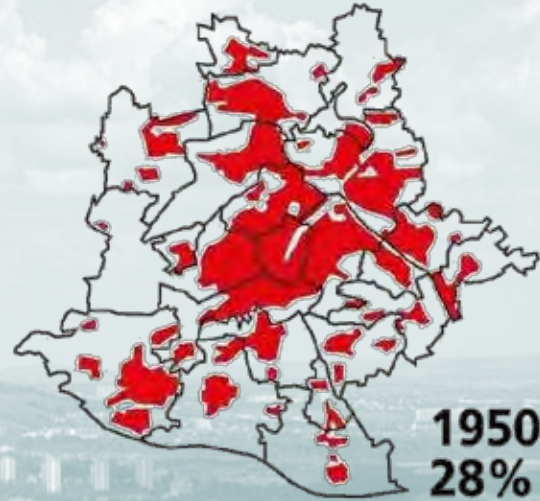
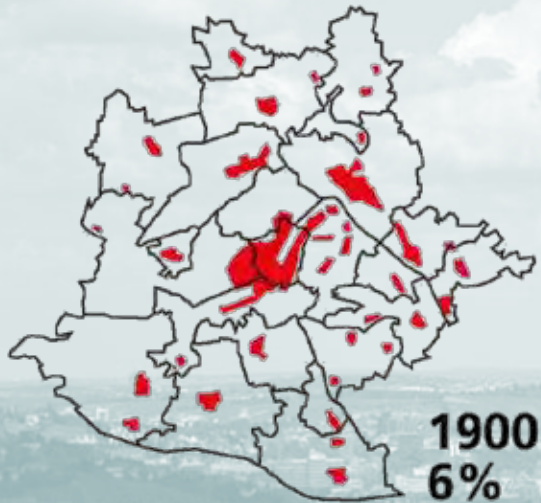
**Education, poverty and socio-economic consequences**

**Ensure urban and sustainable mobility**



# Urban Sprawl Stuttgart

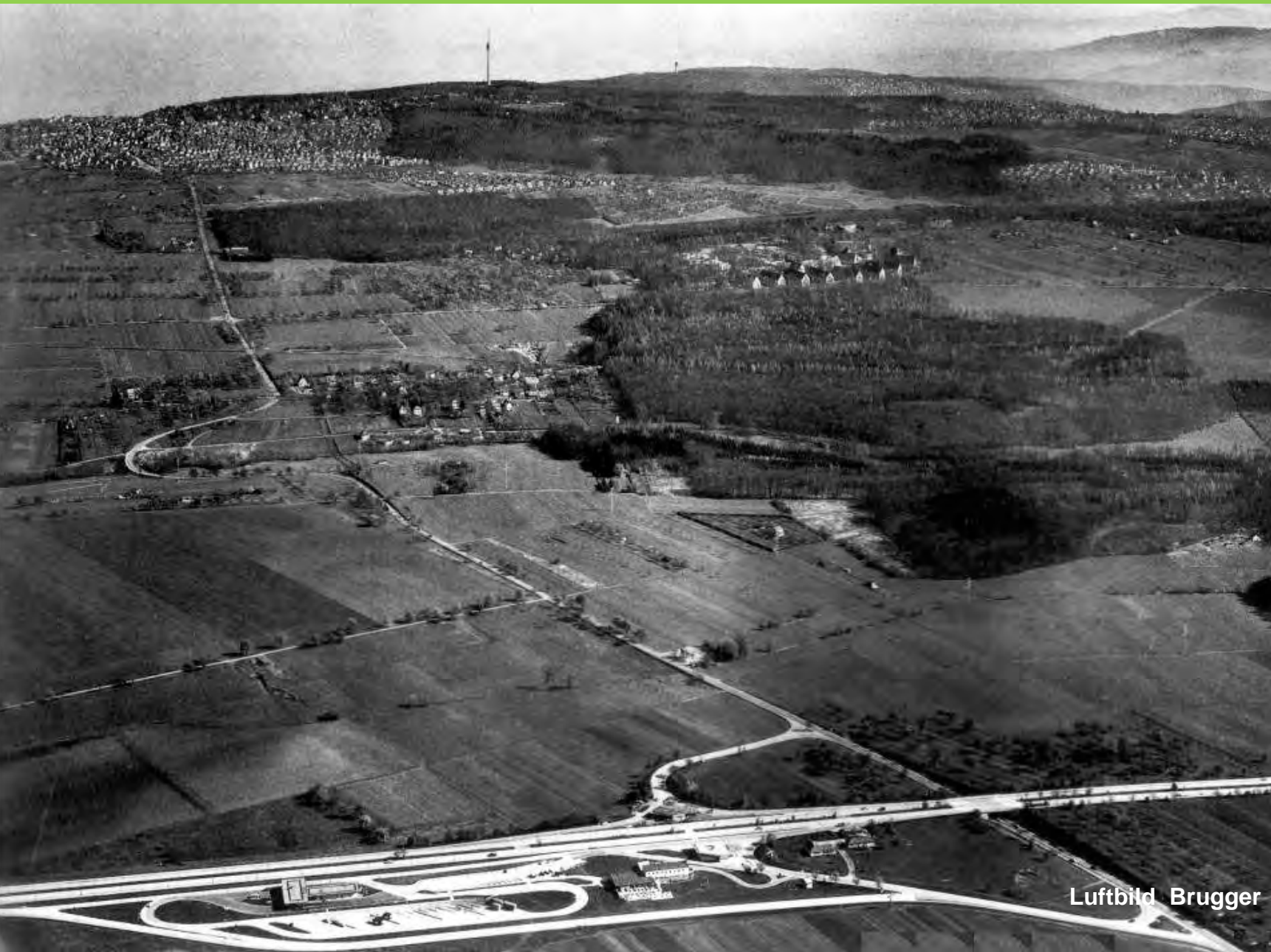
**Growth of the Urban Area – problem with land consumption**



