

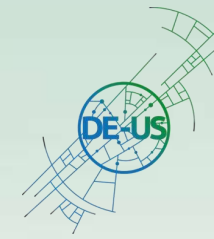
# JENA-GEOS<sup>®</sup>-Ingenieurbüro GmbH

Your partner for

Geology | Soil | Environment | Raw material | Building ground







# Tackling the issues of tomorrow today

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INNOVATION WORKSHOP

12/20/2019

# Connecting experts to shape the City and the Village of Tomorrow





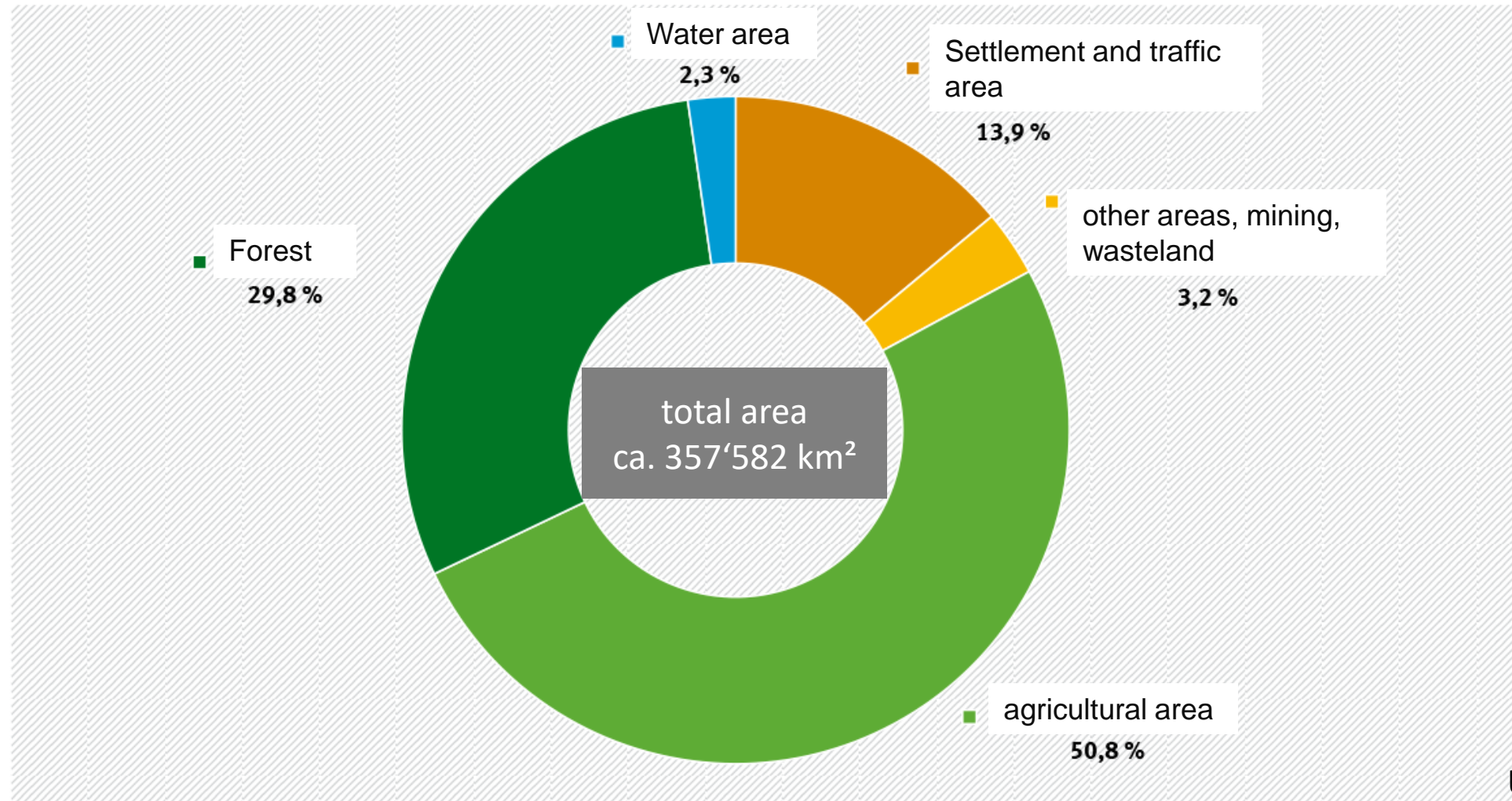
# Soil protection in the context of construction projects

