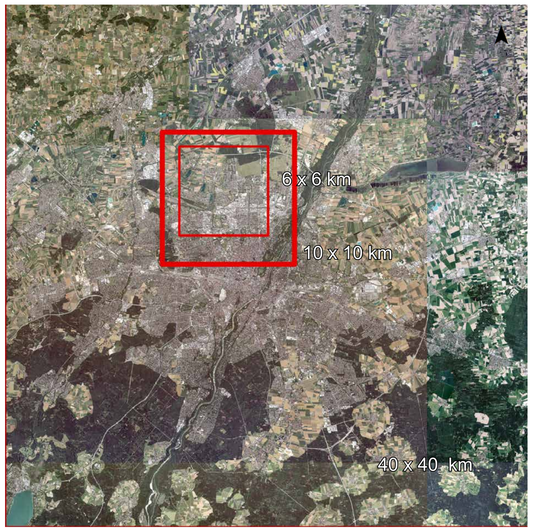
HOCHSCHULE WEIHENSTEPHAN-TRIESDORF - GERMANY

IGC



Base Map of the Munich Region with 40x40 and 6x6 areas

PARK MILES

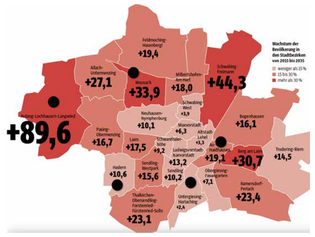
Managing Future Growth

VICTIM OF ITS OWN SUCCESS?

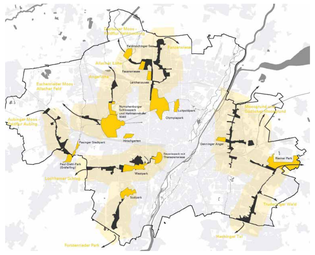
Munich is regularly high up in the rankings of the most liveable cities in the world. However, the strong economy and its popularity contributed to an unexpected population growth. Although the official population forecasts from 2007 had still predicted a moderate growth of +4,9%, the latest forecasts are now predicting much higher growth rates with an extra 300.000 inhabitants or more by 2030. The latest population numbers from 2016 counted 1,45 Mio. inhabitants and the infrastructure is already overstrained.

MAJOR ISSUES:

- Lack of affordable housing
- Lack of industrial areas to accommodate economic growth
- Lowest amount of green space per capita among major German cities (see the comparison of m² per capita below)



The map to the left illustrates population growth for the different parts of the city. The biggest growth is currently expected in the West of the city.



The map to the left shows the currently planned "Park Mile" corridors. These green corridors will connect existing green spaces and provide multifunctional spaces for recreation, biodiversity, transport, food and energy production, health and wellbeing.

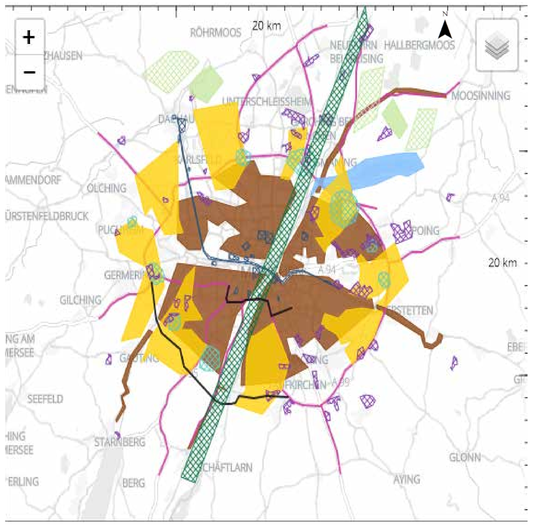
REQUIREMENTS

- **GLOBAL 2035/2050 3**
  Populations will be concentrated in urban areas
- 1.8 Mio. inhabitants by 2035 (i.e. need for an additional 500 ha of high density housing or more for lower density)
- Need for a minimum of 100 ha additional industrial land
- Securing the existing green infrastructure

INNOVATIONS ADOPTED

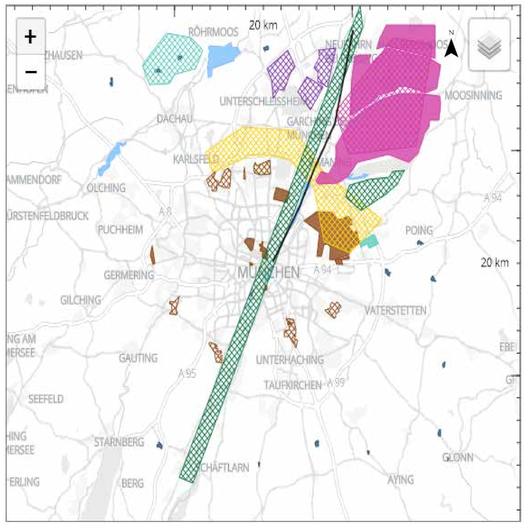
Multifunctional "**Park Miles**" green corridors integrating:

