



Foto: Namphuong Van, www.unsplash.com

# Urban Cooperation by Urban Design Thinking

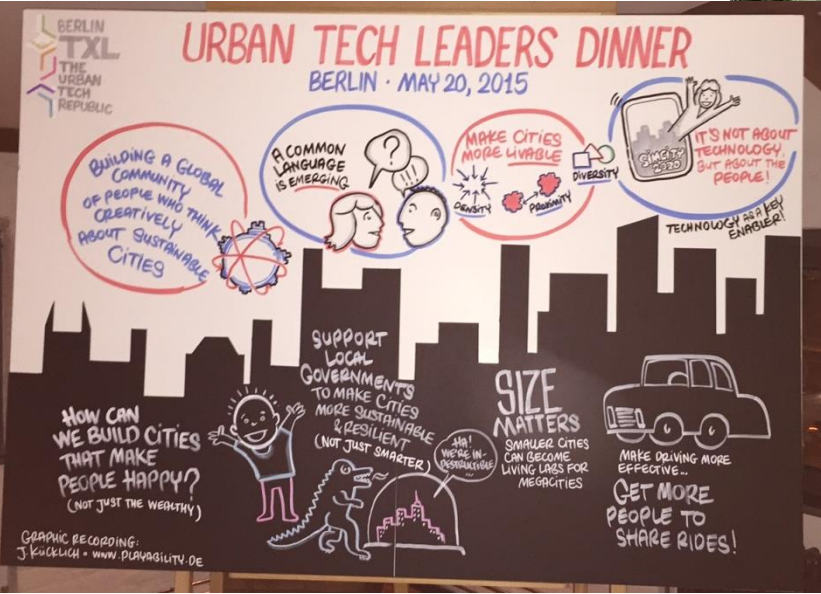
Prof. Elke Pahl-Weber

TU Berlin, Chair of Urban Development and Regeneration



# Smart Sustainable Cities

## Pictures, Facts, Challenges, Strategies, Instruments, Solutions



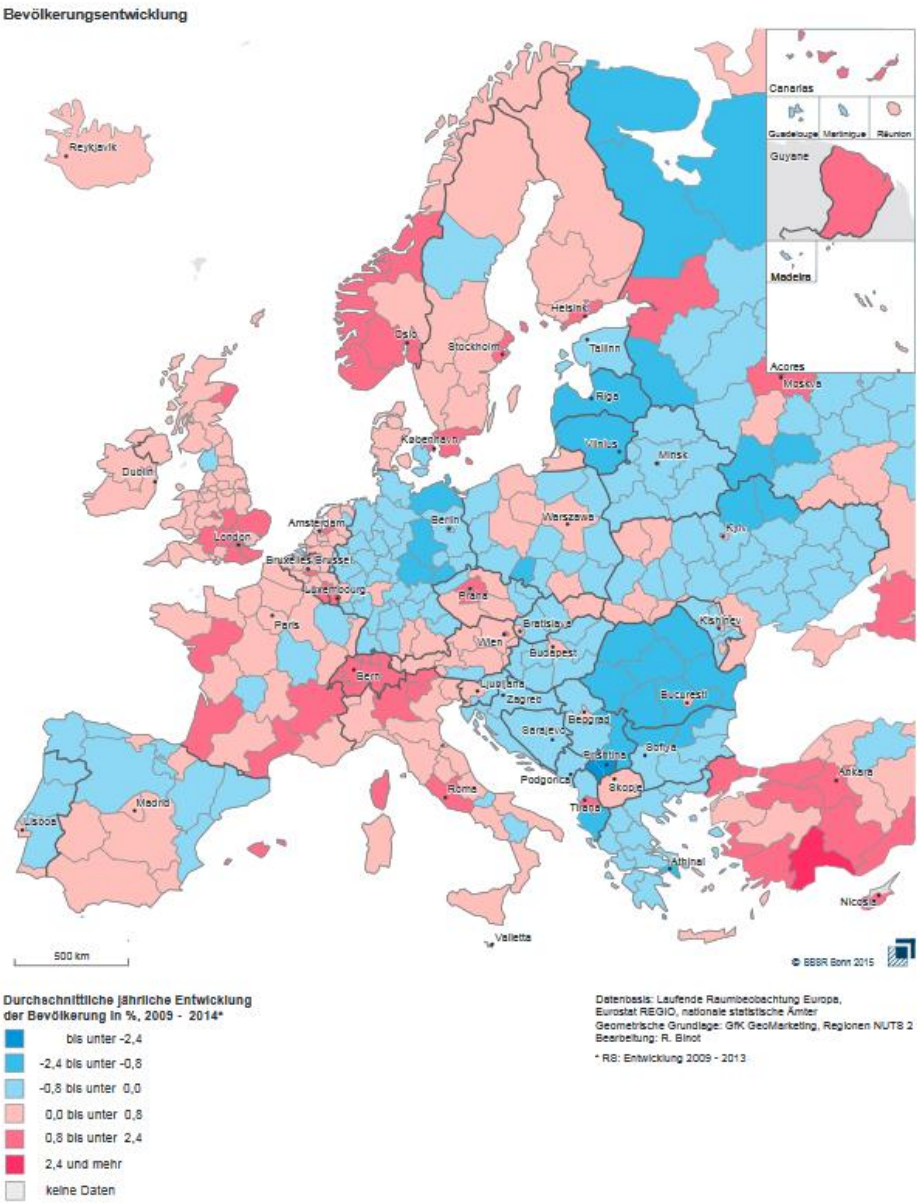
above: Nationale Plattform Zukunft Stadt, NPZ Dateien, onlinepresentation  
26.04.2016  
2 nd line: Elke Pahl-Weber, Urban Tech Dinner, Berlin 2015,  
Copenhagen, July 2015, Delhi March 2016

