

# The Future of Single-Family Houses in peripheral suburban Areas –

## Scenario-process in an interdisciplinary Research Project

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# <http://homes-up.ioer.eu>

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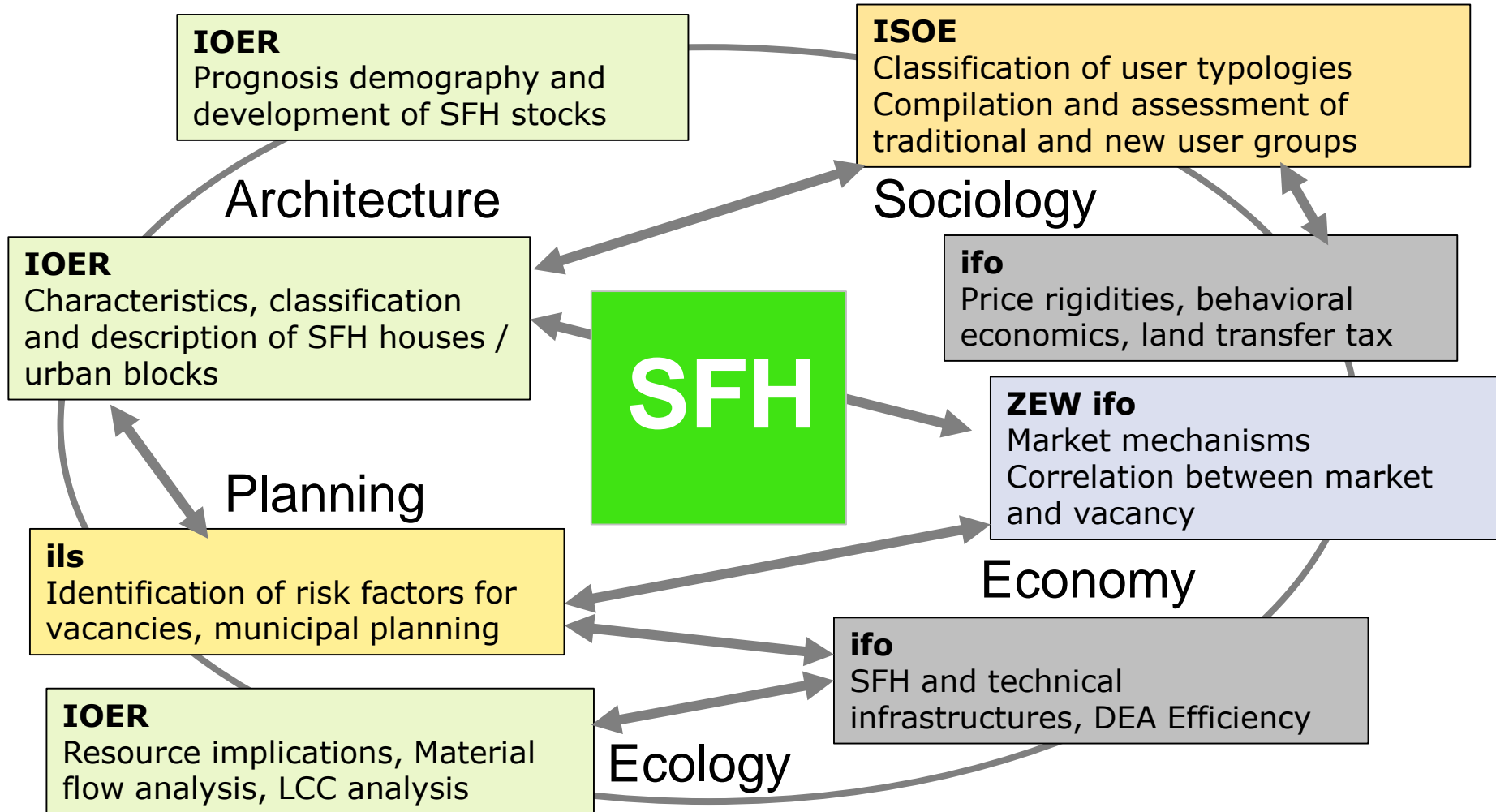
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# Perspectives



# Single Unit Residential Buildings

## What are we talking about ?

A residential building that stands on its own

- detached, semi-detached or in row with some garden space
- occupied by one household.

In UK: 'detached or semi-detached house'.

In Germany 'Single-family house'

In USA: single family home (legal condition of planning)

In Statistics: 'one-dwelling-residential-building', + >50 % residential use.

=> Single Unit Residential Building (SURB).

SURBs cover a wide range of housing types. Villas, old craftsman houses, former multi-unit residential building converted for a single household, etc.