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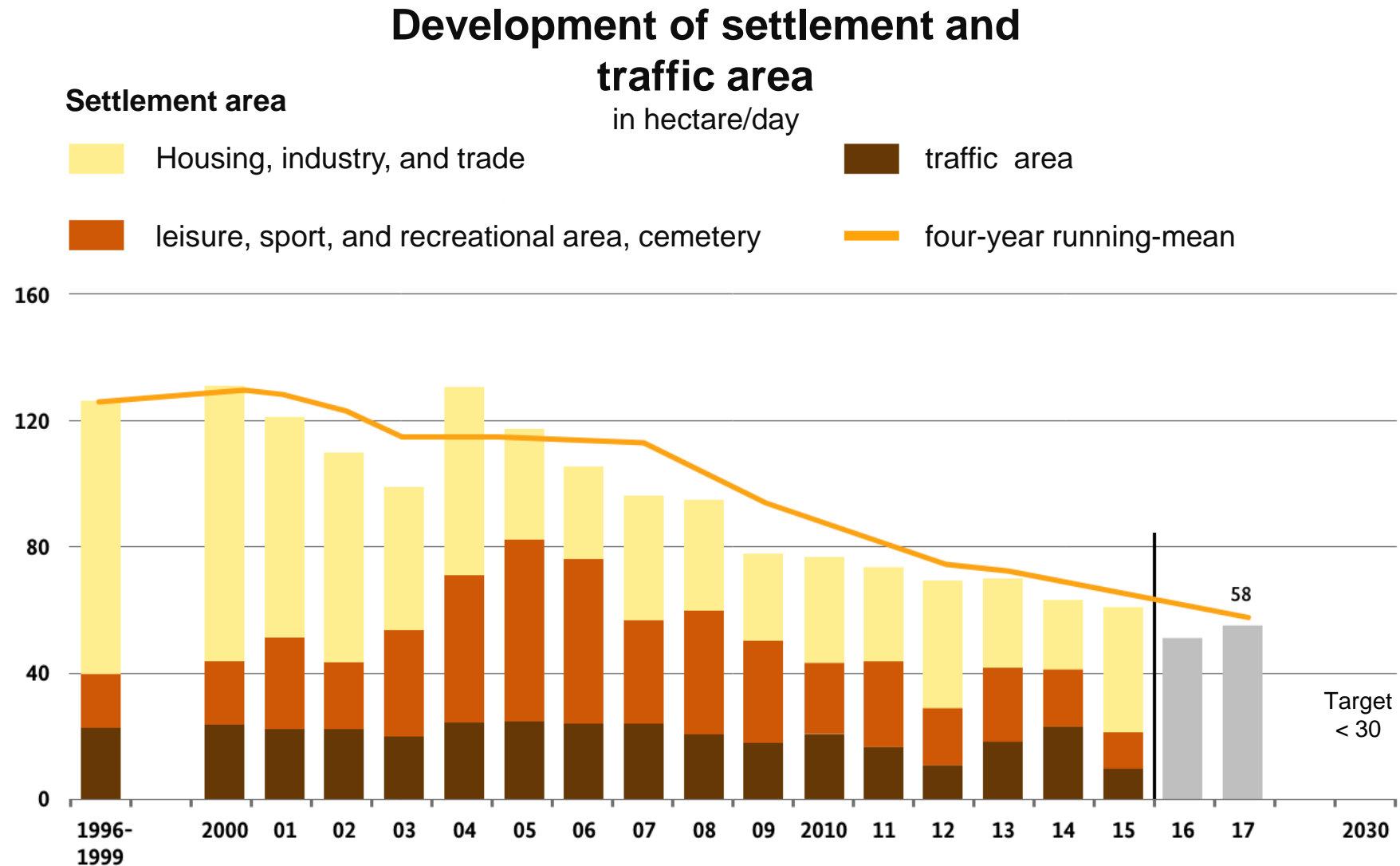
DR. SASCHA MESZNER