**Section 1(5) Federal Building Code:**

**....Land shall be used in a manner which is both economical and considerate exploitation of land..**

1959



Luftbild Brugger



1990



Luftbild Brugger



# 2005



Luftbild Storck

Foto: Manfred Storck

STUTTGART



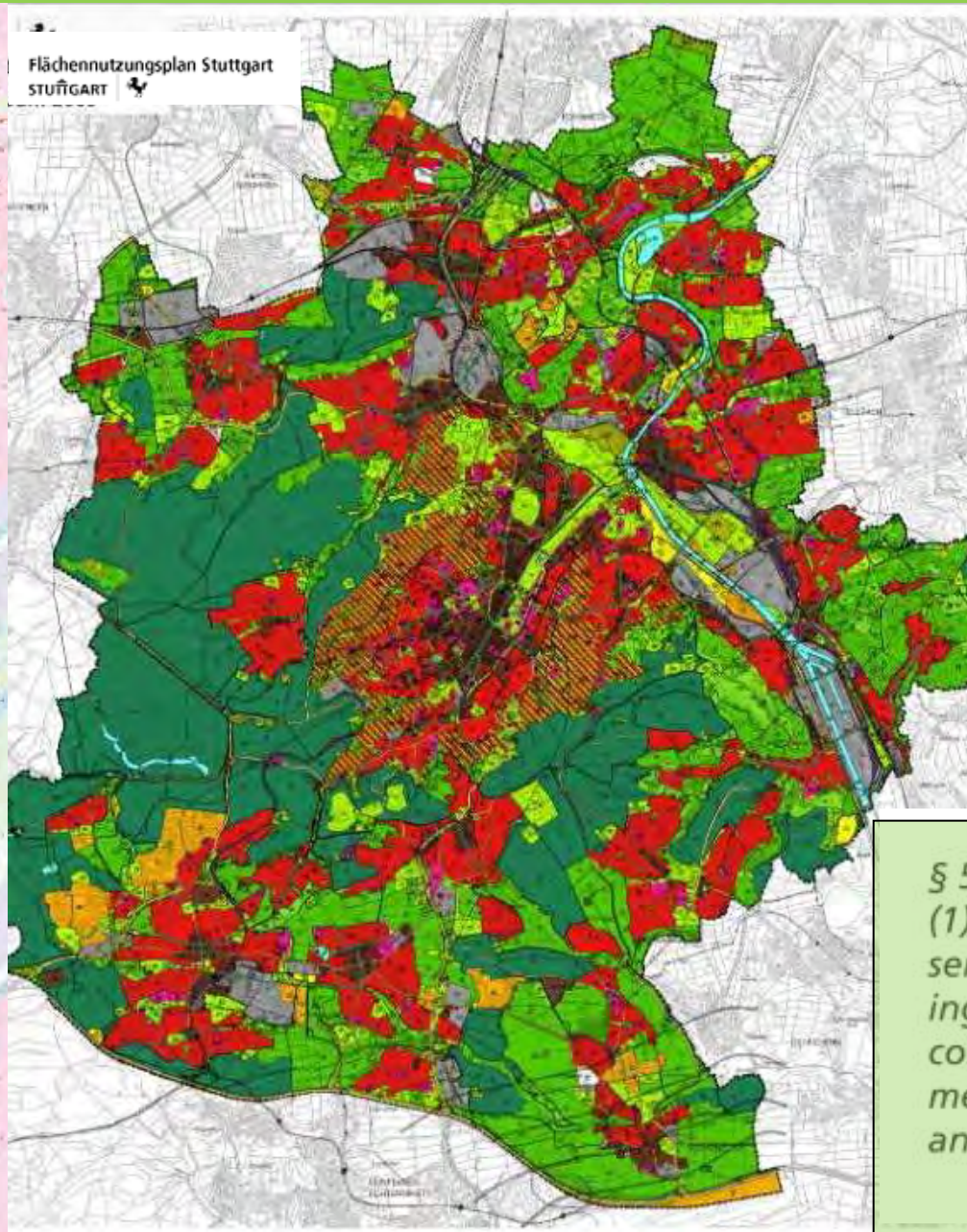


2008





# PREPARATORY LAND USE PLAN

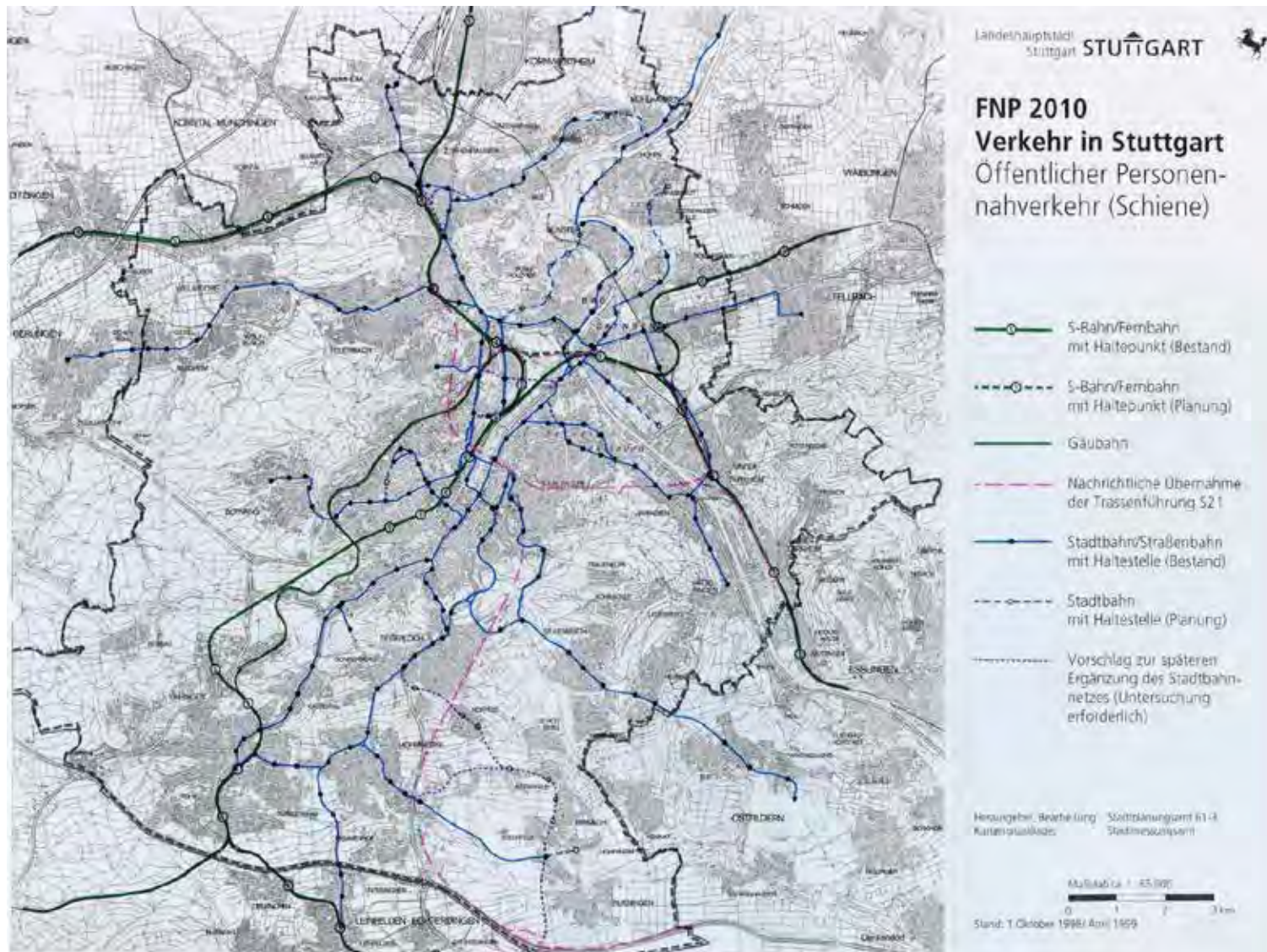


**Scale 1:10000**  
**Plan covers the entire municipality of Stuttgart (207 km<sup>2</sup>, 580,000 inh.)**  
**Legal Basis:**  
**Federal Building Code**

*§ 5 "Federal Building Code"*  
*(1) The preparatory land use plan shall represent in basic form the type of land uses arising for the entire municipal territory in accordance with the intended urban development which is proposed to correspond to the anticipated needs of the municipality.*