# Smart Sustainable Cities

Pictures, Facts, Challenges,  
Strategies, Instruments, Solutions

Demography:  
Where people live

Shrinking and Growing Population Rates  
In Europe



Population Trends in Europe 2009-2014

BBSR, 2016

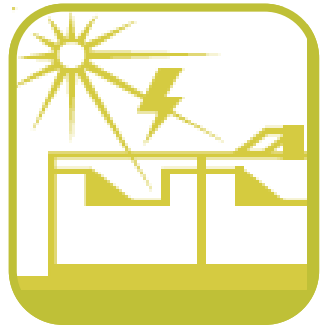
# Smart Sustainable Cities

Pictures, Facts, Challenges, Strategies, Instruments, Solutions

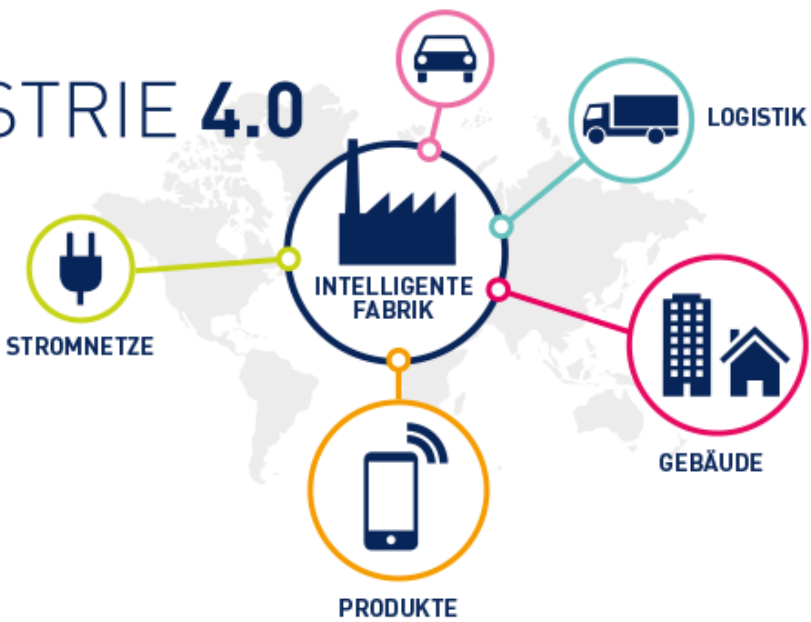
Economic Transformation

Smart industrial production

- In mixed used areas in the city?
- In a new kind of buildings?
- Production on Demand?
- No airpollution, no noise?

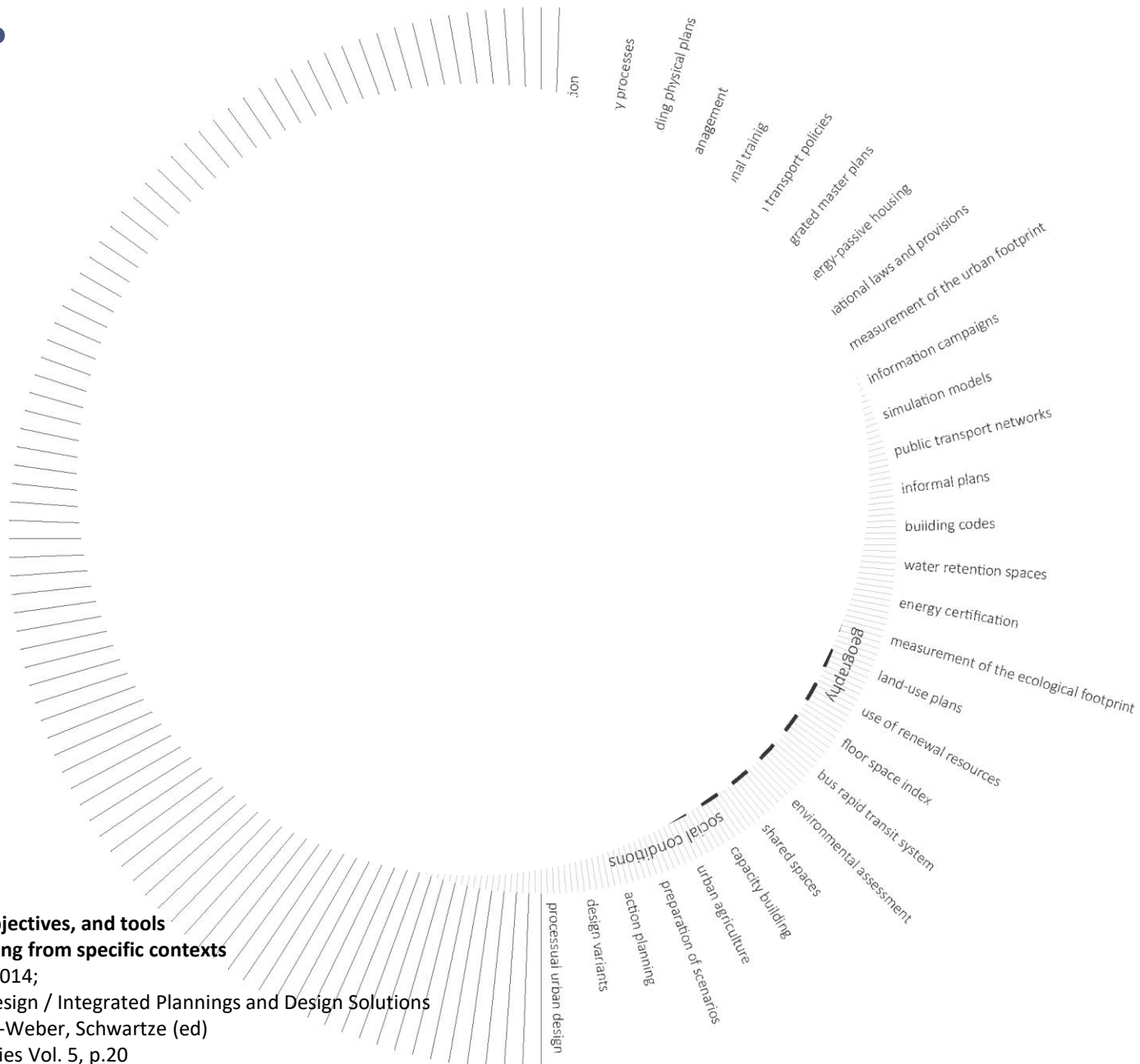


## INDUSTRIE 4.0





# Solutions first?



**Challenges, dimensions, objectives, and tools  
to confront challenges arising from specific contexts**  
Graphic: Jeutner, Marcus, 2014;  
In: „Space, Planning, and Design / Integrated Plannings and Design Solutions  
for Future Megacities“ Pahl-Weber, Schwartz (ed)  
Future Megacities Book Series Vol. 5, p.20

**Urban Design and Planning**

peak oil, global warming, urban growth, energy consumption, emergence of slums, air pollution, social exclusion, increasing distances, population growth, flooding, natural disasters, travel demand, restricted financial resources, sea-level rise, draughts, road congestion, sprawl, segregation, spatial fragmentation, rapid motorisation, infrastructure supply, land consumption, ...