# Small Villas -> Iconografic SURB

1930ies



1950ies



1970ies



1933 Scharoun



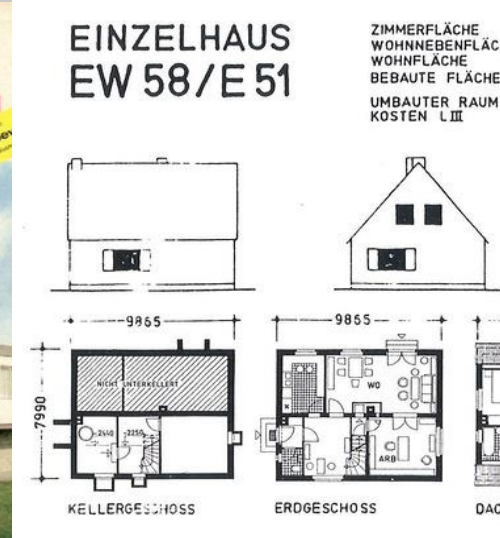
2008 f28



2001 b+b

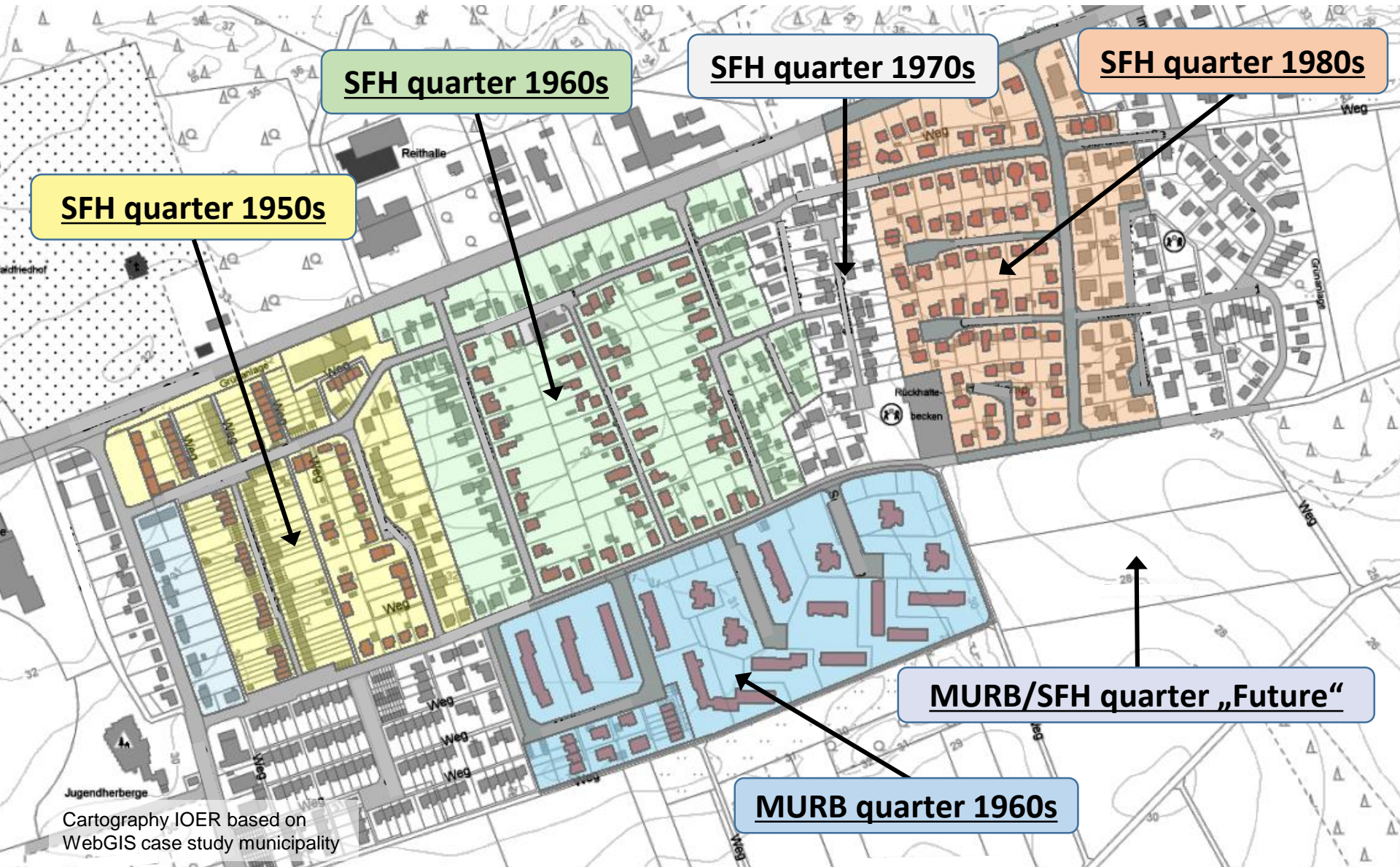


# Tiny Houses and Massproduction





# SURB's in small towns / Suburbia areas



**SFH quarter 1960s**

**SFH quarter 1970s**

**SFH quarter 1980s**

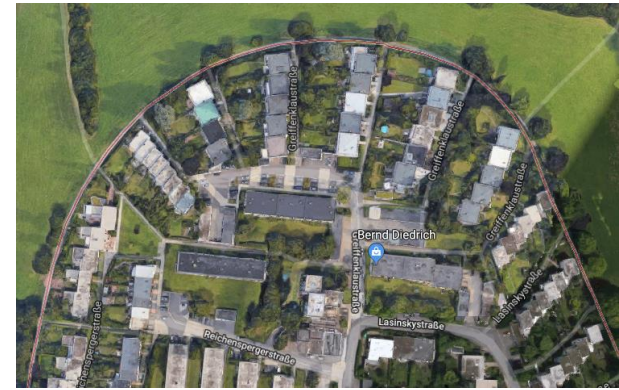
**SFH quarter 1950s**

**MURB/SFH quarter „Future“**

**MURB quarter 1960s**



# Low Density SURB's in Germany





# Settlement Area - Germany

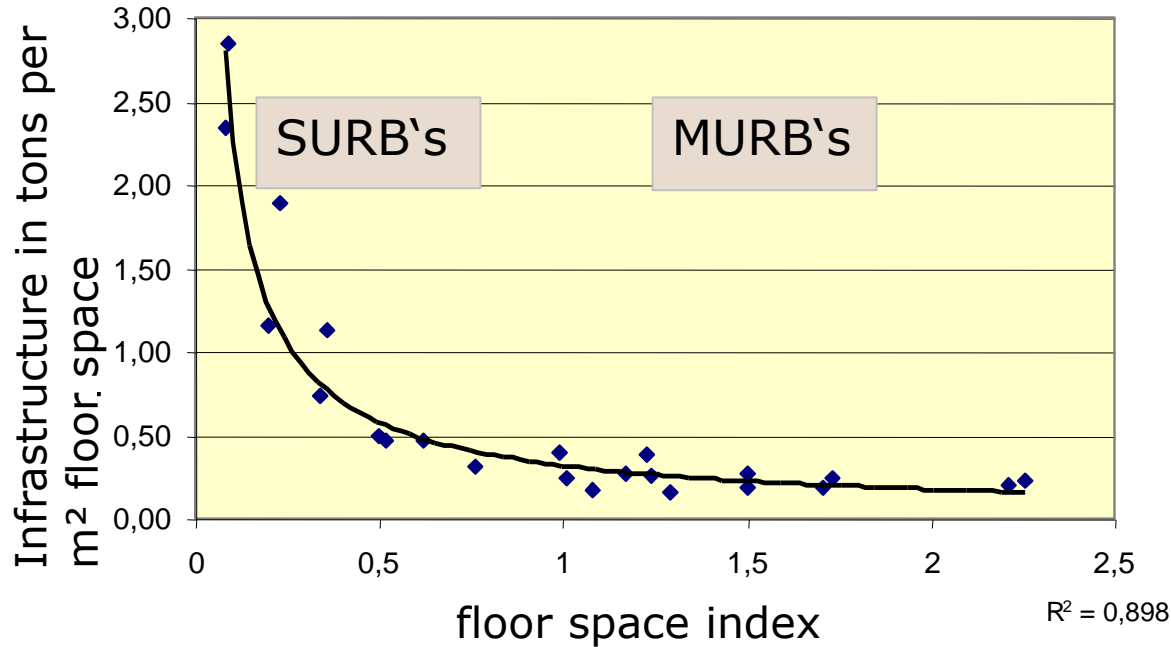
**50% of Population in Germany lives in towns < 20 000 inh.**

**66 % in Single Family homes**

**83 % of r. buildings are Single/Two Family homes**



# Urban Structural Types and Infrastructure



From 1,5 t onward:  
More material in roads, than in buildings

Detached homes	Määnder-MURB	Linear MURB	Block MURB





# Vacancies – Demografic, Economic, Spatial Reasons



# Single Unit Residential Buildings Problems and challenges!

## **Pressure:**

Demographic change, Economic and structural change