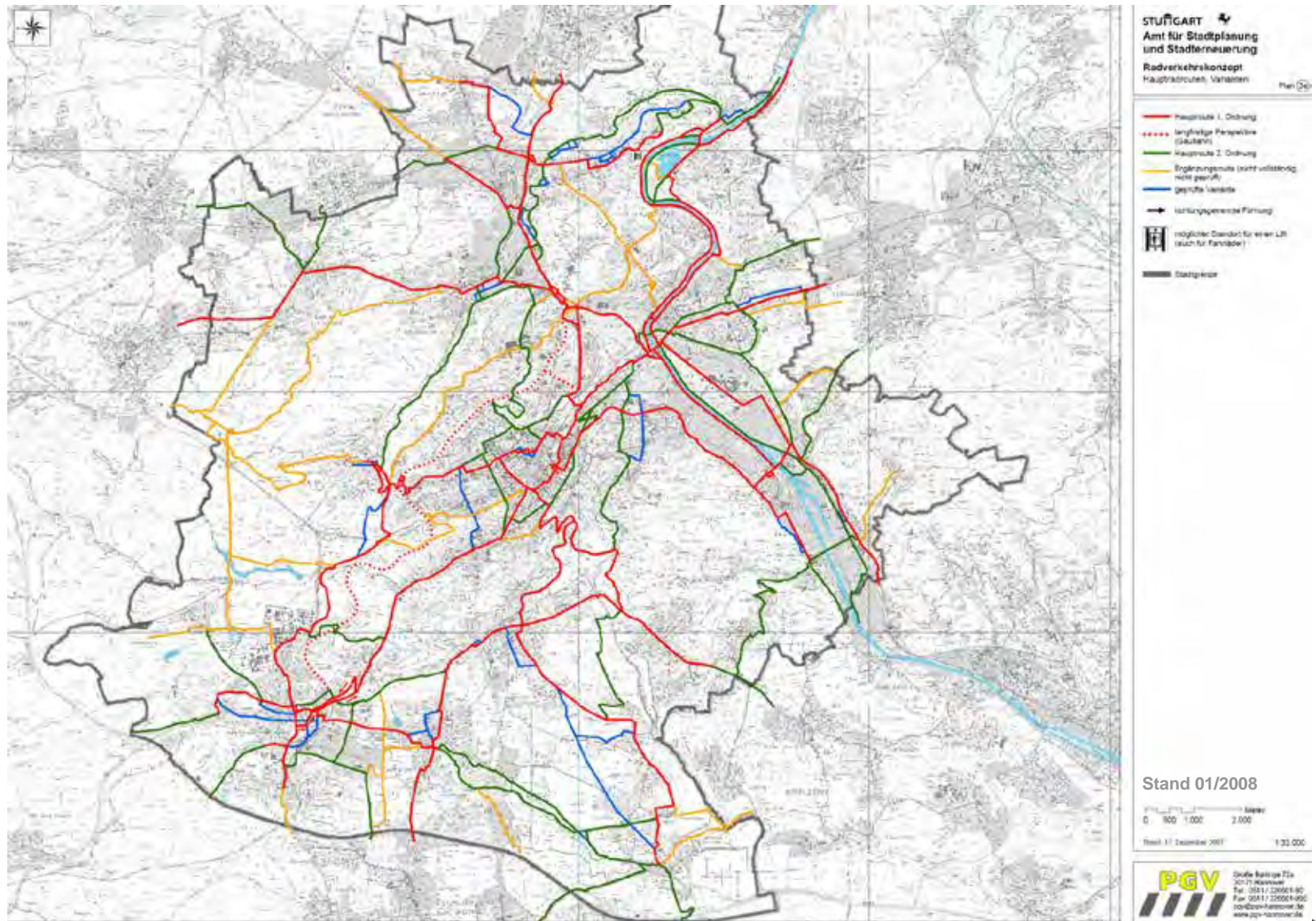


# Master Plan: Rail Systems





# Master Plan: Bicycle Network







## Explanatory Statement

### Land Use Plan 2010

#### Guideline:

**Compact - urban - green**

-relation development in brownfield areas to greenfield sites 4:1

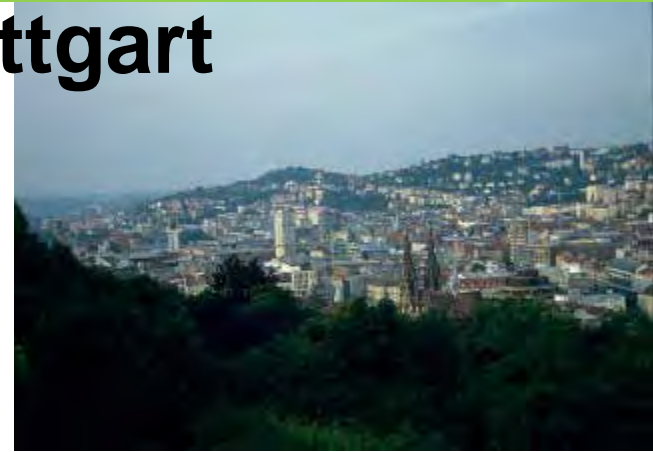
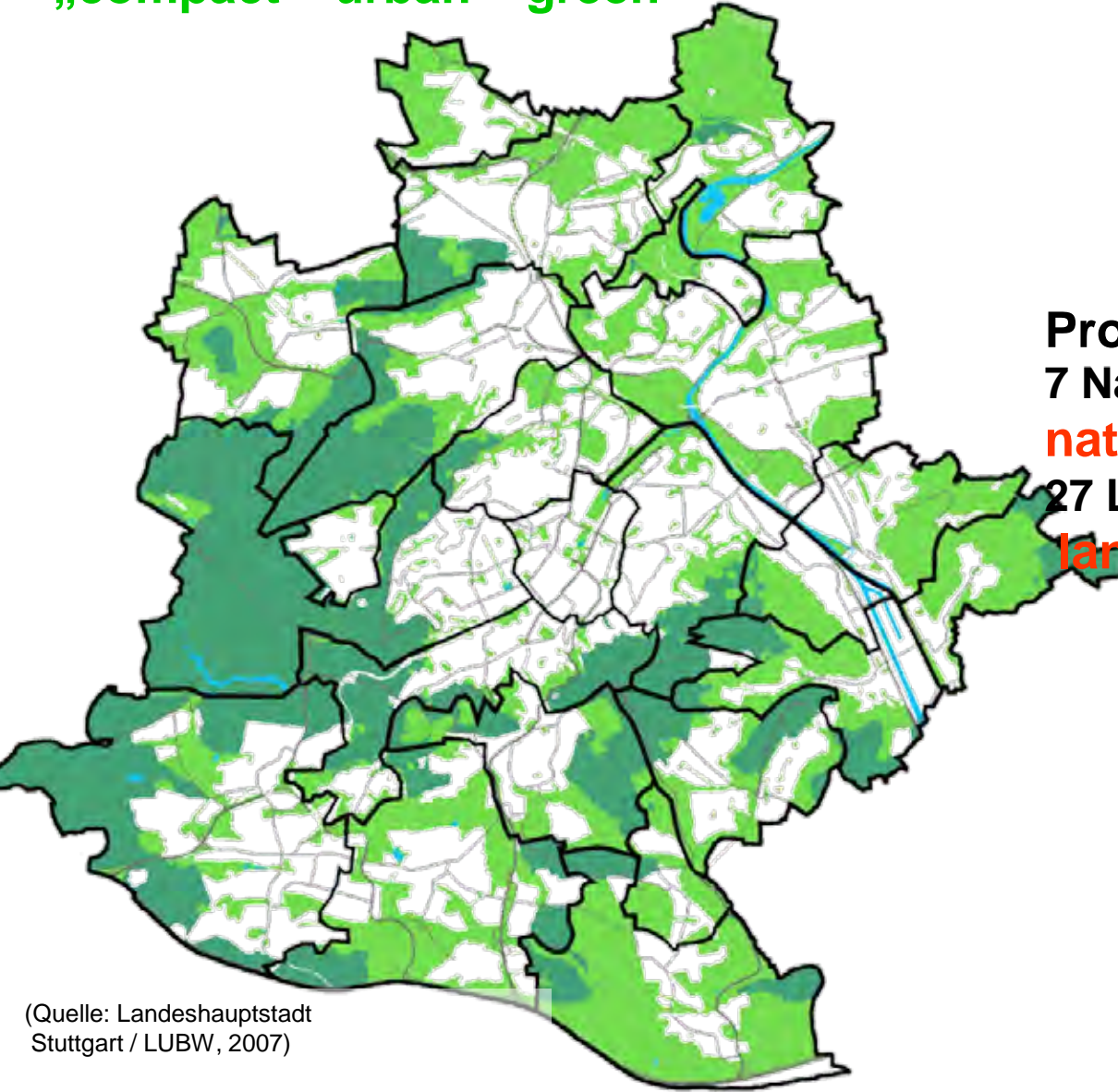
-high density, mixture of functions and revitalization of the polycentric structures

- landscape: protect green areas, develop a green-network through the brownfield-areas



# Preparatory land use plan Stuttgart

„compact – urban – green“



**Protected open areas**

**7 Naturschutzgebiete**

**nature reserves** 1,362 ha 6.6%

**27 Landschaftsschutzgebiete**

**landscape conservation areas**

**6,715 ha 32.4%**



(Quelle: Landeshauptstadt  
Stuttgart / LUBW, 2007)





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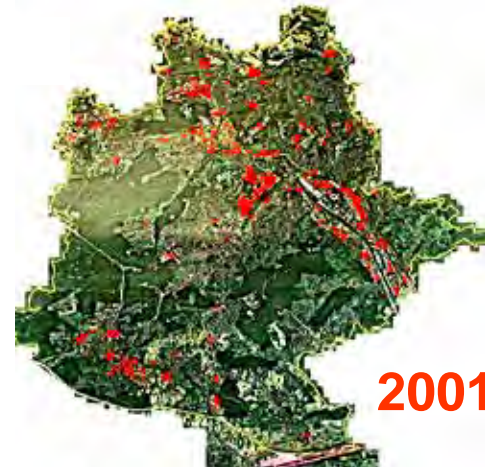
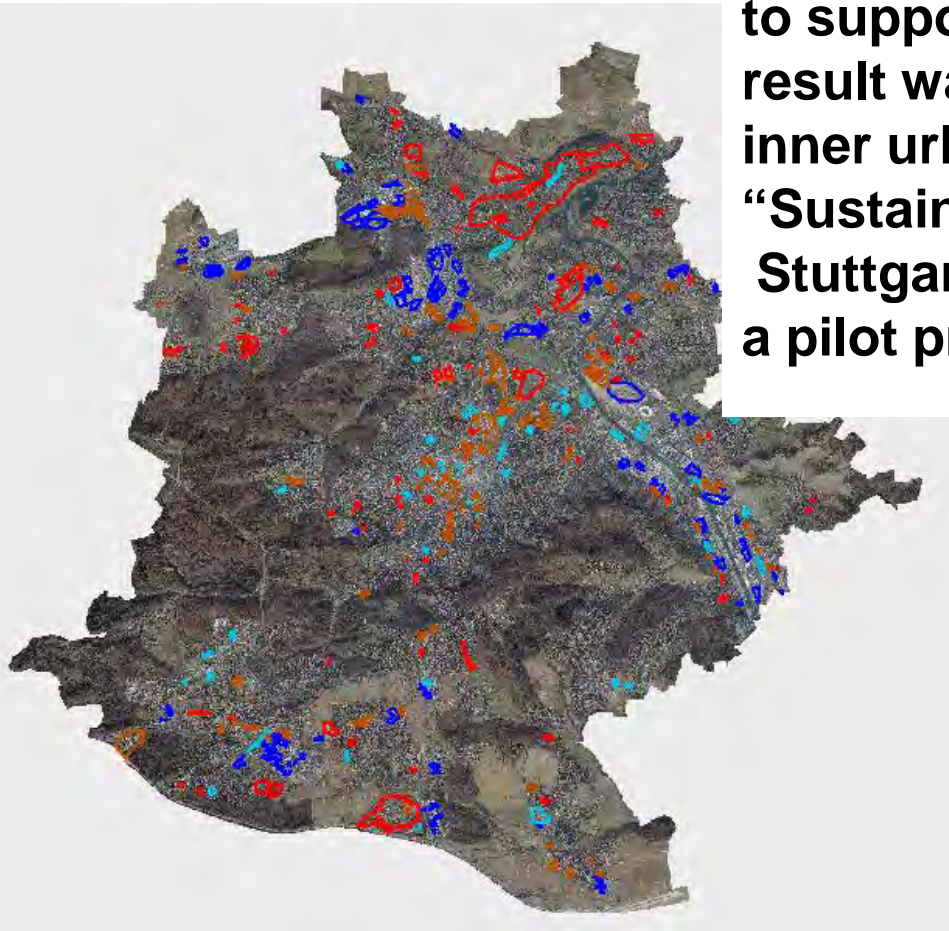
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# Sustainable Management of Building Areas Stuttgart (NBS)



Between 2001 and 2003 the City of Stuttgart developed a “NBS” Management-Tool to support the inner urban development. The result was an information platform of all inner urban potential sites under the “Sustainable Management of Building Areas Stuttgart” (NBS) within the framework of a pilot project.