land-use planning, urban design, infrastructure planning, landscape planning, architecture

mode of urban governance, mixed use structures, resource efficiency, architecture, eco-mobility, economic system, low ecological impacts, local and regional disparities, eco-mobility, economic system, low ecological impacts, local and regional disparities

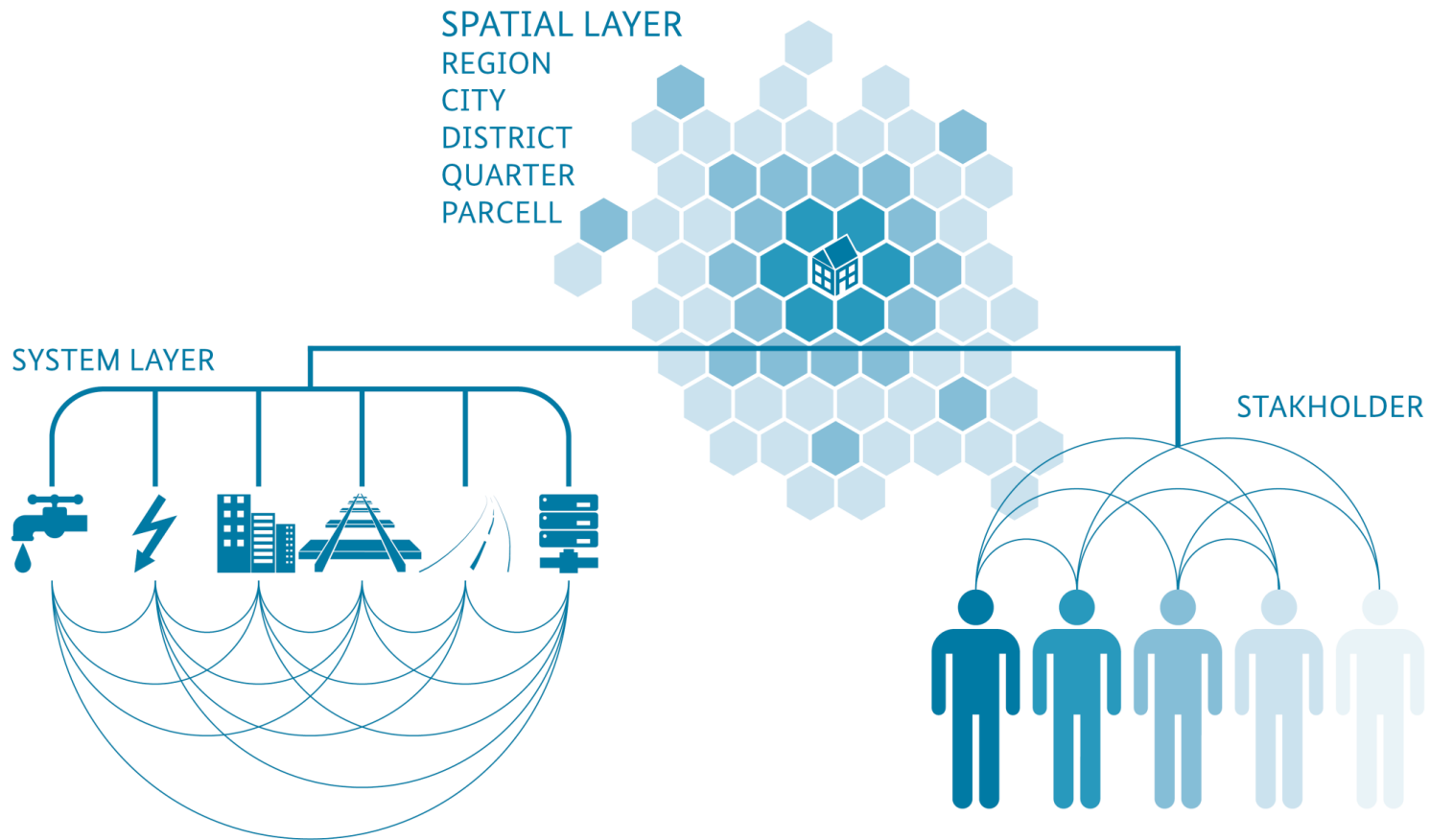
political system, energy efficiency, microclimate, awareness for issues of sustainability, resilient structures, social conditions, healthy living conditions, sustainable buildings, local and regional disparities, eco-mobility, economic system, low ecological impacts, local and regional disparities

flood protection, participatory processes, legally binding physical plan, traffic management, vocational training, urban transport policies, integrated master plans, energy-passive housing, national laws and provisions, measurement of the urban footprint, information campaigns, simulation models, public transport networks, informal plans, building codes, water retention spaces, energy certification, measurement of the ecological footprint, land-use plans, use of renewable resources, floor space index, bus rapid transit system, environmental assessment, shared spaces, capacity building, urban agriculture, preparation of scenarios, action planning, design variants, processual urban design, cultural background, sustainable buildings, landscape planning, infrastructure planning, urban design, energy efficiency, political system, mode of urban governance, mixed use structures, resource efficiency, architecture, eco-mobility, economic system, low ecological impacts, local and regional disparities, eco-mobility, economic system, low ecological impacts, local and regional disparities

Future Megacities Book Series Vol. 5, p.20

# Smart Sustainable Cities

Pictures, Facts, Challenges, **Strategies**, Instruments, Solutions



## Energy Resources and technical Infrastructure systems

Graphic: Jeutner, Marcus, Magdalena Konieczek, 2015;

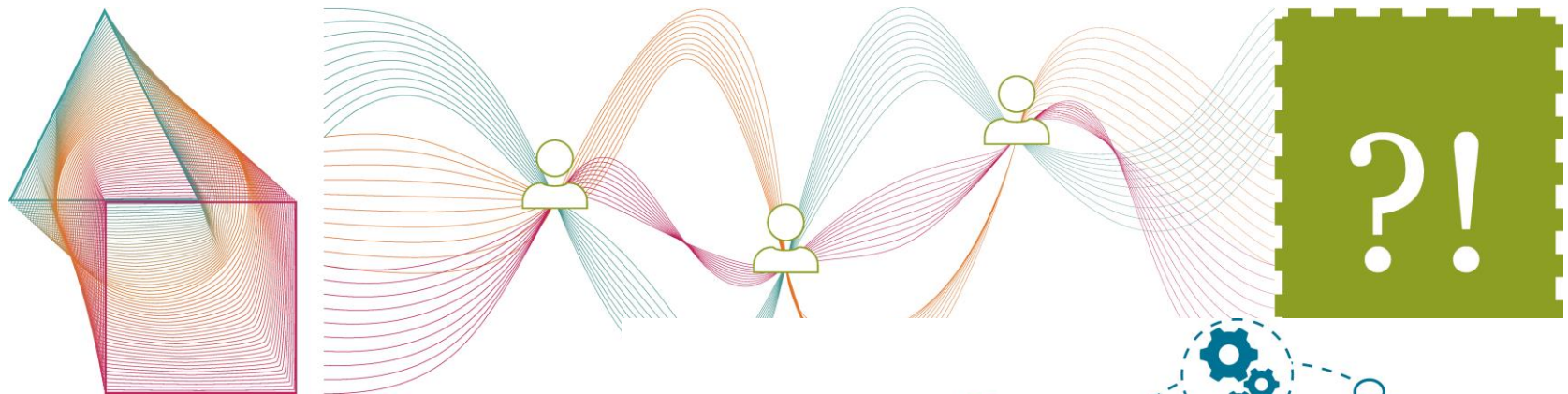
In: „Die Zukunftsstadt: CO2-neutral, energie- und ressourceneffizient, klimaangepasst und sozial. Langfassung der Strategischen Forschungs- und Innovationsagenda (FINA)“