## **State and Trend:**

De-densification, -> Oversupply of dwellings (or at wrong place),  
Structure of stock (old village cores) -> scattered problem,  
Quality and age of stock -> SURB vacancies, stock <1919 <1960

## **Ecological Challenge:**

The built environment = 90 % of anthropogenic material flow:  
45 % infrastructure, 28 % residential buildings (SURB and MURB).  
SFH housing is the most resource consuming type of housing

## **and societal Challenge:**

Decay of neighborhoods, loss of value, spatial economic trap





# SURB Life-style and households

- SURB purchase (and ownership) seems still to be confined to a limited set of life-styles –

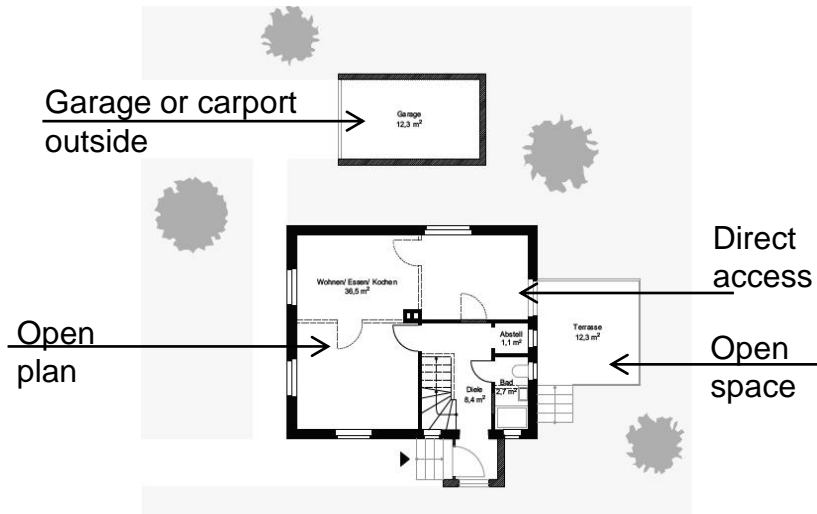
## **SURB as a superior good**

- Field research shows a broad **variety of life phases** and age groups among SURB purchasers – especially second hand homes purchasers
- Only few SURB purchasers live in families with children  
(= End of term „single family house/home“)
- SURB purchasers show different housing concepts, influencing transformation strategies and degrees of **self-provision**