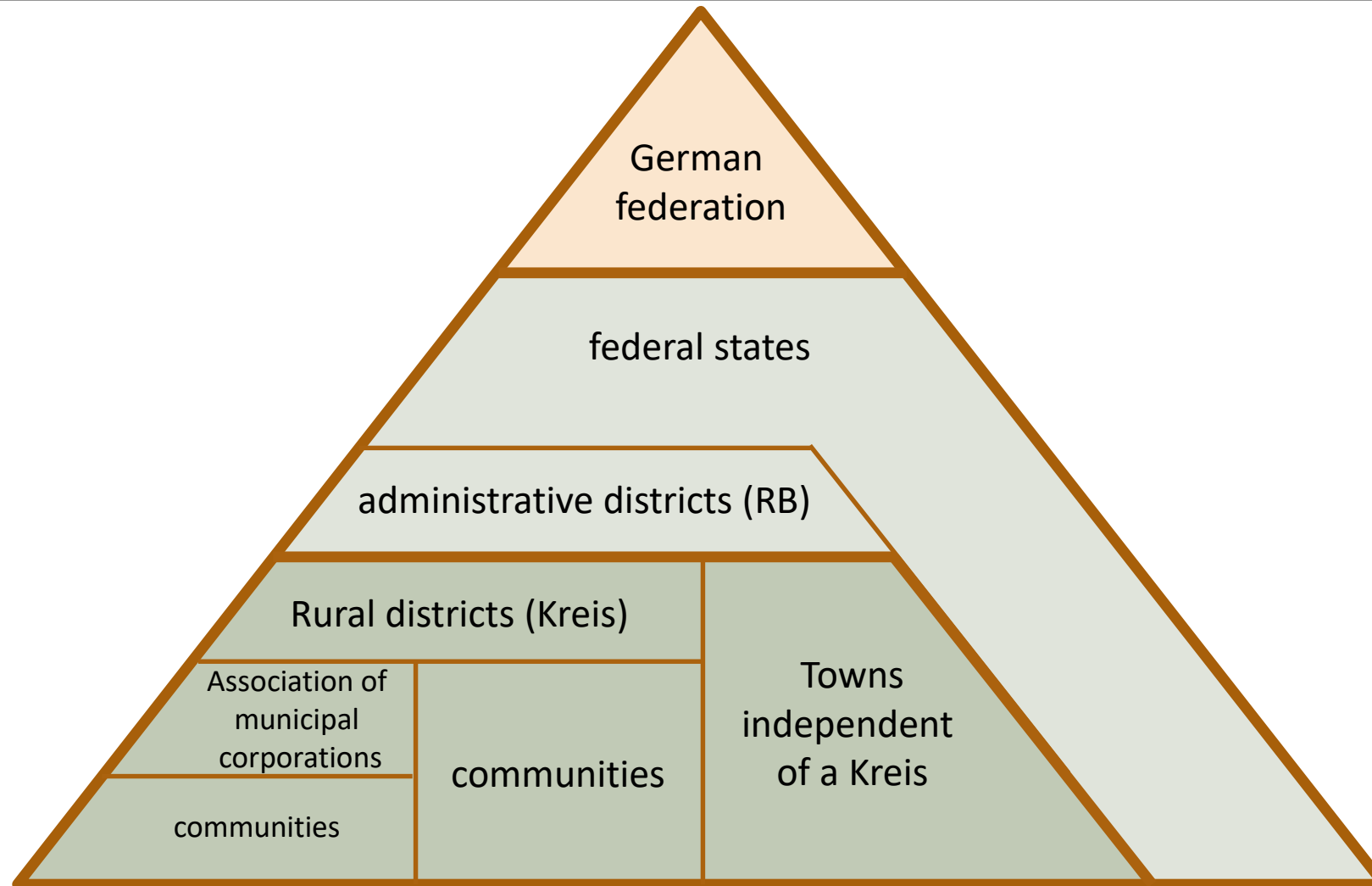
# Land use in Germany



# Land usage and sealing

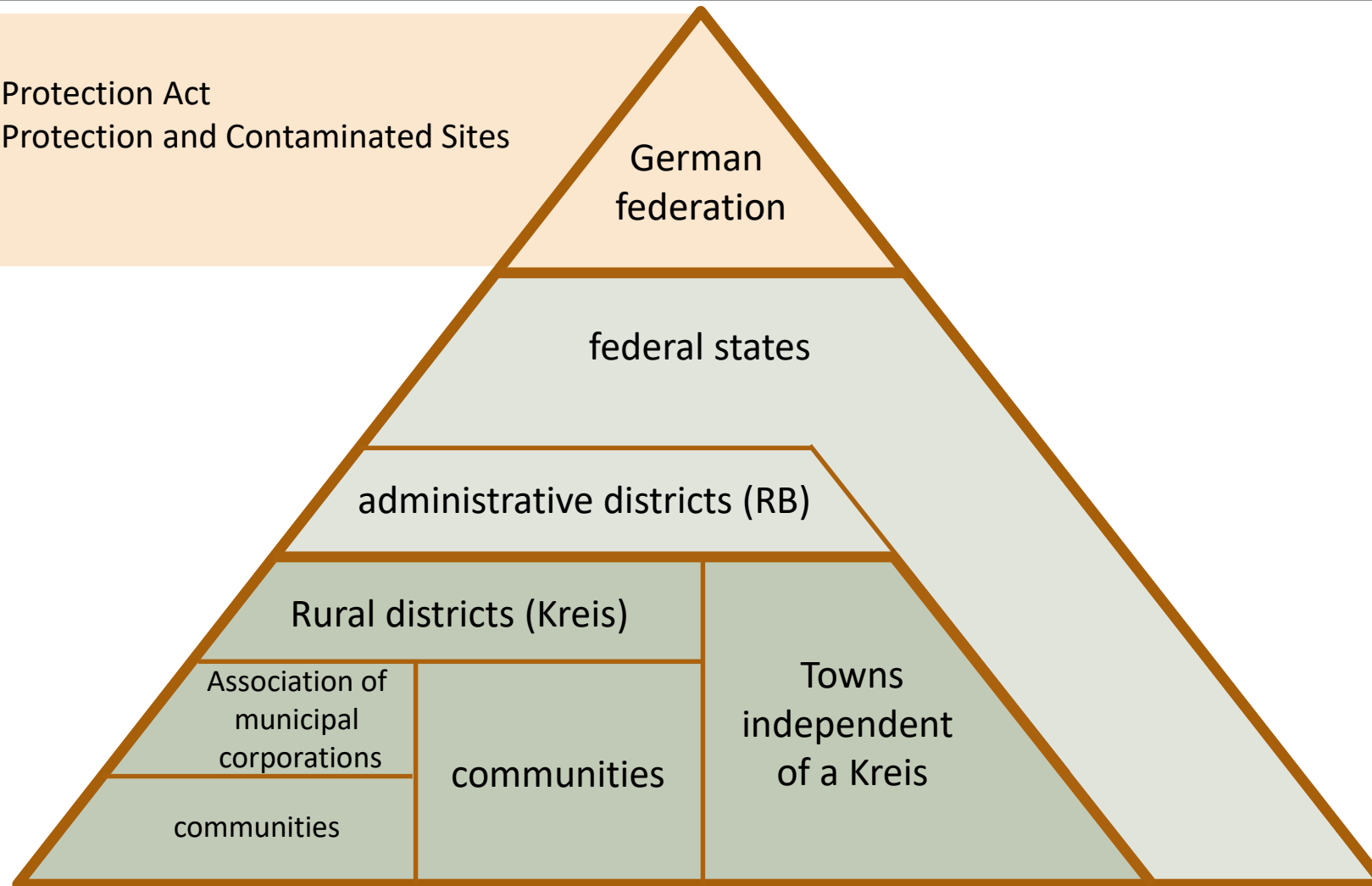


# Legal foundations of Soil Conservation



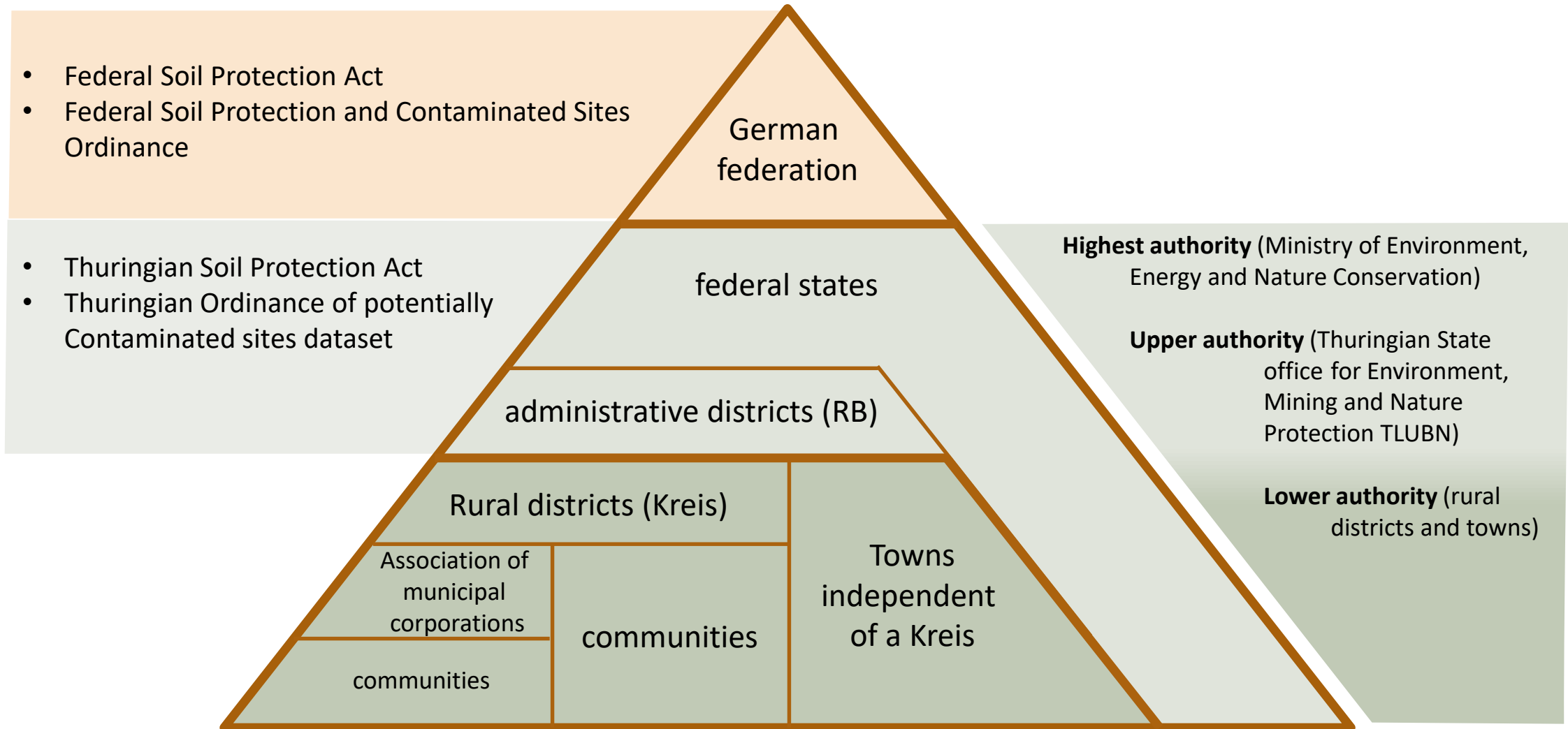
# Legal foundations of Soil Conservation

- Federal Soil Protection Act
- Federal Soil Protection and Contaminated Sites Ordinance





# Legal foundations of Soil Conservation



# Federal Soil Protection Act (1998)

Within the meaning of this Act, the soil performs:

1. natural functions
2. functions as an archive of natural and cultural history and
3. functions useful to man

target the protection or restoration of soil functions



# Natural functions

- as a basis for life and a **habitat** for people, animals, plants and soil organisms,
- as part of natural systems, especially by means of its **water and nutrient cycles**,
- as a **medium for decomposition**, balance and restoration as a result of its **filtering, buffering** and substance-converting properties, and especially **groundwater protection**





# Functions useful to man as

- a medium that holds deposits of raw materials,
- land for settlement and recreation,
- land for agricultural and silvicultural use,
- land for other economic and public uses, for transport, and for supply, provision and disposal.