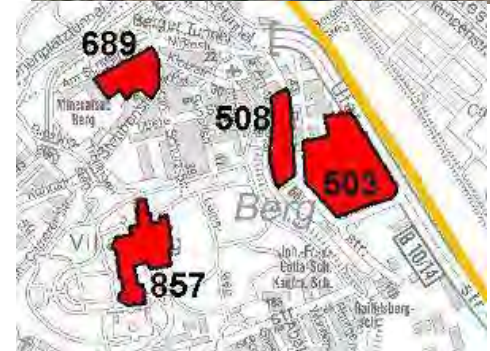
**2001-2003**



# Sustainable Management of Building Areas Stuttgart (NBS)

- Since 2003 inventarisation of potential building areas providing a city-wide overview
- Internet based information platform continuously updated
- Strategies to promote revitalization of brownfield areas
- **Concept to promote sustainable development on the base of the Land Use Plan Stuttgart**

ca. **350** potentials for inner urban development of about **500** ha (**1235** acres)



# Types of areas in NBS

## Listed types

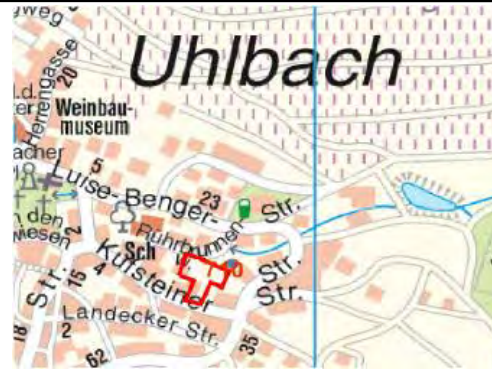
Type I: traditionelle Baulücke

**empty lot**

inner zone

has never been built-up before

Example: Am Rührbrunnen



Type II: Brachflächen

**brownfield site**

Areas no longer used / lying idle

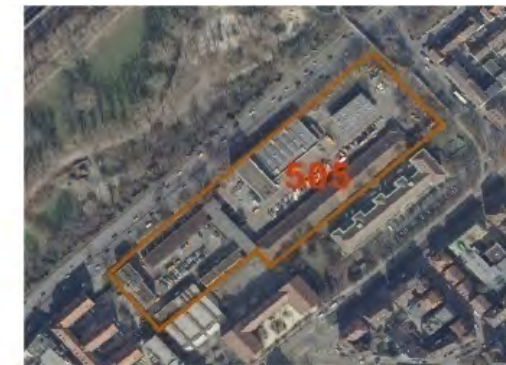
Example: former sugar factory



Type III: untergenutzte Grundstücke.

**developed on a low level**

Example: Department of Town Cleaning





# Types of areas in NBS

## Listed types

Type IV: ungenutzte Betriebs-  
Reserveflächen

**reserve on developed  
real estate**

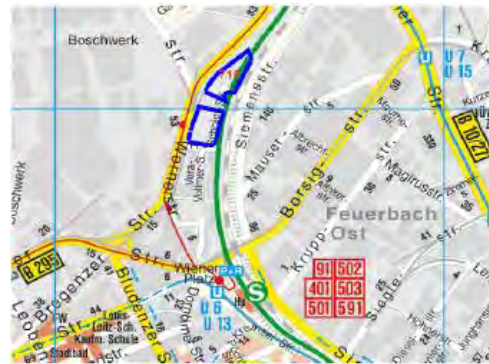
Example: Plieninger Straße



Type V: Umnutzungs-, Konversionsflächen

**conversion area**

Example: freight depot Feuerbach



Type VI: Neubauflächen FNP Stuttgart

**undeveloped real estate**

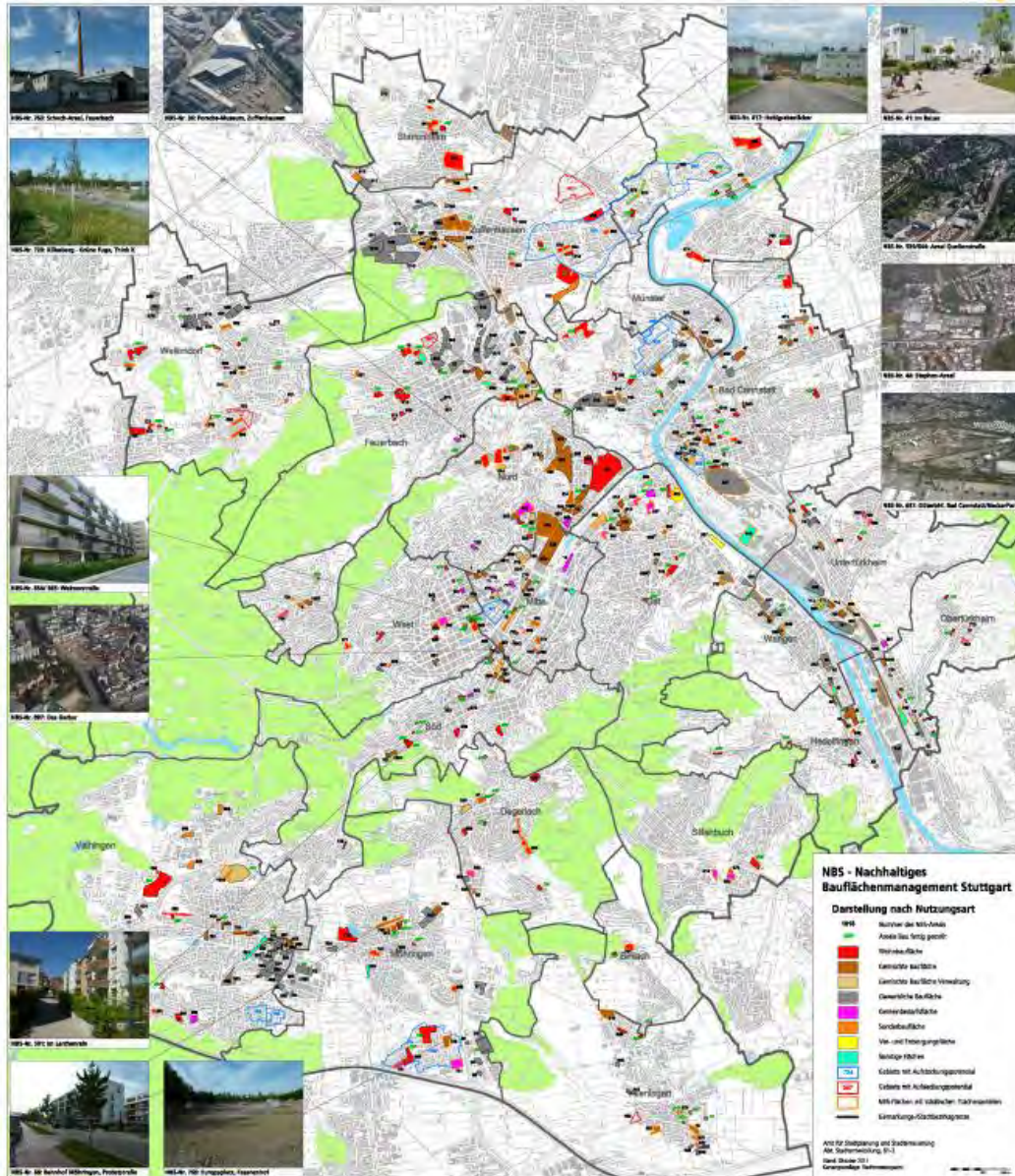
Example: Hohlgrabenäcker





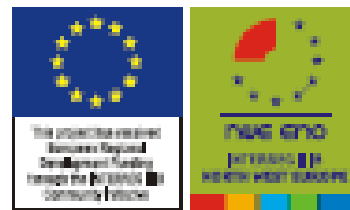
# Sustainable Management of Building Areas Stuttgart (NBS)