# Emergent patterns of SURB transformation

- High degree of **self-provision** in transformation
- Renovation in (construction) stages, **lived-in renovation**, incremental renovation approach
- Moderate implementation of **open plan design** / room designation mainly retained
- Single-floor living: **age appropriate modernization**
- **Greater permeability** between the house and the garden
- **Moderate to 'reluctant' low energy** & low carbon



Priority for **quality of living measures** (spatial optimization, large bathrooms, implementation modest degree of open space principle on the ground floor)





# Home-based self-employment in SURB's

- Home-based self-employment takes place (in general)
- Chance for SURB'S for business in different economic sectors
- Long running and stable arrangements
- Strong local and regional ties in private/social life and customer base
- Impacts on neighborhood (e.g. supply, enlivening)
- Public policy support useful ( ICT, information, amenities)



# From ecological Perspective

- Under trend conditions the **consumption of resources for SURB housing will continue to increase** despite of population decline.
- **Keeping existing buildings in use** – as the most realistic option – helps to save resources (“housing stock exchange”, “housing pilots”, “young buy old” – subsidies ...).
- **Transformation of existing stock** provides considerable potential for material savings – however implies considerable behavioral change as well.  
(Future) Subsidies only for dividable buildings.
- **Infill development** – e.g. with smaller MURBs – **in SFH-neighborhoods** helps to increase the (resource) efficiency of urban infrastructure (60 %!) and may support ageing in place.





# Single Unit Residential Buildings

## Scenarios 2050



# Scenarios = hypothetical possible futures

## Scenarios

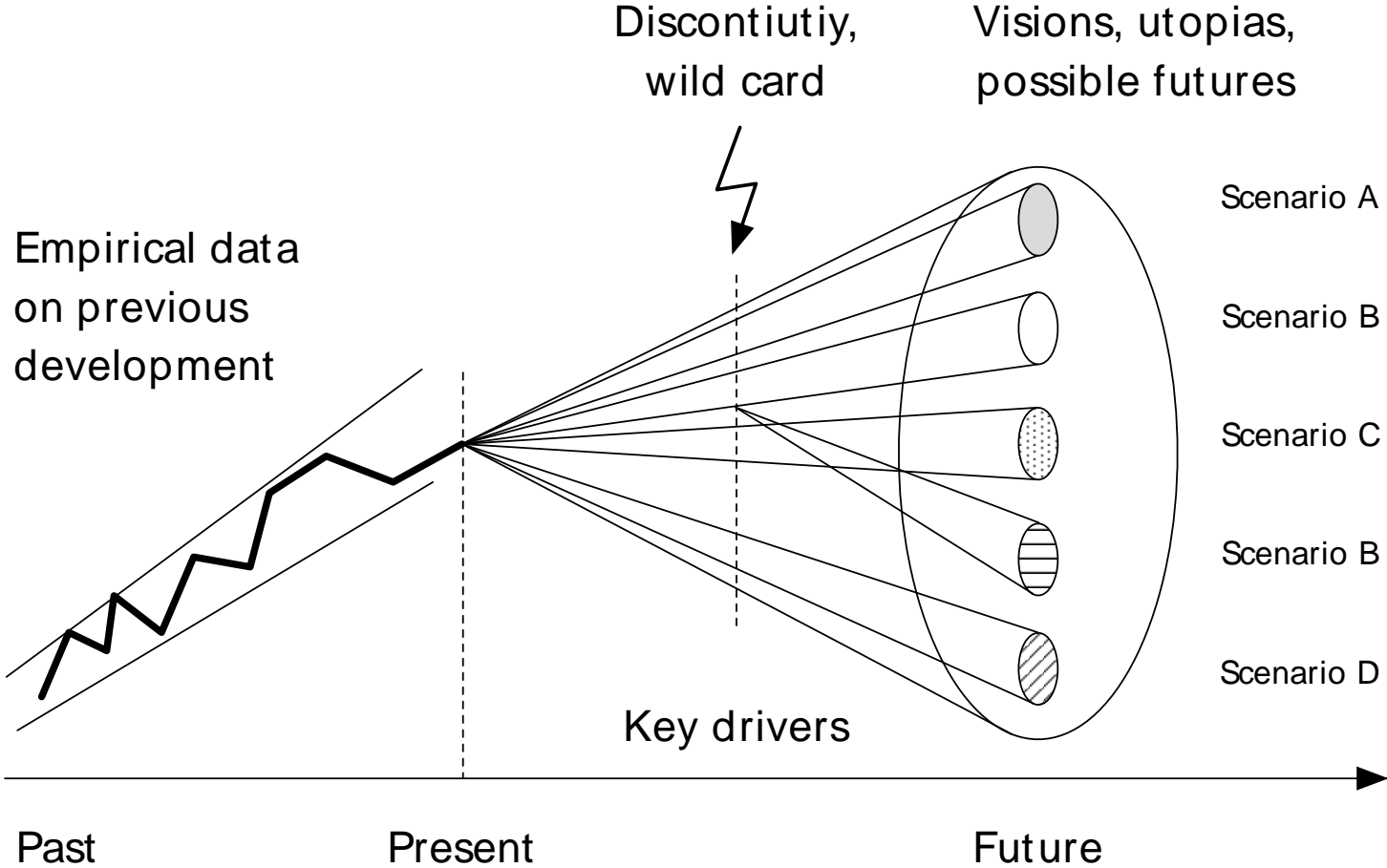
- allow to deal with uncertainty in a rational way
- are not prediction, but hypothetical constructions of possible futures
- allow to view the present as a field of possibilities