- **AGR 2035/2050 10** Urban Agriculture
- **AGR 2035/2050 12** Rooftop Gardening
- **ENE 2035/2050 1** Renewable Energy Sources
- **ENE 2050 20** Semiconductor Insulator Solar Cells
- **GRN 2035 1** Resilient Landscape Structure
- **GRN 2035 3** Increased Vegetation Interlinked w/ Stormwater I.
- **GRN 2035 4** Linear Parks (main theme)
- **GRN 2035/2050 7/9** Connectivity and Elements
- **GRN 2035/2050 10** Green Urban Streets
- **MIX 2035 1** Mixed Use Development
- **MIX 2035 11** Defining High Density Locally
- **MIX 2035 15** Smart Connected Mobility
- **RES 2035 1** Building Infrastructure Solar PV
- **IND/COM 2035 1** Industry 4.0 (BMW)



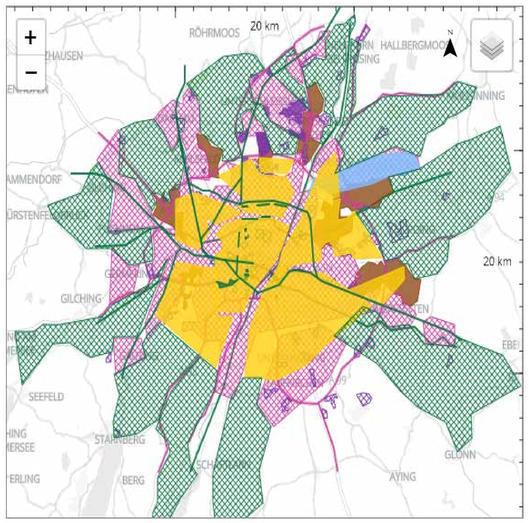
Existing situation: 2020

Housing areas at the edge and green corridor along river



Early adopter: 2035

High density city extensions and renewable energies



Early adopter: 2050

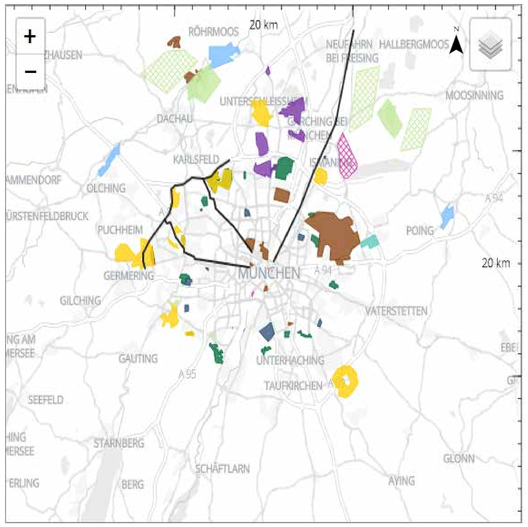
High density extensions at the city and infill housing in the centre

LEGEND: 10 SYSTEMS

- Green Infrastructure
- Water Infrastructure
- Gray Infrastructure
- Energy Infrastructure
- Agriculture
- Industry
- Housing Lower Density
- Mixed Use
- Institutional
- Waste & Recycle

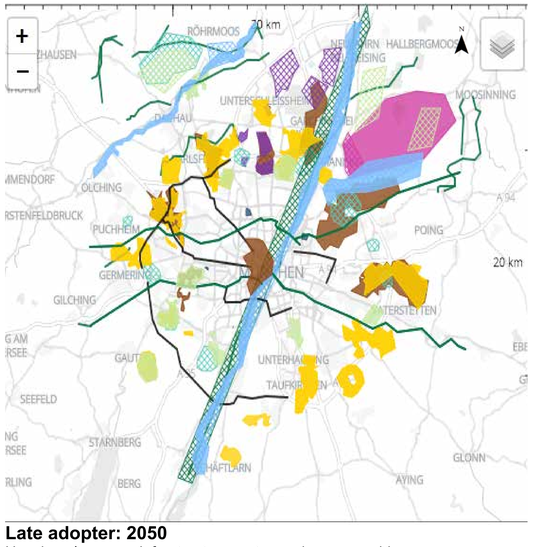
Synthesis comparisons

The synthesis comparisons (see the charts to the left) shows that the Early Adaptors 2050 scenario scores highest in terms of matching the goals. In contrast, the Late Adaptors 2050 scenario scores lowest if we exclude the business as usual scenarios.