## Nachhaltiges Bauflächenmanagement Stuttgart (NBS)





# Research projects to promote inner urban development in Stuttgart



[www.revit-nweurope.org](http://www.revit-nweurope.org)





# Sustainable Management of Building Areas Stuttgart



Stuttgart 21





**Inclusion of Stuttgart's main station into the European high-speed rail network**



**From a 16-tracks terminal station to 8-tracks through station below ground**

**Stuttgart 21**

**STUTTGART**







S21 100 ha  
(250 acres)

3 km

12,000 Inhabitants  
24,000 Workplaces  
20 ha (50 acres) Park extension

Stuttgart 21

STUTTGART







Stuttgart 21

STUTTGART







Stuttgart 21

STUTTGART







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# Environmental aspects in spatial planning in Stuttgart





Nature  
conserva-  
tion  
(pp. 8-21)

Soil  
protection  
(pp. 22-27)

Water  
protection  
(pp. 28-43)

Noise  
(pp. 44+45)

Climate  
(pp. 46-51)

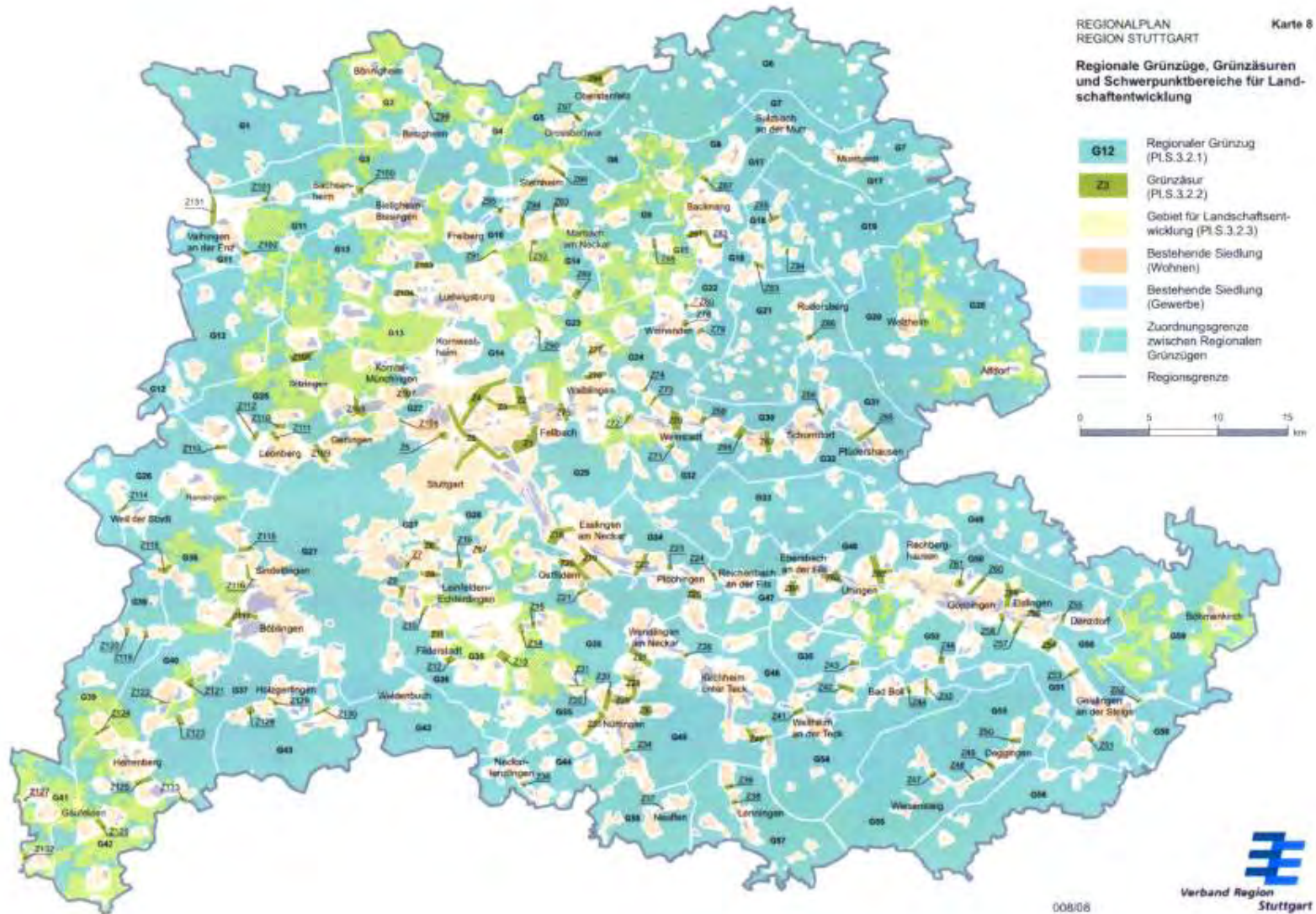
Energy  
(pp. 52+53)