## Aims and roles of scenario processes

- overcome boundaries of conventional thinking
- break habitualized patterns of thinking
- generating ideas for future
- systematically analyse possible futures
- facilitating exchange in interdisciplinary settings

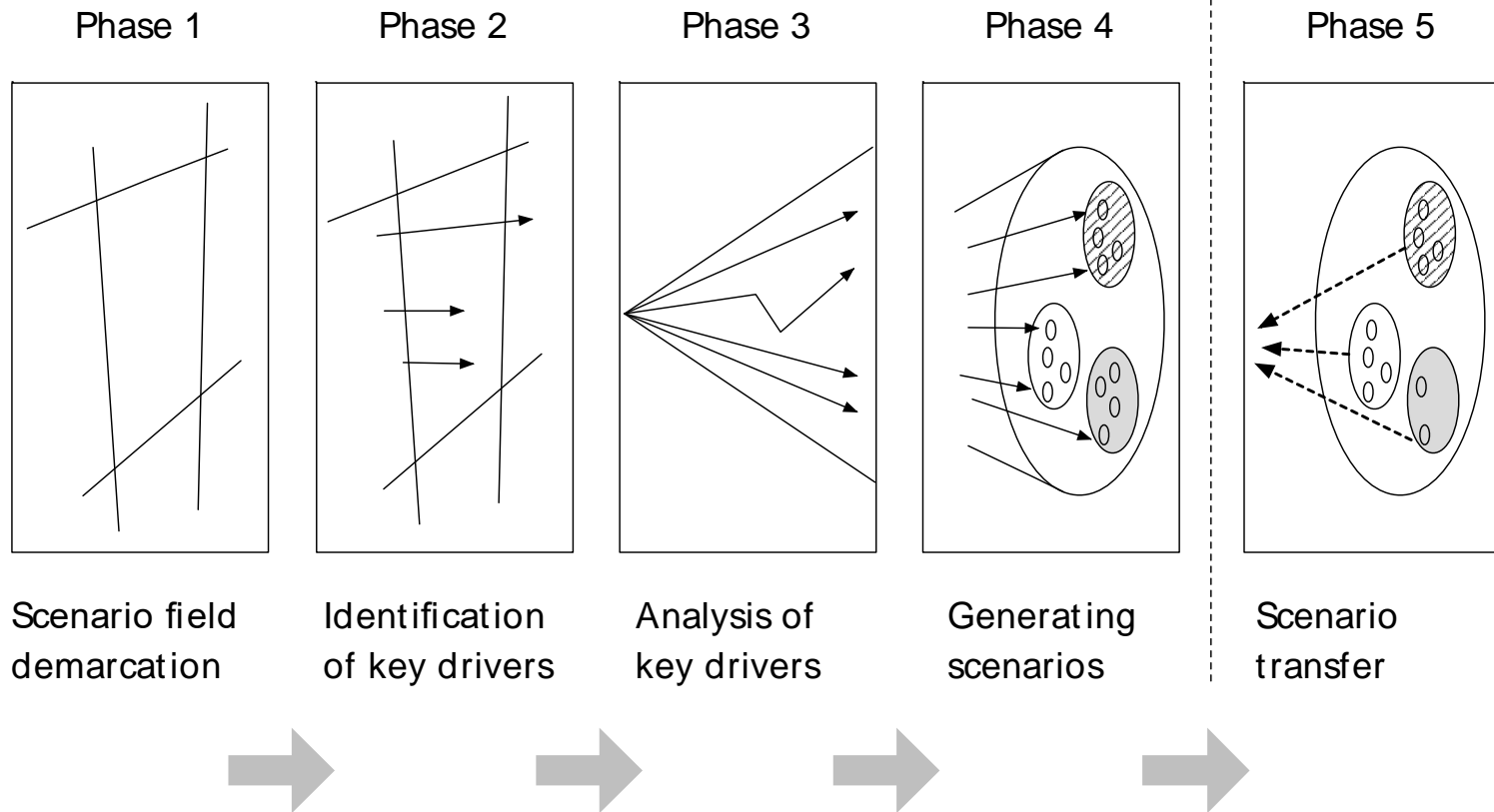


# Scenario process





# Phases of the scenario process



Adapted from: Kosow & Gaßner (2008, p. 20)



# Collection of influencing factors (216 factors)

## Six areas

- physical conditions
- economic development
- demographic development
- scientific and technological development
- political and legal development
- socio-cultural development

## Procedure

- 216 influencing factors, collected in on-line brainstorming process
- evaluation of each factor in workshop

**Homes-up: Systematisierung der Einflussfaktoren – Querschnittsthemen**

Bitte bewerten Sie jeden Einflussfaktor anhand der drei Kriterien *zentral* (↑), *eher unwichtig* (↓) oder *unklar* (?). Zellen ohne Kreuz sind erlaubt (mittlere Wichtigkeit). Versuchen Sie bitte, höchstens 10 mal *zentral* zu vergeben. Wenn Sie einen Einflussfaktor für ein Duplikat eines anderen halten, streichen Sie bitte die weniger gut formulierte Variante durch und notieren Sie die Nummer der besser formulierten Variante vor der durchgestrichenen Zeile. Bitte nutzen Sie einen schwarzen oder blauen Stift (Kugelschreiber oder dünner Filzstift) und markieren Sie Ihre Antworten so:  Ankreuzen. Fehler können Sie korrigieren, indem Sie das Kästchen komplett ausfüllen:  Korrigieren.