Late adopter: 2035

Housing area in the East and additional transport infrastructure



Late adopter: 2050

Housing along new infrastructure routes and green corridors

Scenario process: In a competition of ideas, 30 international students drafted the 2035 and 2050 scenarios in parallel working teams. Nevertheless, the results are surprisingly consecutive. The common idea is that the GRN innovations are concentrated in the "Park Mile" green corridors (i.e. innovation GRN 2035 4). Housing is mainly accommodated using MIX innovations.

SCENARIO EARLY ADOPTER 2035

Until 2035, the early adopters continue carrying out the City´s more progressive policies such as high density mixed use city extensions in the East and West of the city centre. Green corridors, the so-called Park Miles, are further strengthened to interconnect existing green spaces. The scenario goes beyond current policies in terms of renewal energies (see the large designated area in the North-East) and sustainable transport.

SCENARIO EARLY ADOPTER 2050

For 2050, the early adopters extend the high density mixed use areas along the major public transport lines towards the City´s edge. The green spaces in-between, urban forestry in the South and valuable farm land in the North-West, are put under protection from further development. The large inner-city yellow policy zone marks low-density laneway housing in the otherwise

SCENARIO LATE ADOPTER 2035

The late adopters implement only small changes until 2035. In addition to the already dense mixed use city centre, some new low density housing at the city´s edge is developed. Only major high density development is the new neighborhood Freiham in the East.

SCENARIO LATE ADOPTER 2050

By 2050, the late adapters have continue mixed use development in the city centre and more low density housing on agricultural or forestry land at the city´s edge. However, as climate change is causing more frequent and severe heat-waves, urgently needed new green climate corridors are finally designated. Now, the late adopters have also developed renewal energies in the North-East and urban agriculture has become a necessity across the city.

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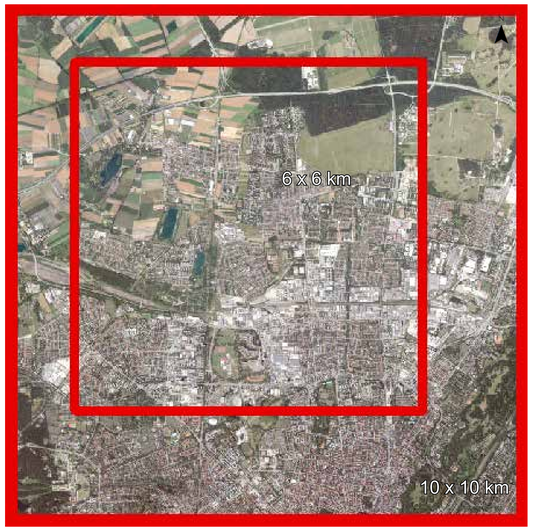


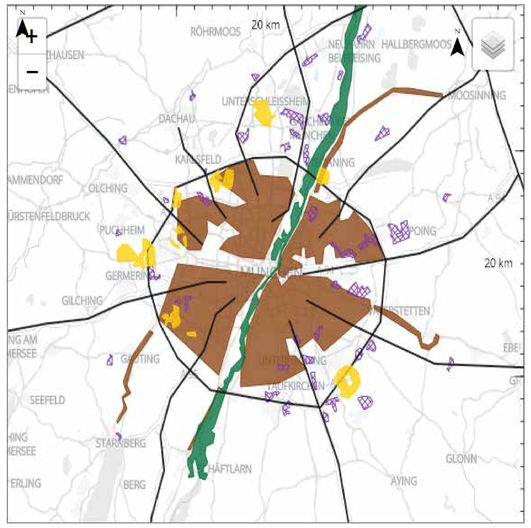
Zoom of Munich North 10x10 and 6x6 km

PARK MILE MUNICH NORTH

A Park for All

In another workshop, this time with international planners not students, we focussed on the 6x6 km large core area in the North of Munich between Olympic Park, the high rise housing estate Hasenbergl and the nature reserve “Panzerwiese” at the City´s edge. Despite the high pressure for development, the area includes sufficient open space to create a green corridor, i.e. Park Mile North, to connect the Olympic Park with the City´s edge.

In the workshop, *six change teams* were formed: 1) Parkmile team, 2) City administration, 3) Low density housing association, 4) BUND environmental NGO, 5) Real estate developers, 6) Industry association. Following the geodesign process developed by Steinitz (2012), the six change teams first developed individual scenarios. Then, each two teams, who would match the closest, negotiated a consensus design. The resulting three designs are presented below and illustrated through artistic impressions from student work (left and right columns) and a 3D visualization based on geodesignhub (bottom right).