## Smart Sustainable Cities

Pictures, Facts, Challenges, [Strategies](#), Instruments, Solutions

### How to handle complexity?

### Transfer of the Triple Helix as cooperative model in urban development



**Transformation as dialogic Process – Innovation by urban Co-Production**

Graphic: Jeutner, Marcus, TU-Berlin, 2015;

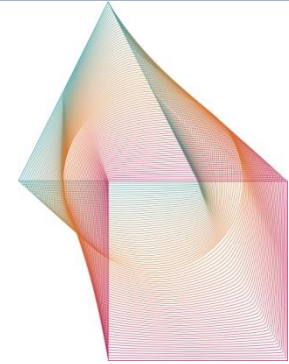
#### **Involvement of People and Stakeholder**

Graphic: Jeutner, Marcus, Magdalena Konieczek, 2015;

In: „Die Zukunftsstadt: CO2-neutral, energie- und ressourceneffizient, klimaangepasst und sozial. Langfassung der Strategischen Forschungs- und Innovationsagenda (FINA)“







TU Urban Lab:

Economy-governance-science collaboration

Graphic: Marcus Jeutner

## Urbanisation in Germany

Pictures, Facts, Challenges, Strategies, Instruments, Solutions

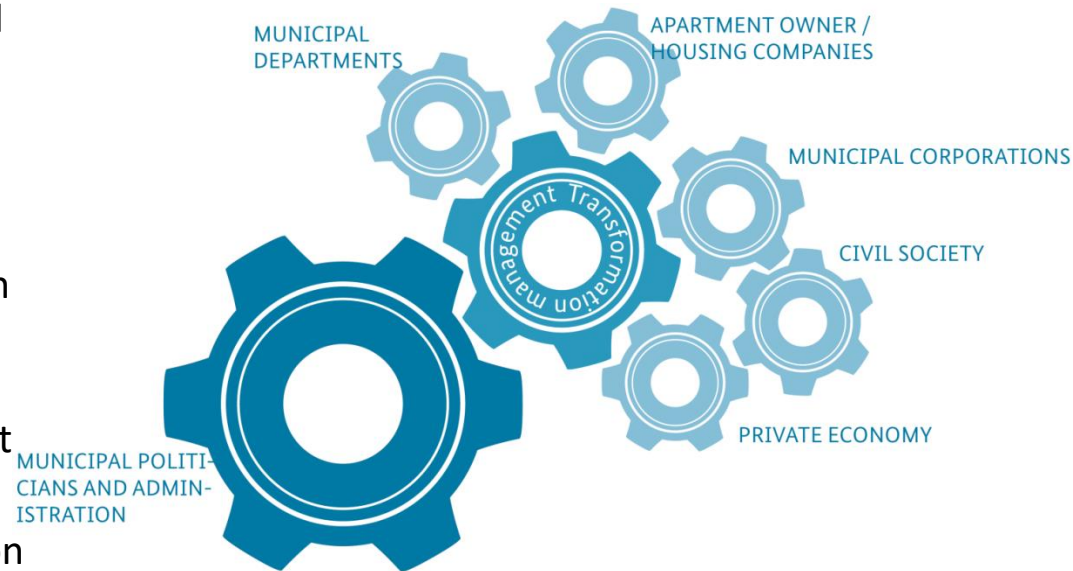
Here: „Smart City“ = Urban Coproduction

How to handle complexity?

Transfer of the Triple Helix

as a cooperative model in urban development

- **Industries and enterprises, also housing companies, small and medium enterprises and local businesses** for innovation and implementation in urban transformation processes
- **Governance** with municipality as steering entity in concept development, implementation in politics and administration as well as promoter for active user engagement (civil society) and participation in urban development
- **Sciences** for invention, process supervision, reflection, evaluation and for overall comparison



### Urban Transformation Management

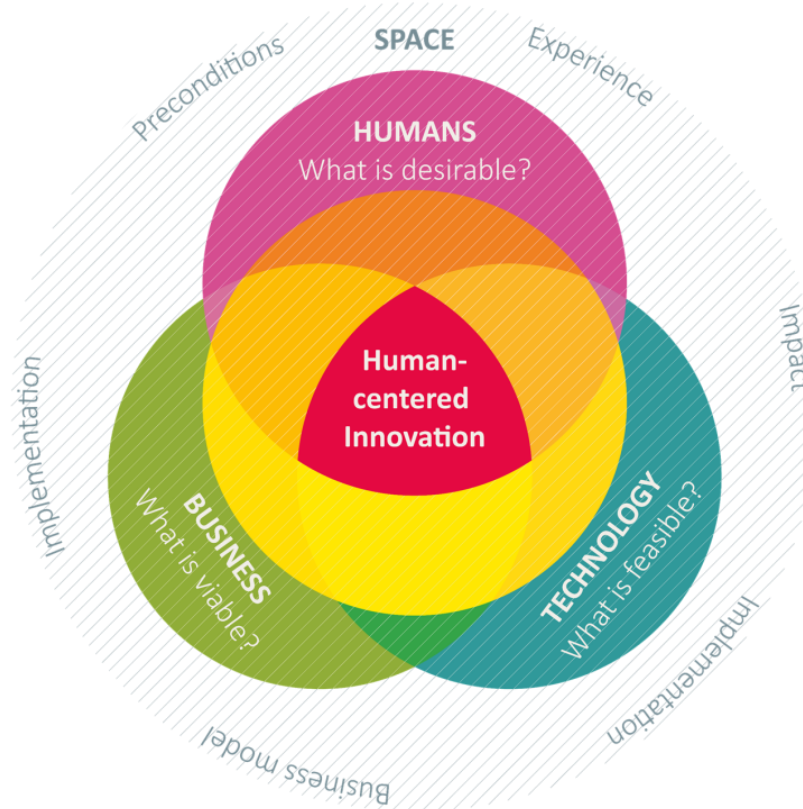
Graphic: Jeutner, Marcus, Magdalena Konieczek, 2015;