**1 Zu: Physische Rahmenbedingungen (MI, 01. Februar 2017, 13:30 - 15:00 Uhr)**

1.1 Räumliche Entwicklung / Siedlungsentwicklung

	↑	↓	?
Q.1. Räumlich dispartate Entwicklung (Wachstum / Schrumpfung)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.2. Re-Urbanisierung	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.3. Kontinuierliche Suburbanisierung und Neubau	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.4. Zentrale Orte	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.5. Segregation, Residualisierung	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.6. Rückbau Infrastrukturen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.7. Rückbau Siedlungen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.8. Nachverdichtung	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.9. Leerstand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1.2 Lokale Entwicklung Einfamilienhausgebiete

	↑	↓	?
Q.10. Nachbarschaftseffekte / "neighbourhood effects"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.11. Homogenisierung (Bewohner)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.12. Heterogenisierung (Bewohner)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.13. Zunehmende Einbettung in kommunale Entwicklung	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.14. Partizipation regionale und lokale Planung	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.15. Rolle der intermediären Organisationen (Stadtearbeit...)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.16. Lokales Gewerbe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.17. Walkability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.18. ÖPNV-Angebot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.19. Verkehrskorridore	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.20. Lebensqualität	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.21. Abhängigkeit Individualverkehr	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.22. Eigentümergemeinschaften	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.23. Siedlervereine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q.24. Ageing in place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1.3 Sonstiges

	↑	↓	?
Q.25. Informationsasymmetrien	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Wir möchten diesen Bogen am Ende der Veranstaltung gern einsammeln und für die nächsten Schritte des Szenario-prozesses weiterverwenden. Wenn einen Scan Ihres Bogen erhalten möchten, vermerken Sie bitte hier einfach Ihre Mail-Adresse. Danke!