**Urban land-use planning**



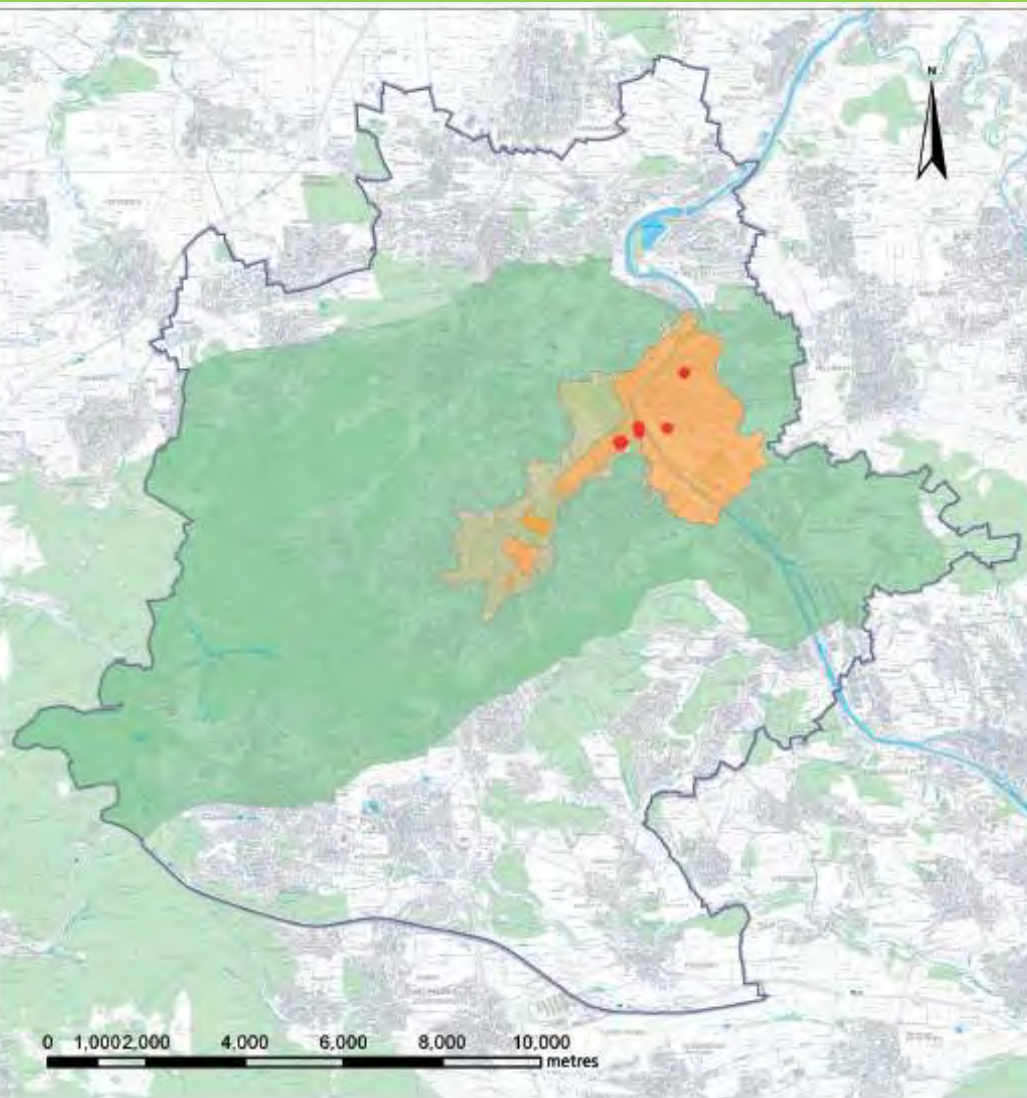
# Nature conservation



Regional Green Corridors restrict local decisions by state planning law



# Water protection



## Legend

□ District border

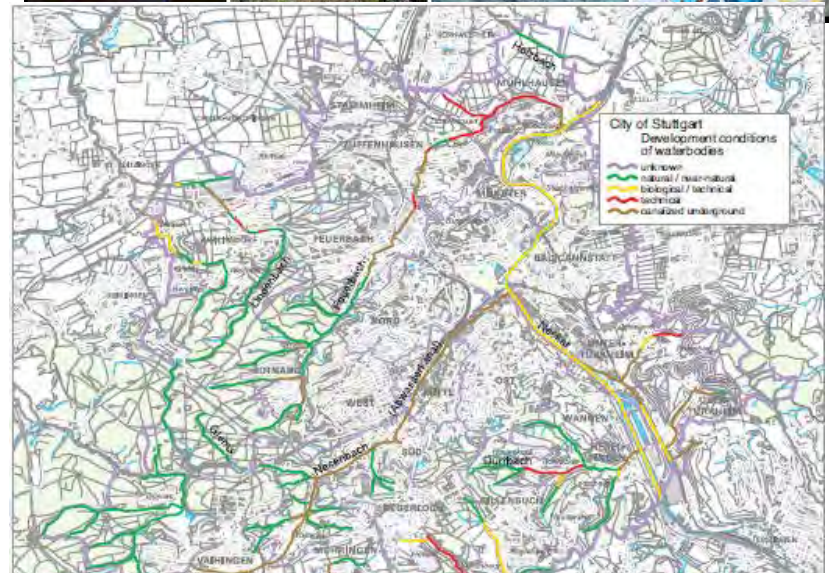
## Spa conservation area

● Spa water catchment area

core zone

inner zone

buffer zone

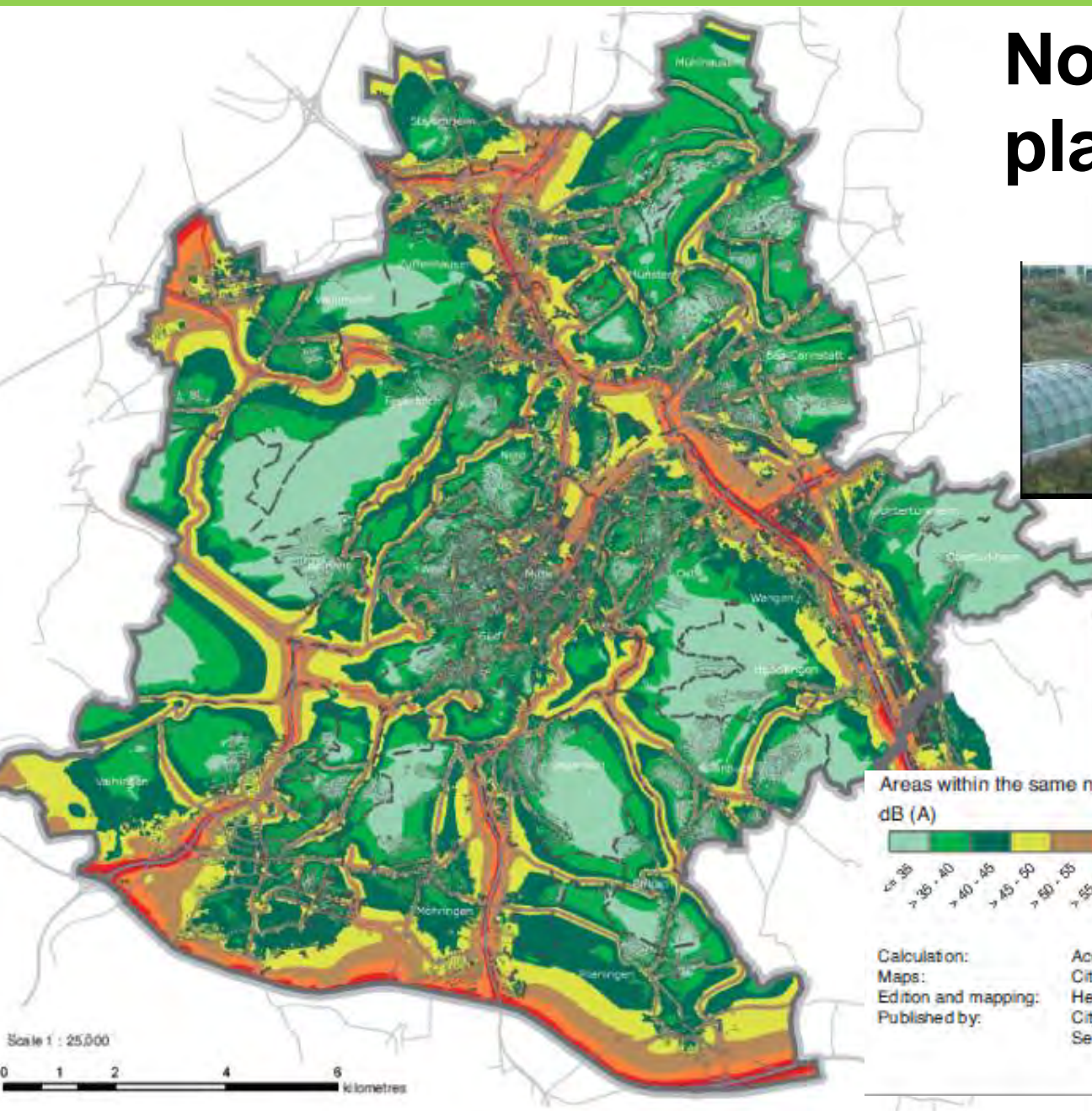


STUTTGART





# Noise abatement plan



Areas within the same noise level categories  
dB (A)



Calculation:  
Maps:  
Edition and mapping:  
Published by:

Accon GmbH (Ltd.), Greifenberg  
City Surveyor's Office, Stuttgart  
Heide Esswein, Dipl. - Geogr. (graduate geographer)  
City of Stuttgart, Office for Environmental Protection,  
Section of Urban Climatology, 2007



- Buildings
- Roads
- Urban district borders
- - Borough borders



# Clean air and action plan/KLIKS



Forecast for annual average

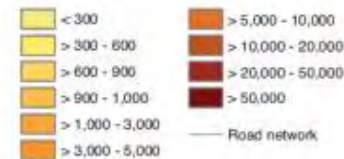
NO<sub>2</sub> (2010)  
Unit: µg/m<sup>3</sup>

<span style="display: inline-block; width: 15px; height: 15px; background-color: magenta; border: 1px solid black;"></span> ≥ 80	<span style="display: inline-block; width: 15px; height: 15px; background-color: red; border: 1px solid black;"></span> ≥ 65	<span style="display: inline-block; width: 15px; height: 15px; background-color: yellow; border: 1px solid black;"></span> ≥ 50	<span style="display: inline-block; width: 15px; height: 15px; background-color: green; border: 1px solid black;"></span> ≥ 40	<span style="display: inline-block; width: 15px; height: 15px; background-color: cyan; border: 1px solid black;"></span> ≥ 30	<span style="display: inline-block; width: 15px; height: 15px; background-color: blue; border: 1px solid black;"></span> ≥ 20
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## Legend

Sum of carbon dioxide emissions  
t/year per km<sup>2</sup>



**Data basis:**  
Emission inventory by the State Institute for Environment, Measurement and Nature Conservation Baden-Württemberg (LUBW)