In: „Die Zukunftsstadt: CO2-neutral, energie- und ressourceneffizient, klimaangepasst und sozial. Langfassung der Strategischen Forschungs- und Innovationsagenda (FINA)“

## Smart Sustainable Cities

Pictures, Facts, Challenges, Strategies, [Instruments](#), Solutions

Smart City ↔ Urban Coproduction



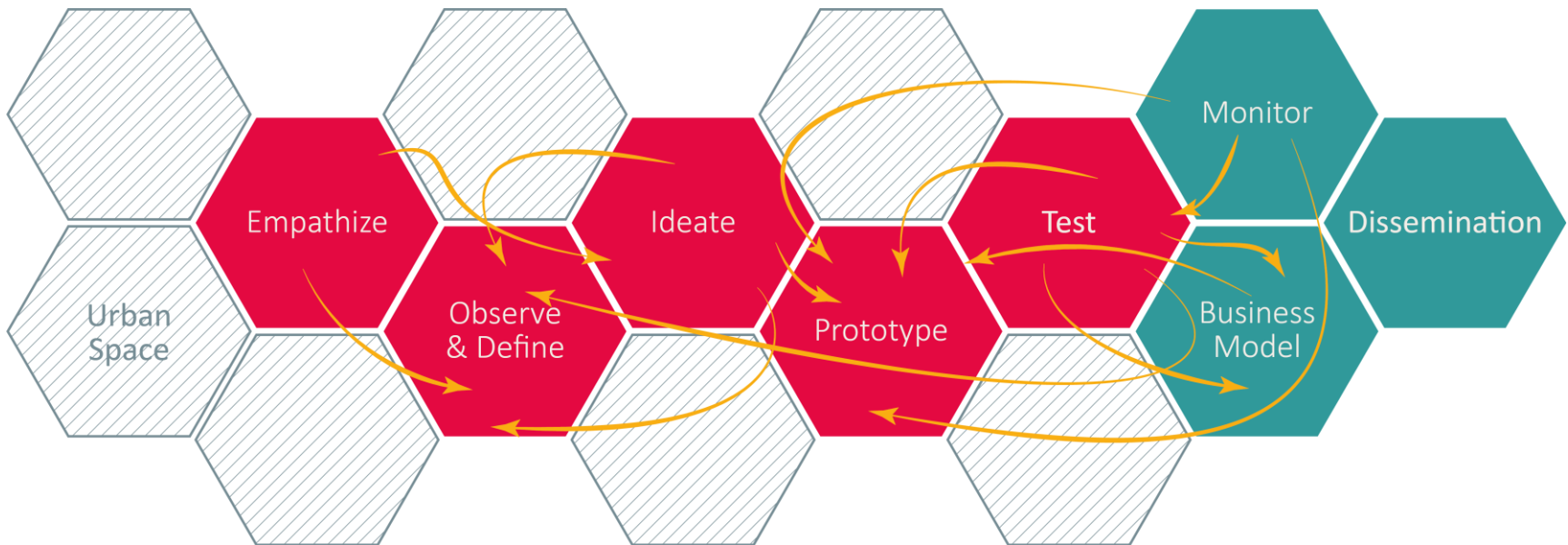
**Human-centered Innovation and co-production of urban solutions**

TU Berlin, Graphic: Jeutner 2016, on Nadja Berseck, 2015

## Smart Sustainable Cities

Pictures, Facts, Challenges, Strategies, Instruments, **Solutions**

Smart City ↔ Urban Coproduction



**Urban Design Thinking**  
TU Berlin, Graphic: Jeutner 2016



# Smart Sustainable Cities

Pictures, Facts, Challenges, Strategies, Instruments, **Solutions**

## Research

Basic oriented applied research  
Sustainable and smart urban  
Development



## City of the Future

### Wolfsburg

Research Project, funded by the National  
Ministry for Education and Research,  
March 2017-October 2018



Bundesministerium  
für Bildung  
und Forschung

- Urban Development ViWo 2030+:  
Visions for Living in Wolfsburg,  
digital and connect
- December 2016: WolfsburgDigital;  
Memorandum of Understanding  
between Volkswagen AG and City of  
Wolfsburg: Digital Infrastructure,  
digital Platform, Real Lab Wolfsburg



# Smart Sustainable Cities

Pictures, Facts, Challenges, Strategies, Instruments, **Solutions**

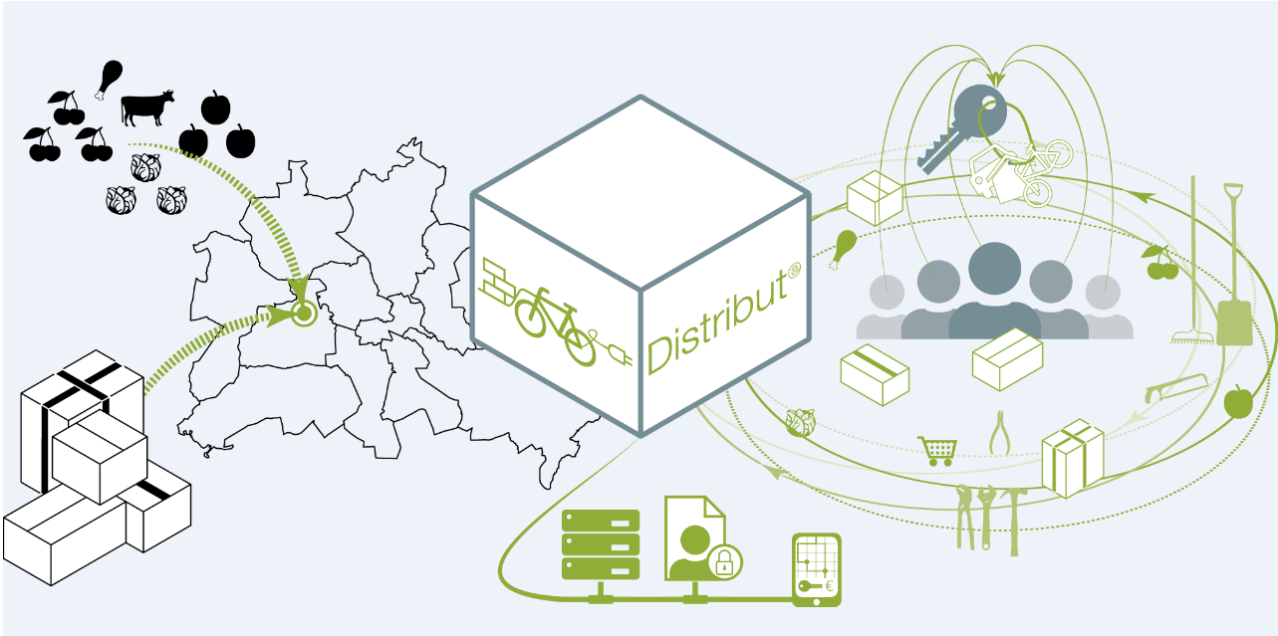
Research  
Basic oriented applied research  
Economic Transformation  
Smart City Services