**difo**  1/6



# Cross-impact analysis → impact matrix (30 factors)

**Einflussanalyse, Alle Bewertungen (MW)**  
 Wirkrichtung des Einflussfaktors von links (Liste/Zeilen) nach rechts (Spalten)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	AS	PS	SF	KF
1 Anbindung an Mobilitätsinfrastruktur und Verfügbar		0.8	0.2	2.6	0.8	0.2	0.4	0.8	0.6	1.6	0	1.4	0	0.2	0.8	3	1.6	2.8	0.4	1.6	0.8	1.2	0.2	0.6	2	1.2	0.4	0.4	0.6	1.2	28	31	0	27
2 Anbindung an Telekommunikationsinfrastruktur	1.4		0	1.2	0.4	0.8	0	0	0.4	1.6	0	0.8	0	0	0	0.8	0.6	2.2	0.6	0.6	0.2	1	0.2	0.6	1.8	0	0.4	0.4	0.6	1	18	26	0	0
3 Anbindung an technische Infrastruktur (Müllabfuhr)	0.4	0.6		0.4	1	0.6	1.6	0.6	0.6	1.2	0.2	0.2	0.4	0.2	0.2	0.6	1.2	0.8	0.6	1	1	2	0.6	0.4	1.2	0.4	0.8	0.2	0.4	0.2	20	20	0	0
4 Anbindung an soziale Infrastruktur	0.8	0.6	0		1	0.4	0.2	0.2	0.6	1.2	1	2.4	0.2	0.6	1.2	1.2	0.4	0.4	1.4	1	1.2	0.8	0.4	0.8	2	0.4	0.4	1.4	0.8	2	25	38	0	109
5 Wohnbauflächenangebote (z.B. kommunale Wohnbauland	1.4	1.4	1.6	1.6		1.8	1.4	1.6	1.2	2	0	0.4	0.4	0.6	2	1.2	2.2	1.2	1	2	2.6	2.2	1.8	0.2	1.4	1	1.4	0.4	2	0.6	39	36	3	563
6 Gestaltungsmöglichkeiten	0	0	0.2	0	0.2		0.4	2	2.8	0.8	0.2	1.4	0.8	0.4	1.2	0.2	1.2	1.2	0.4	0.8	0.8	0.6	2.8	0.6	0.6	1.4	2.8	1.2	2.6	1.4	29	31	0	58
7 Verfügbarkeit materieller Ressourcen (Rohstoff-, E	2	1.4	2.2	1	1.6	1.6		1.2	1.4	1.2	0.2	0.4	0.2	0.4	0.8	2.4	2	1.8	1.2	1.6	1.6	1.8	0.4	0.4	1.6	1.2	1.6	0.2	1.6	0.4	35	20	15	0
8 Grundstücksgröße/Garten	0	0	0	0	0.8	2.6	1		0.8	0.8	0	1.2	0.6	0.4	0.6	0.4	2.4	0.8	0.8	2.2	1.4	1.8	1.4	0	2.6	1	2.4	0.2	2.4	1.2	30	34	0	179
9 Physischer Zustand, Ausstattung, Barrierefreiheit	0.4	0.2	0.2	0.8	0.2	1.6	1	1.2		0.8	0.2	2.8	1.4	0.8	1	0.2	1.8	1	0.8	1	1.2	1.4	2	0.2	0.4	1.2	1.4	0	1.6	0.8	28	33	0	83
10 Räumlich disparate Entwicklung (Wachstum/Schrumpfu	2.6	2	1.4	2.6	2.4	0.4	1	1	0.8		0.8	0.8	1.6	1	1.2	2.2	3	2.4	1.8	1.6	2.2	1.8	1.2	1	2.6	1.2	1.6	0.6	1.2	1.4	45	41	4	1004
11 Natürliche Entwicklung der Bevölkerung (Geburten-/	1	1	1.4	2.4	0.8	0.2	0.8	0	1	2.2		2.4	3	3	1.4	1.2	1	0.8	1.4	0.4	1.4	1	0.6	1	0.4	0.8	0.8	1.4	0.2	1.4	34	14	20	0
12 Alterung (individuell, gesunde Jahre, Aging in pla	1.4	1	0.8	1.8	0.6	1.2	0.2	0.8	2.6	2	2.8		2.8	3	1.6	1	1.4	1.4	1.2	1	0.4	0.4	1.4	0.4	2	2.8	1.8	1	1	2.4	42	33	9	545
13 Vererbung, Generationenwechsel („Baby-Boomer-Bubbl	0.6	0.8	1.2	1.6	1.2	0.2	0.2	0.4	1.4	1.2	0.8	0.2		2	2	0.6	1.8	0.4	2	0.6	1.2	1.6	1.4	0.4	1	0.2	1.2	1.2	1.2	1.8	30	28	2	0
14 Entwicklung der Personenanzahl pro Haushalt	1.4	1.4	0.8	1.8	1.4	1	0.8	2	1.4	0.8	0.8	1.4	1.2		0.8	1	2.2	1.2	0.8	0.6	1	1.4	2	1.6	1.8	1	2.4	1.2	1.2	1.6	38	27	11	185
15 Nachbarschaftseffekte (Externe Effekte durch Leers	1.4	0.8	0.6	1.6	2.2	0.8	0.2	0.6	1.6	1.4	0.2	1.2	1	0.6		0.4	2.4	0.2	1.4	2.6	2	1.4	1	0.2	1.6	0.4	1.4	0.2	2.2	2.2	34	33	1	281
16 Mobilitätskosten	1.8	0	0	1.6	1.2	0.4	1	0.8	0.2	2	0.2	1.2	1.2	1.2	0.4		2.2	2.8	1.2	0.8	0.8	0.6	1	1.4	2.6	1	0.6	1.4	1.2	0.8	32	34	0	247
17 Erschwinglichkeit des EFH-Besitzes (Affordability/	0.6	0.2	0.2	0.4	1.6	1.4	1	1.8	2	1	0	0.4	1.2	1	1	1.6		1.8	1.6	1	1	1.8	2.6	0.4	2.2	1.2	2.6	1	2.4	1.2	36	49	0	923
18 Arbeitsmobilität	1.4	1.4	0	1.2	0.8	0.4	1.2	0.8	0	1.2	1.2	1.2	0.6	1.4	0.6	2.4	1		1.2	0.4	0.6	0.6	1.4	2.4	2.2	1.4	1	1.8	0.8	1	32	40	0	439
19 Verteilung des Wohlstands, sozial disparate Entwic	1.6	1.6	1.2	2.4	1.4	1.2	0.4	1.4	1.6	1.8	1.4	1.6	0.8	0.8	2.4	1	2.4	1.4		1.6	0.6	1.2	2.6	1	1.6	1.4	2.4	1.2	1.8	2.2	44	30	14	479
20 Gebietsspezifisch vorhandene Wohnumfeldqualität (L	1.2	1	1.2	1.4	1	0.8	0.4	1.2	0.8	1.8	0.4	1.2	1.4	0.6	1.6	0.8	1.6	0.8	0.4		1.4	1.8	1	0.2	1.8	0.8	1.4	0	1.8	0.6	30	34	0	179
21 Nachverdichtung, Wohnbaurechtsänderungen	1.4	1.6	1.6	1.8	2.4	2	1	2.2	1	1.6	0.6	0.6	0.4	0.4	1.6	0.8	1.6	0.4	1.2	2.6		1.8	1	0	2	1.6	1.2	0.8	1.8	1.4	38	34	4	451
22 Kosten des EFH-Besitzes (u.a. Beteiligung der Eig	0	1	0.6	0	1.6	1.4	0.6	1.8	1.8	1.2	0	0.8	1.2	0.8	1.6	0.2	3	1.2	1.8	1	1		2.6	0.2	2	1.6	2.6	0.4	2.6	0.8	35	36	0	419
23 Veränderung von Präferenzen bzgl. Miete vs. Eigent	0.4	0.8	0.4	0.8	2.2	2.2	0.8	1.4	1.2	1.2	0.2	1.2	1.4	1.2	1.6	1	2.2	1.2	1.4	1	1.8	0.6		1	1.8	1.6	2	1	1.2	0.8	36	42	0	671
24 Veränderte Erwerbsbiografien	0.8	0.8	0	0.4	0.2	0.6	0.2	0.6	0.4	1.2	1	0.8	0.6	1	0.4	1.6	1.4	2.8	1	0.2	0.2	0.4	2.4		2.2	1.4	1.8	1.6	1.6	1	29	19	10	0
25 Veränderung von Präferenzen bzgl. Dorf vs. Stadt	2.4	2.2	1.8	2.2	2.2	1.2	1.2	2	0.6	2.6	0	0.8	1	0.2	1.4	2.2	2	1.6	1.2	1.6	2	1.4	2.2	0.8		1.6	2.2	0.8	1.8	1.8	45	52	0	1499
26 Ansprüche an Aufenthalts- und Wohnumfeldqualität (	1.2	1	0.8	0.8	1.6	0.8	0.6	2.2	1.6	0.8	0.2	0.8	0.2	0.4	1.2	1.4	1.6	1.4	1	2	1.4	1.6	0.8	0.4	2.4		1.8	0.4	1.8	0.8	33	31	2	182
27 Veränderung von Präferenzen bzgl. Haus vs. Wohnung	1.2	0.8	0.6	0.6	2.2	1.8	0.6	2.4	1.6	2	0.2	1.2	1.8	0.8	1.8	1.2	1.8	1.2	0.8	0.8	1.6	2	2.4	0.6	1.8	0.4		0.8	1.8	1.8	39	46	0	953
28 Pluralisierung der Lebensstile (z.B. der Familienm	0.6	0.4	0	1.6	0.4	0.2	0.2	1	0.6	1.4	1.2	1.4	0.6	3	0.6	1.2	1	2.2	0.8	0.2	0.4	0.2	2.2	2.2	2.4	1.8	2.4		2.4	2	35	23	12	0
29 Veränderung von Präferenzen bzgl. Bestand vs. (sel	1.2	1	1.2	1.4	2.4	1.4	1	1.8	1.6	1	0	0.4	1.2	0.4	0.6	1.2	1.6	1.2	0.4	1.4	1.8	1.2	1.6	0.2	2	1	1.4	0.6		1.4	34	44	0	655
30 Nachbarschaftshilfe, soziale Netze	0.6	0.2	0	1.8	0.4	1.4	0.2	0.4	0.8	1	0.4	2.8	0.4	0.8	1.4	0.6	0.8	1	0.6	1.2	0.4	0.2	1	0.2	2	0.4	1.8	1	1		25	37	0	84
Passivsumme (PS)	31	26	20	38	36	31	20	34	33	41	14	33	28	27	33	34	49	40	30	34	34	36	42	19	52	31	46	23	44	37				