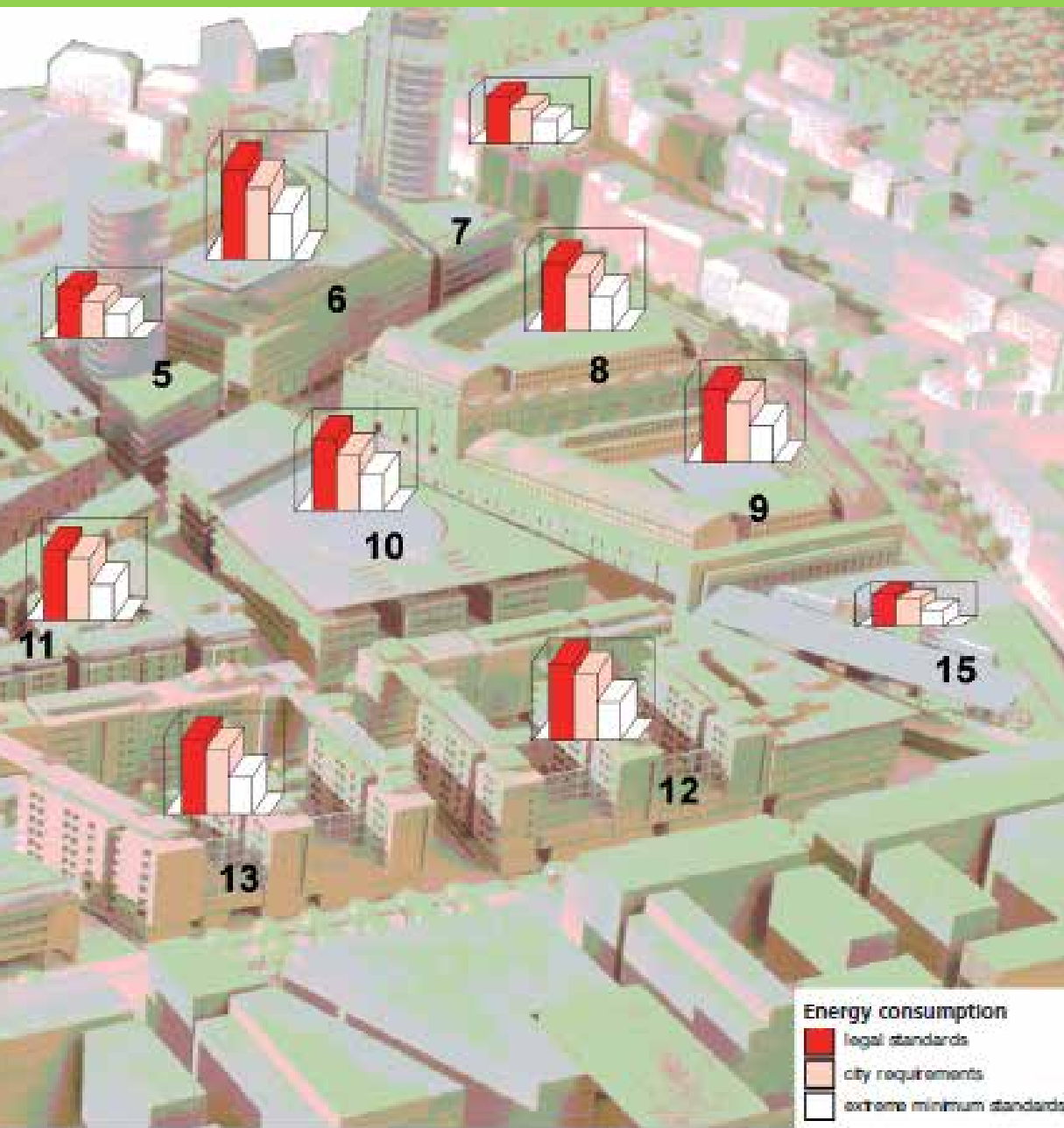
**Map basis:**  
City Surveyor's Office Stuttgart

**Edition and mapping:**  
Section of Urban Climatology, Office for Environmental Protection, City of Stuttgart  
H. Esswein, Nov. 2007

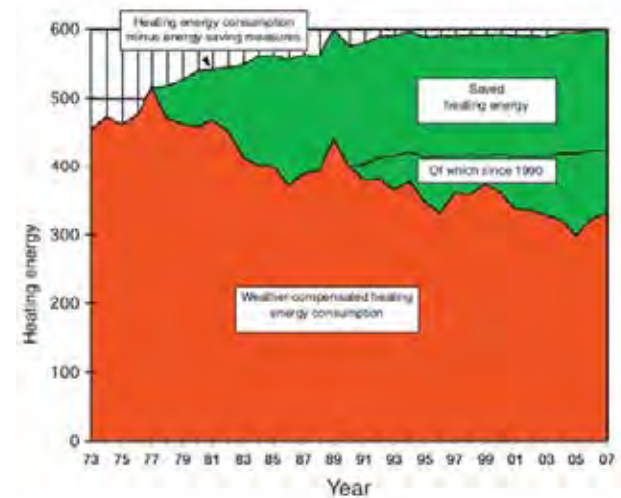
**STUTTGART**





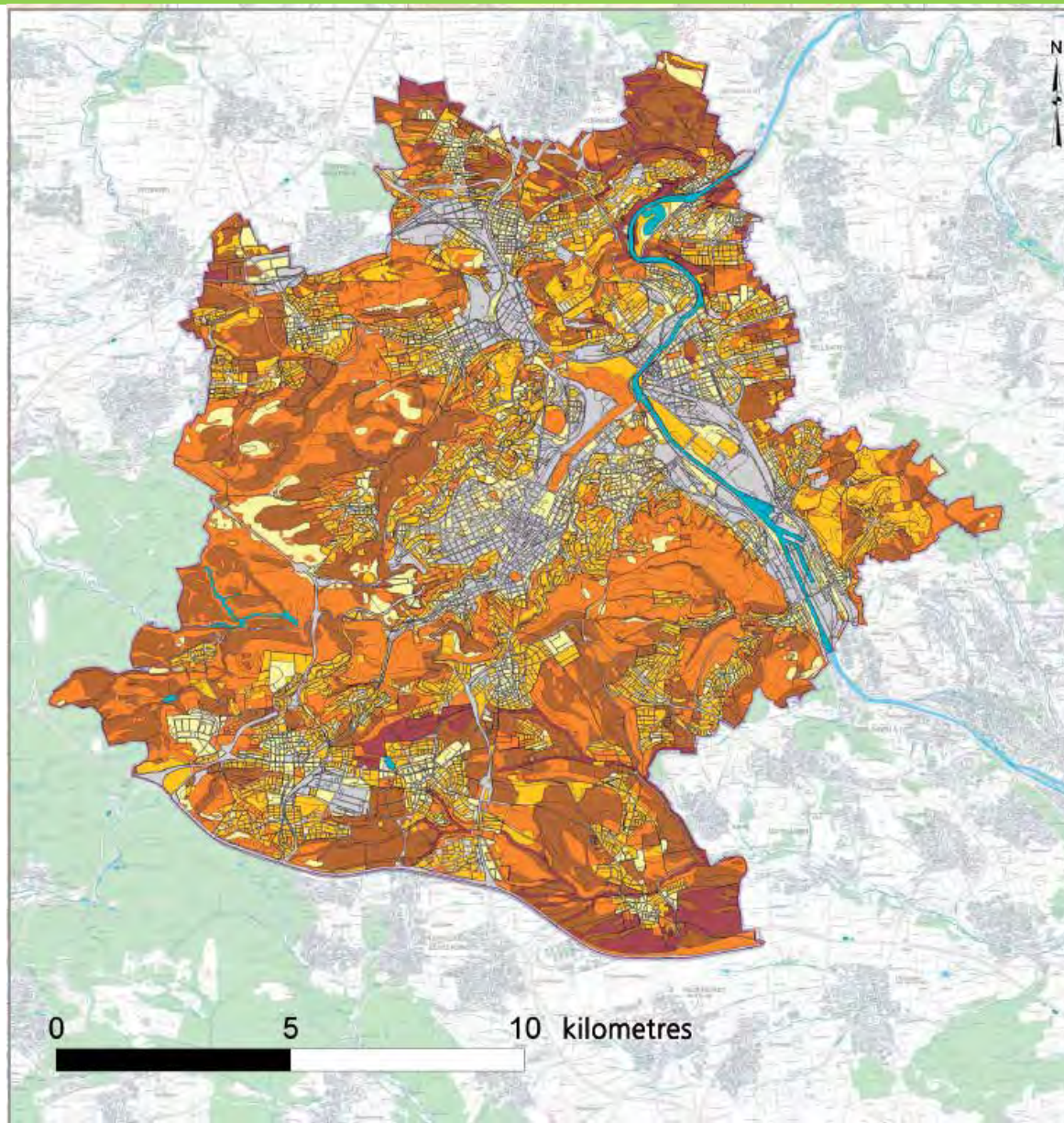


# Energy





# Soil protection



Legend

Soil quality (urban area of Stuttgart)