**Distribute**

**Grüne Kiez-Lieferketten für die Stadt  
von morgen**

Research Project, funded by the  
National Ministry for Education and  
Research, April 2017- April 2020

- In districts and quarters?
- Planned and driven by triple  
helix actors?



**Distribut(e) – Green Logistics for Neighborhoods**  
Smart-city-Services-Program funded by BMBF  
TU Berlin, 2016  
Graphic: Marcus Jeutner, 2015

# Smart Sustainable Cities

Pictures, Facts, Challenges, Strategies, Instruments, Solutions

## Research

Basic oriented applied research  
Integration of different cultural  
backgrounds by co-productive  
formats

How do highly skilled migrants  
think about questions of:

- Mobility?
- Housing?
- Work?
- Communities?
- Governance?



**Migrants4Cities – Welcome perspectives for sustainable cities funded by BMBF**

TU Berlin, 2016

Graphic: Marcus Jeutner, 2015



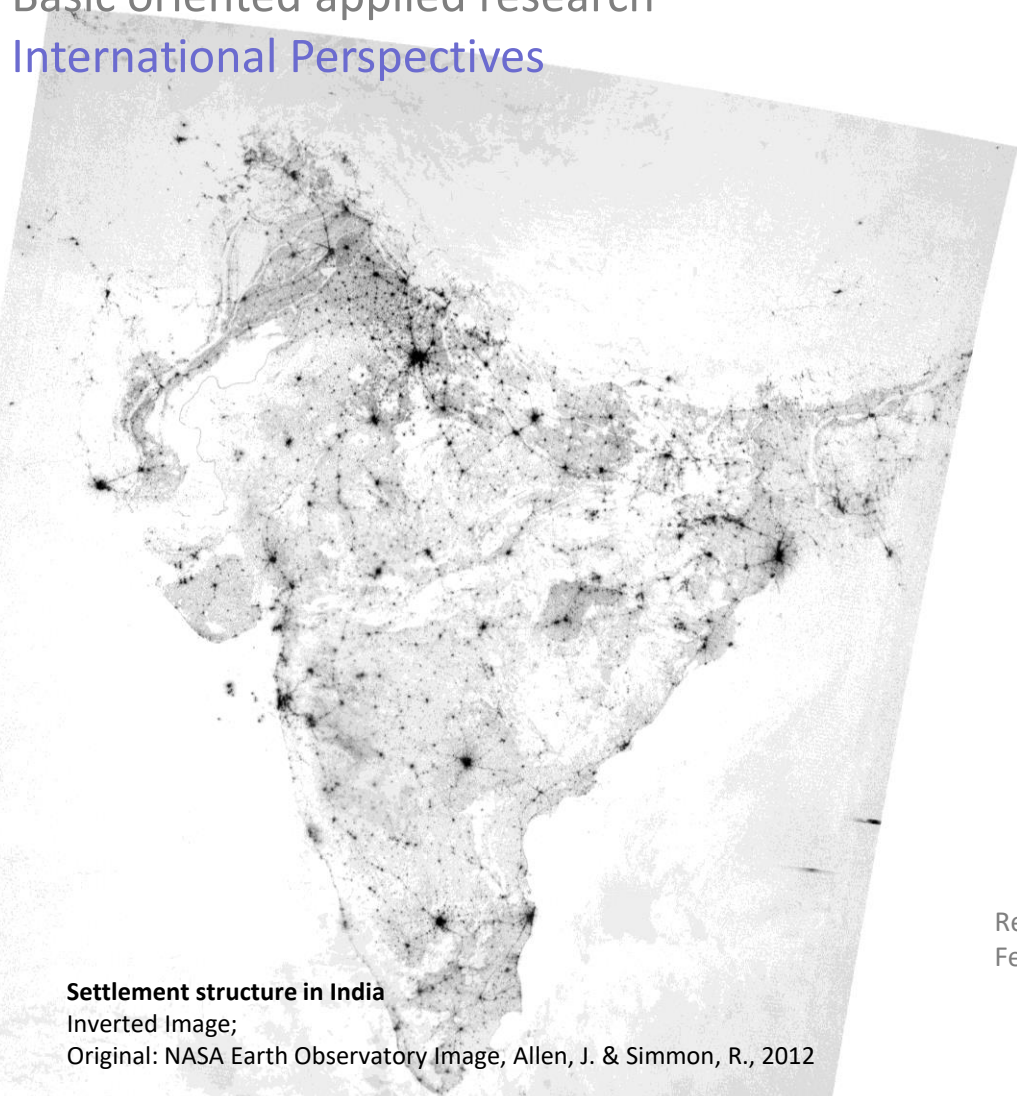
# Smart Sustainable Cities

## Pictures, Facts, Challenges, Strategies, Instruments, Solutions

### Research

### Basic oriented applied research

### International Perspectives



**Settlement structure in India**  
Inverted Image;  
Original: NASA Earth Observatory Image, Allen, J. & Simmon, R., 2012