# Eleven pre-scenarios on the key drivers

## **Physical conditions**

- Availability of plots for housing construction
- Accessibility of mobility infrastructure
- Accessibility of telecommunication infrastructure
- Availability of natural resources

## **Demographic development**

- Spatially disparate development
- Natural development of the population
- Aging

## **Economic development**

- Affordability of owning a single-family home
- Housing property as a means of old-age provision

## **Socio-cultural development**

- Altered employment/working biographies
- Pluralisation of lifestyles



# Szenario A: Turbourbanisation Booming Cities, Impoverished Country





# Scenario A: Turbourbanisation

## **Demographic development:**

- Over aging in all regions, especially in the municipalities in the rural area
- High immigration in big cities and population loss in rural areas of all age groups

## **Economic outlook:**

- Networking and cluster of companies in agglomeration areas (like Silicon Valley)
- Loss of companies in rural areas, in business sectors, agriculture and production

## **Policy:**

- Deregulation and liberalisation

## **Infrastructure:**

- Reduction of social, medical and cultural facilities in rural areas
- Underuse of public infrastructure and closing of supermarkets in rural areas
- Expansion of technical, social, medical and cultural infrastructure in big cities

## **Spatial structure:**

- Urbanisation and suburbanisation
- Devastation of municipalities in rural area

## **Development of single family-houses in the three planning regions:**

- Agglomeration area: SFH only for top earners
- Suburban area: high demand for suburban SFH
- Rural area: abandonment and dereliction of SFH, high price discounts of SFH





# Szenario C The End of Geographic Restrains



APT. #3A - DAY  
The living area is open to the dining area and the kitchen, and the dining table is ready for use.



APT. #4D - DUSK  
The living area is open to the dining area and the kitchen, and the dining table is ready for use.



APT. #3A - NIGHT  
The living area is open to the dining area and the kitchen, and the dining table is ready for use.



APT. #4D - NIGHT  
The living area is open to the dining area and the kitchen, and the dining table is ready for use.



# Sc C: The End of Demographic Restraints

## **demographic development**

→ Stable demographic conditions

## **economic outlook**

→ Stable economic development, home office becomes the new normal; digitization dominates the organization of work processes

## **implemented policies**

→ Public promotion of rural areas to avoid negative aspects of urbanization

## **infrastructure**

→ Focussed investments in social and technical infrastructure

## **spatial structure**

→ Equalisation of regional living conditions; decentralization

Increase of SFH home-ownership; new user types and forms of use

→ Large cities: serviced flats; small towns: affordable SFH; for rent, ICT, amenities, home-office





# Szenario C

# The End of Geographic

# Restrains



**APT. #3A - DAY**  
The living area is open and ready for use.



**APT. #4D - DUSK**  
The living area is open and ready for use.



**APT. #3A - NIGHT**  
The living area is open and ready for use.



**APT. #4D - NIGHT**  
The living area is open and ready for use.