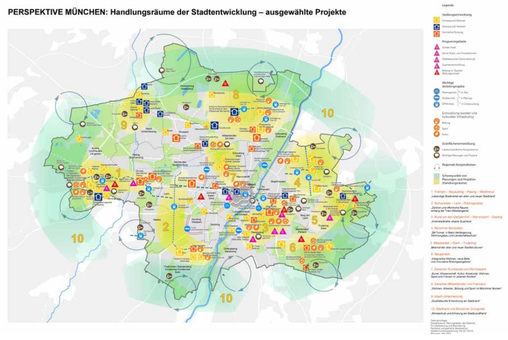


Non-adopter: 2050

Continuing high density mixed areas in the tradition of the “European City”

Non-adopter scenario 2050

In Munich, non-adopter scenario doesn´t mean that nothing will happen - the City already has plans for dense mixed-use urban extensions at the western and eastern edges of the city (map to the left non-adopter 2050). In addition, there are multiple projects addressing all 10 systems (see the original map below). Considering the scale of the challenge, these might not be enough though.

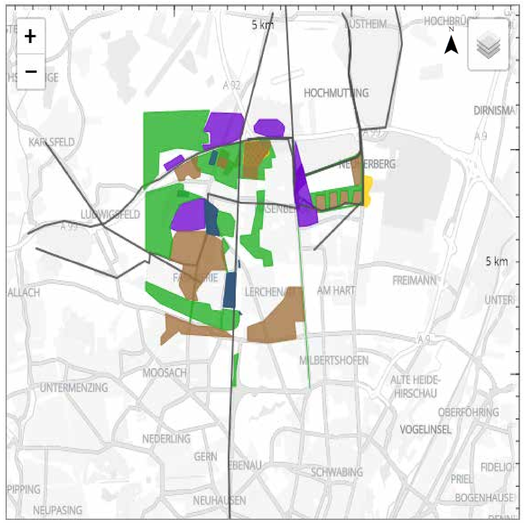


REQUIREMENTS FOR PARK MILE NORTH AREA (6x6 km)

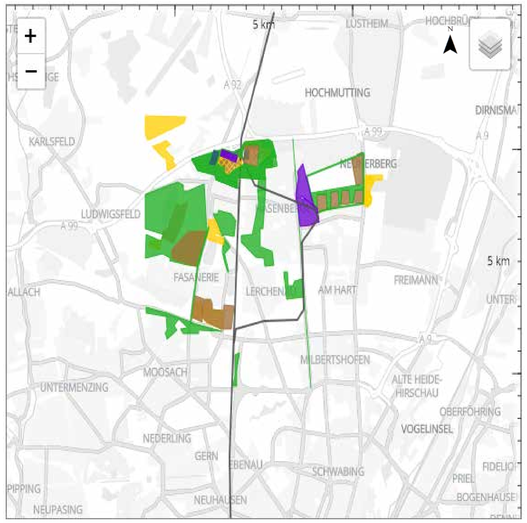
System	2016 area in ha	2040 area in ha
GI - Green Infrastructure	**800**	**800**
*BI - Blue Infrastructure**	*120*	*120*
GRYI - Grey Infrastructure	460	500
ENEI - Energy	15	100
*AI - Agriculture**	*750*	*600*
IND - Industry	655	755
LDH - Housing low density	60	80
MIX - Housing high density	1355	1800
INST - Institutional	410	500
*CLIM - Climate**	*640*	*640*
Systems in italics are part of GI – Green Infrastructure		

INNOVATIONS ADOPTED

- “Park Mile North” - a multifunctional green corridor connecting the famous Olympic Park in the South of the area with the multi-ethnic high-rise neighborhood of Hasenbergl and the Panzerwiese nature protection area north of the City



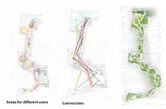
Housing Lower Density & Industry Change Teams 2035



Developers & City Administration Change Teams 2035

Integrated Green Infrastrucutre Innovations until 2035: Energy production, urban agriculture, climate adaptation, health benefits, biodiversity

Park Mile North



LEGEND: PARK MILE NORTH

- Green Infrastructure Park Mile
- Water Infrastructure
- Gray Infrastructure
- Energy Infrastructure
- Agriculture
- Industry
- Housing Lower Density
- Mixed Use
- Institutional
- Climate adaptation

Park Management & Nature Protection Change Teams 2035

3D Visualization of Park Mile North -

Urban forestry and urban agriculture in the green corridor; automatically generated, based on the planning in geodesignhub.com in a beta version of a plugin developed by Jochen Mulder, Philip Paar and Jörg Rekittke.

Participant team credits:

In no particular order, thanks to the following contributors: all participants of the DLA 2018 Geodesign Workshop, Prof. Carl Steinitz, Hrishi Ballal (Geodesignhub.com), the 2018 IMLA students (evaluation maps and scenarios), the City of Munich, especially Linda Mertelmeyer from the City, Prof. Stock-Gruber and her students (illustrations), Jochen Mülder, Philip Paar & Jörg Rekittke (3D visualization of geodesignhub output), Walter Demel (geodata) and many more.

Geodata sources:

Urban Atlas 2015 (based on Copernicus data), Landesamt für Digitalisierung, Breitband und Vermessung, City of Munich