“Where impacts are made on the soil, disruptions of its natural functions and of its function as an archive of natural and cultural history should be avoided as far as possible.”



# A new Standard

DEUTSCHE NORM

September 2019

DIN 19639

**DIN**

ICS 13.080.01; 91.010.99

target the physical impact

## Bodenschutz bei Planung und Durchführung von Bauvorhaben

Soil protection during planning and execution of construction projects

Protection des sols lors de la planification et de la mise en oeuvre des projets de construction



# 2003





# 2007



# 2016



# 2017





# 2019



# Two important tools

## Soil protection concept (before)

- Collecting soil data (maps, field work, GIS)
- Derive special sensitivities... which soil is sensible for ... erosion
- Create maps or site-specific instructions (card)
- Define general policies against soil degradation, recultivation







# Two important tools

## Soil protection concept (before)

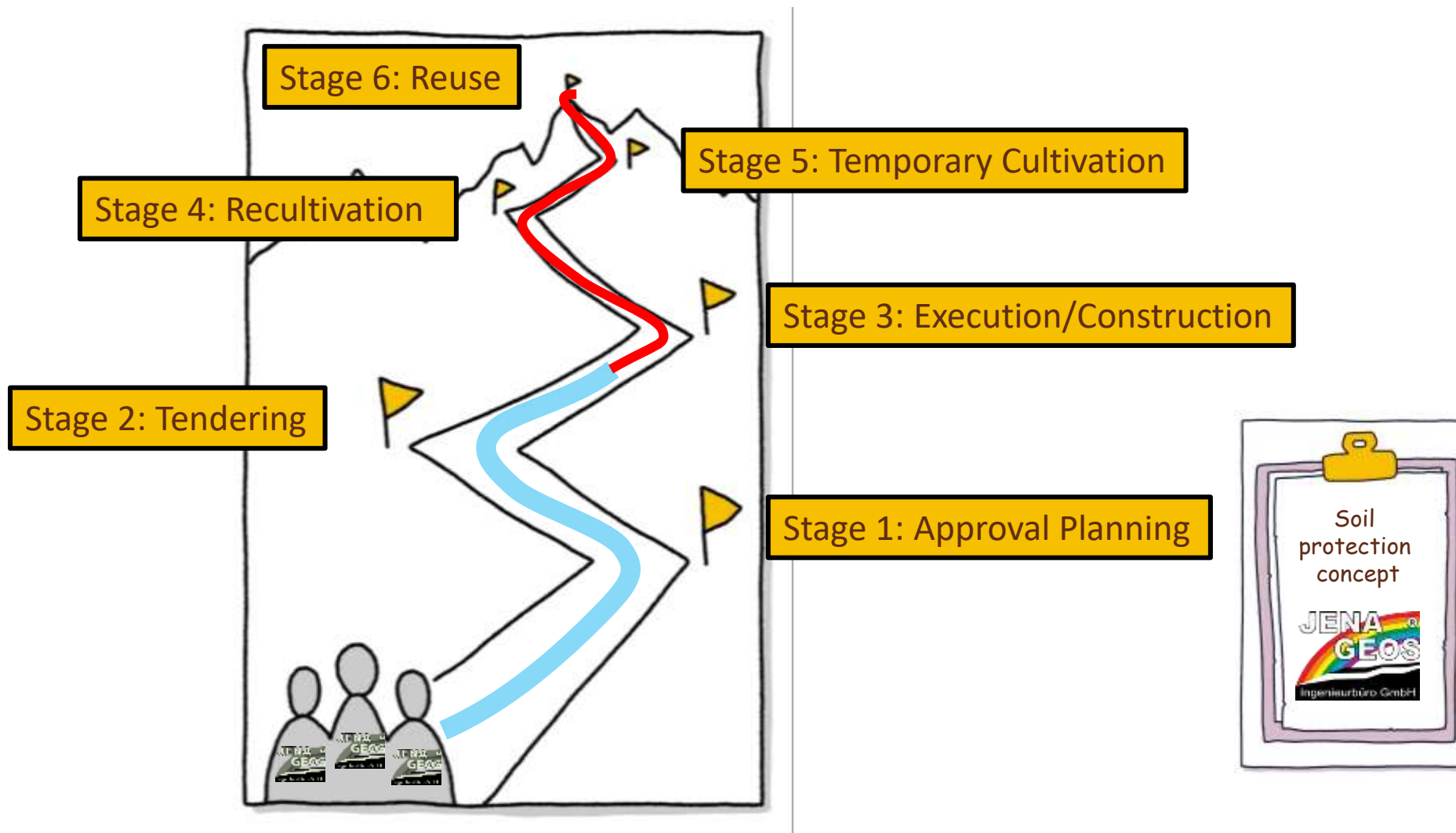
- Collecting soil data (maps, field work, GIS)
- Derive special sensitivities... which soil is sensible for ... erosion
- Create maps or site-specific instructions (card)
- Define general policies against soil degradation, recultivation