### Indo-German Smart Initiative

Integrated Urban Development and Co-Production for Indian Cities

In Bezug auf die zahlreichen Herausforderungen internationaler Urbanisierungsprozesse, zeigt die *Indo-German Smart Initiative* im Rahmen von *Werbung für den Innovationsstandort Deutschland* einen Weg auf, die vielfältigen Erfahrungen Deutschlands mit der Entwicklung von *Smart Cities* weltweit zu vermitteln. Integrierte Stadtentwicklung und kollaborative Arbeitsweisen machen Synergien zwischen Wissenschaft, Unternehmen und Kommunen nutzbar und produzieren städtische Innovationen, zukunftsfähige Infrastrukturen und lebenswerte Räumen. Aus Anlass der indischen Smart Cities Mission baut die Bundesrepublik Deutschland derzeit eine Partnerschaft mit Indien auf, an der hier angeknüpft wird. Im Mittelpunkt der Aktivitäten steht dabei der experimentelle Methodenansatz des *Urban Design Thinking*, mit dem bereits erprobte und bewährte Prozesse der Produktentwicklung auf komplexe Themen der Stadtentwicklung übertragen werden. Diese raumbasierte und nutzerzentrierte Methode ermöglicht die Entwicklung innovativer Handlungsansätze und Umsetzungsstrategien. Durch die Arbeit in dialogischen und anwendungsorientierten Reallaboren (*UrbanLabs*) wird die Einbeziehung möglichst vieler Nutzerinteressen sichergestellt und zugleich eine zielgerichtete und effektive Umsetzung von im Prozess erarbeiteten Lösungen vorangetrieben. *Urban Design Thinking* wird von der *TU Berlin* entwickelt und ist bereits in interdisziplinären Studien-, Forschungs- und Umsetzungsprojekten pilothaft eingesetzt worden.

Das Konsortium wird durch das Fachgebiet Bestandsentwicklung und Erneuerung von Siedlungseinheiten am Institut für Stadt- und Regionalplanung der Technischen Universität Berlin koordiniert. Sämtliche in der Projektskizze aufgeführten Partner haben ihr Interesse an einer Mitwirkung im Projekt durch einen Letter of Intent bekundet. Die Originale liegen dem Antragsteller vor und können auf Rückfrage jederzeit eingesehen werden.

Research Project, funded by the National Ministry for Education and Research  
February 2017-July 2018

Germany Land Ideas, Research Campaign “Building the City of Tomorrow of Ideas” funded by BMBF  
TU Berlin, Graphic: Marcus Jeutner 2015

# “Designing Smart Cities” master project

## Facts & figures



Started in 2013, 5 months project each winter term



Different project partners with challenges, e.g., in the field of urban mobility or energetic renewal



24 students in 4 teams with urban planning, business and engineering backgrounds



1) Conceptual prototype, 2) Spatial visualization, 3) Business model



Develop space-based urban innovations and learn to work in an innovation team



# Network of partners and mentors

## Transdisciplinary projects



Graphic: Markus Jeutner, TU Berlin, 2015



# Project challenges

## Difference locations in Berlin

Future mobility  
in Inselstadt Gartenfelde

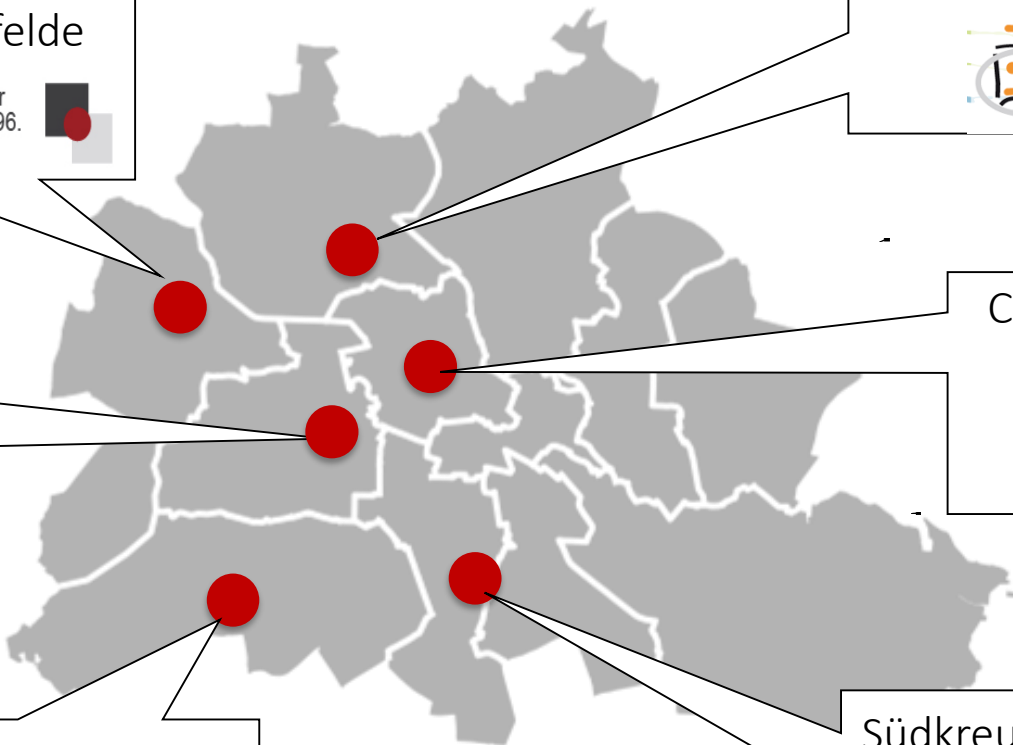
**UTB** Unternehmensberatung in der Immobilienwirtschaft. Seit 1996.

Elderly mobility &  
health

**SIEMENS**

Energetic renewal in  
Gartenstadt Lichterfelde

**Märkische Scholle**  
Wohnungsunternehmen eG



Community experience in  
Brunnenviertel

Checkpoint Charlie  
experience

Südkeuz future train  
station

EMPATHY !

# Elderly mobility and health

## User insights



I know, it's less safe but I prefer to have a stick, rather than a walker!

There is no elevator at Deutsche Oper station.



I feel again like a baby because I am not being able to ride my bike anymore.



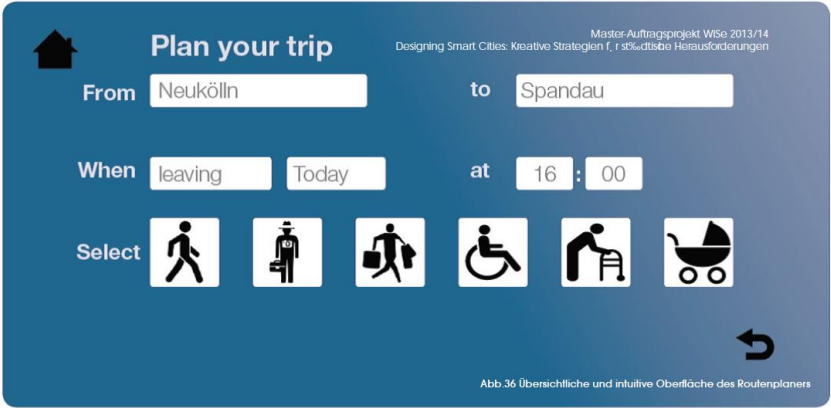


# Elderly mobility and health Solutions



Multi-functional rollator

## Route planner for mobility impaired users



Modular bike

## Energetic Renewal

### Challenge context at Gartenstadt Lichterfelde

- Project area owned by housing association
- Renovation of 841 apartments in houses from the 1930s houses

#### Objectives:

- **Family-friendly** and **age-oriented** adaptation of the living space
- **Energy efficiency:** energetic self-sufficiency
- **Socially compatible:** the lowest increases in rent possible

Re-design campus “Lichterfelde Süd”  
to achieve

**ENERGY-EFFICIENT AND  
INTERGENERATIONAL HOUSING.**





# Energetic Renewal

## User Insights



With all this new technology in the basement, we have less storage space.