Legend

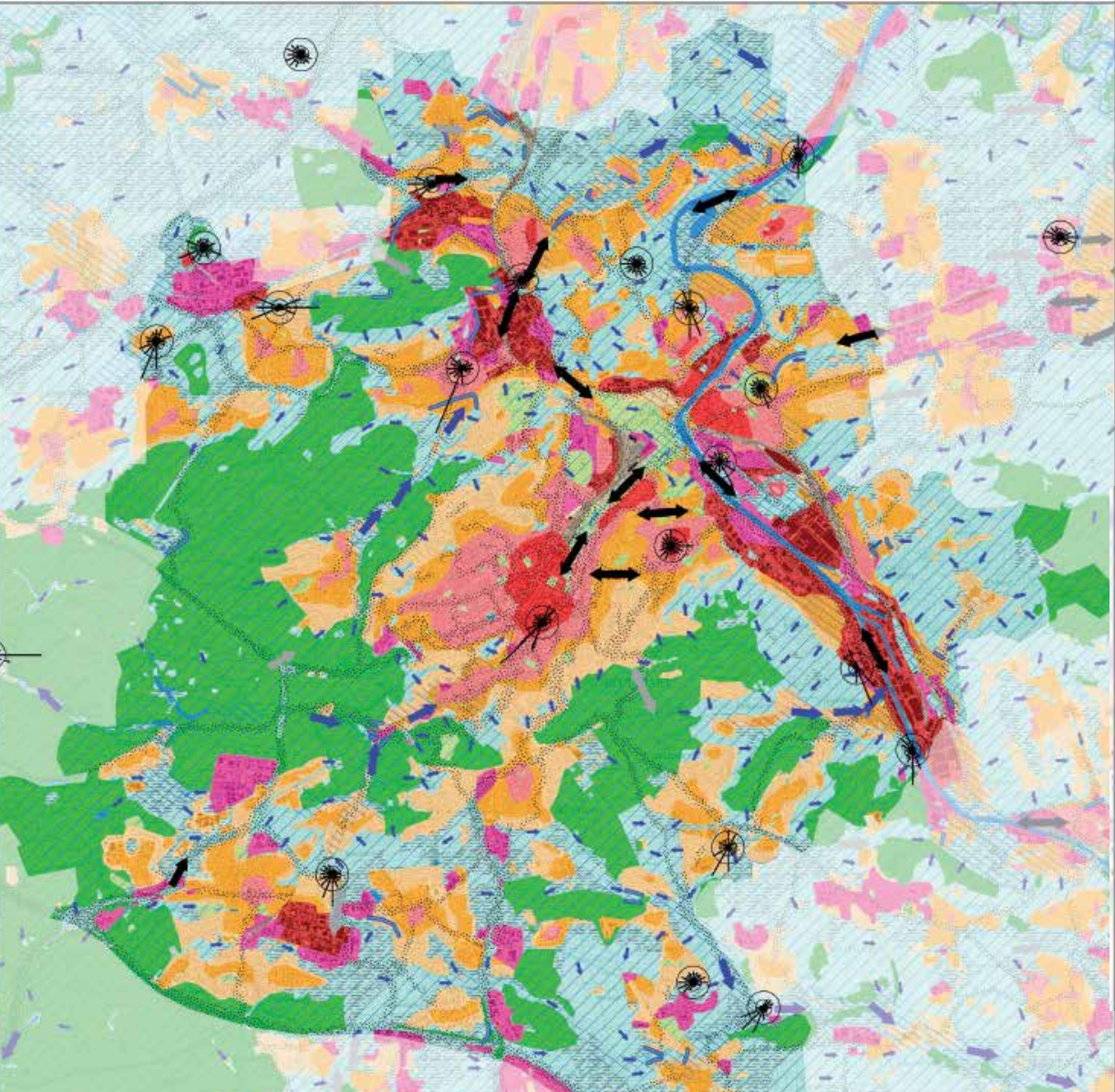
Potentially or actually contaminated sites (undifferentiated)

1822: Unambiguous area number from within the information system for contaminated sites in Stuttgart. With this number, persons entitled can obtain information from the Office for Environmental Protection on details like the type and period of the former use, the state of investigation and the potential need to take measures.

0	(unavailable)
1	(very low)
2	(low)
3	(medium)
4	(high)
5	(very high)



# Climate protection Climate atlas



**Legend**  
Climatopes

- Railway climatope:** extreme daily temperature curves, dry, open to winds, ventilation lanes.
- Industry climatope:** intense heat island effect, partly strong wind field disturbances, problematic air exchange, high air pollution (large-scale significance).
- Business climatope:** strong variations of all climatic elements, heat island effect, partly high air pollution.
- Town centre climatope:** intense heat island effect, low humidity, strong wind field disturbances, problematic air exchange, air pollution.
- Town climatope:** strong variations of all climatic elements in comparison with open land, intermediate heat island effect, air pollution.
- Suburban climatope:** significant influences on temperatures, humidity and wind, disturbances of local wind systems.
- Garden town climatope:** slight influences on temperatures, humidity and wind.
- Green space climatope:** pronounced daily temperature and humidity curves, climatic compensation area within the settlement.

**Technical mission:**  
T. Pöhl, Stuttgart Engineering Office, Karlsruhe; J. Rauscher, Section of Urban Climatology, Office of Environmental Protection, City of Stuttgart, 2007.  
**Data basis:**  
Thermal Rights, Stuttgart, 2006 August 2006.  
GSD 40 and wind field model, Stuttgart Engineering Office, Karlsruhe, 2007.  
Wind path, ATGSD-CCP Land surveying of the Baden-Württemberg, (www.bw-luft.de), in Germany, A.L. 2003 to 1976, 2002/2003.  
Climatological map, German Meteorological Service (DWD), Stuttgart Engineering Office, Karlsruhe, 2007.  
Traffic data economic traffic model, PTV traffic mobility system, Karlsruhe, by order of Verband Region Stuttgart, 2007.  
Climatological map, State Institute for Environment, Measurements of a heat island, Stuttgart Engineering Office, Karlsruhe, 2006.  
**Map basis:**  
ATGSD TK 25 land surveying office Baden-Württemberg, Stuttgart, in Germany, A.L. 2003 to 1976, 2005.  
1:50,000 edition and mapping, H. Rauscher, 2007.

**Verband Region Stuttgart**









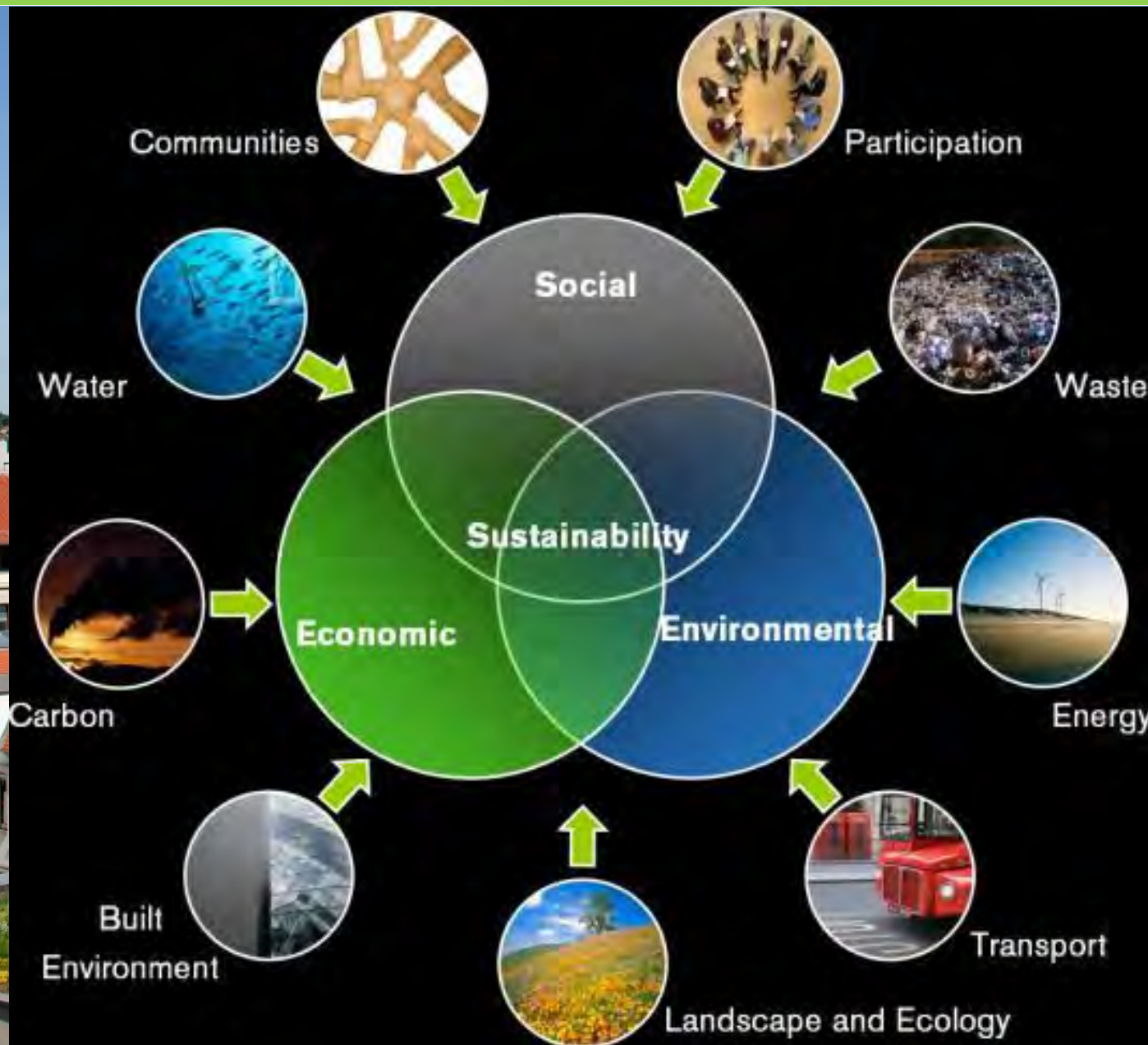


**Public participation**











# Thanks for your attention!

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**Department of City Planning and Urban Renewal**  
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