## Pedological construction supervision (always and all-around)

- Participate in meetings
- Monitoring/ checking the realization of defined policies during construction
- Consulting all involved players (purchaser, const. Supervision, also aggrieved party... owner)
- Contact and report to the responsible authority



Pedological  
construction  
supervision



# Practical experiences by JENA-GEOS



## Gas Pipelines

EUGAL – European Gas Pipeline Link (480 km)

Gas Pipeline 32 through Thuringia

## Water Pipes

3 Pipelines in Thuringia (length between 6 and 9 km)





# Practical experiences by JENA-GEOS



High-voltage power line (380 kV, Wahle-Mecklar)

50 km and 127 poles

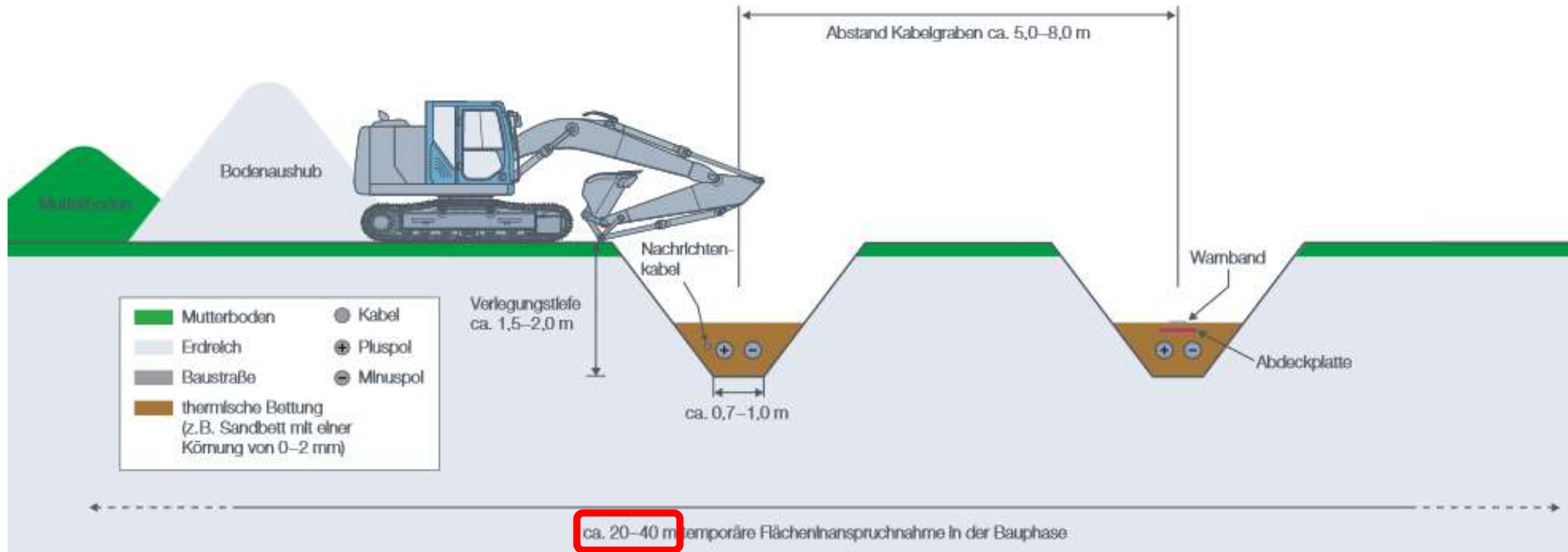
65 km and 176 poles

Several power lines are planned not as overhead line construction but as underground cables