The renovation went great, no complaints! But I cannot find a spot to do sports.



Residents workshop with only 10 residents...

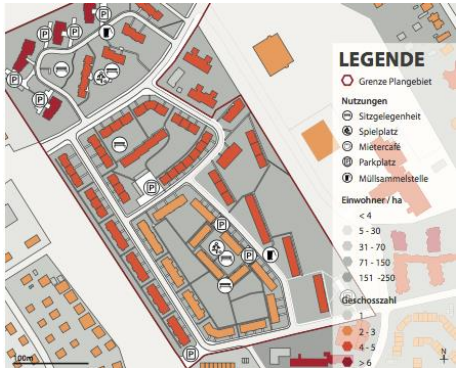


There is no place to play with our children...



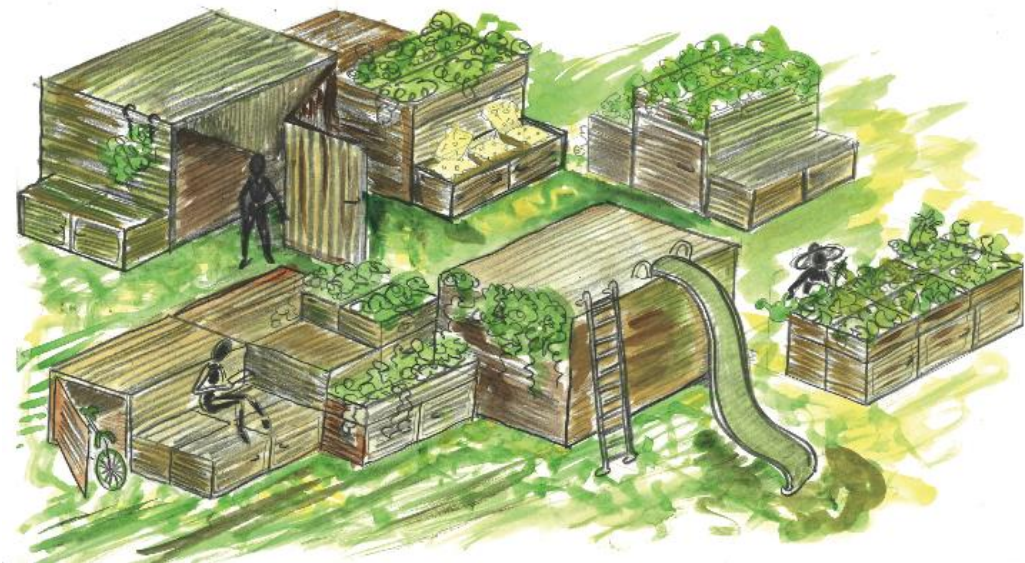
# Energetic Renewal

## Observation and mapping





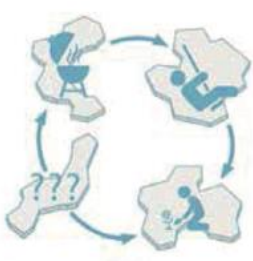
# Energetic Renewal Solutions



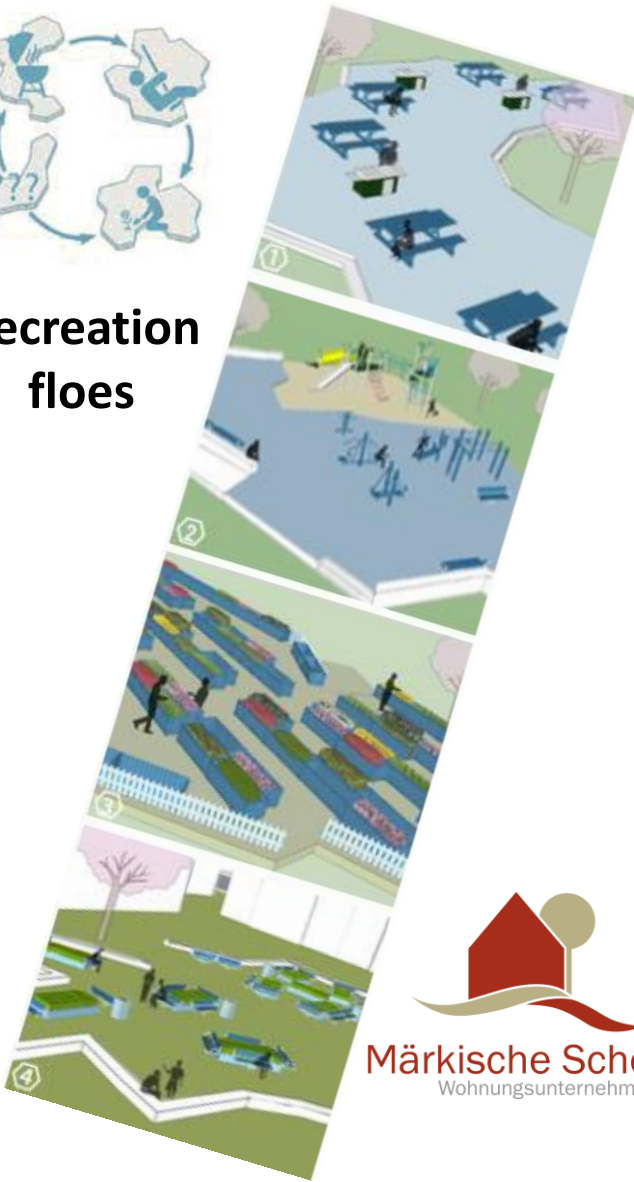
FlexiCubes



Rainbow meeting point



Recreation  
floes



**Thank you  
for your  
attention!**

## **Prof. Elke Pahl-Weber**

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