# Underground Cables



# Many thanks for your attention!

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# Urban redevelopment on district level

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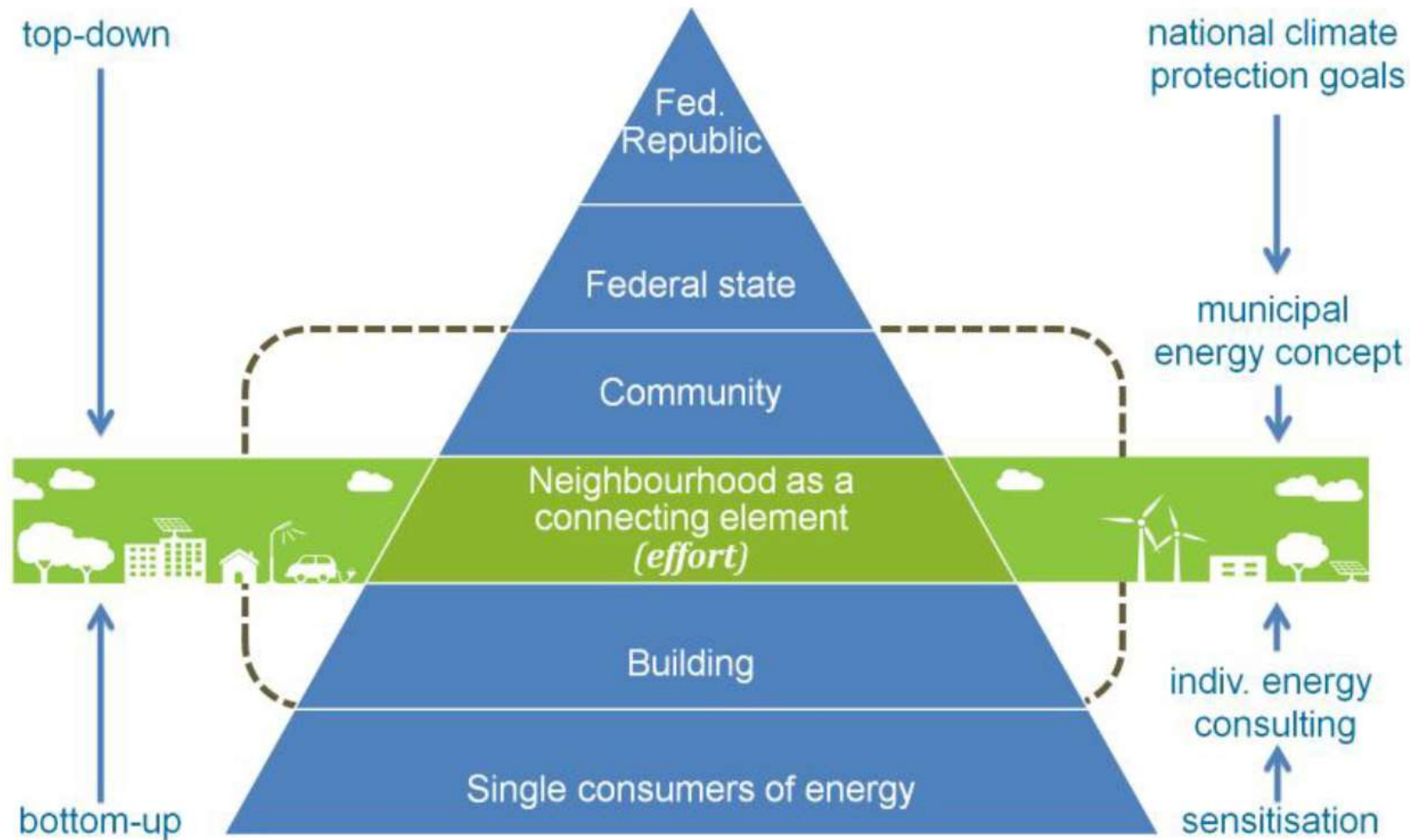
CHRISTIANE BÜTTNER

- Maintenance
- Adjusting to changing lifestyles, needs, and climate challenges
- Currently, 40% of heat energy consumption by building sector
- Goal: Climate-neutral buildings until 2050





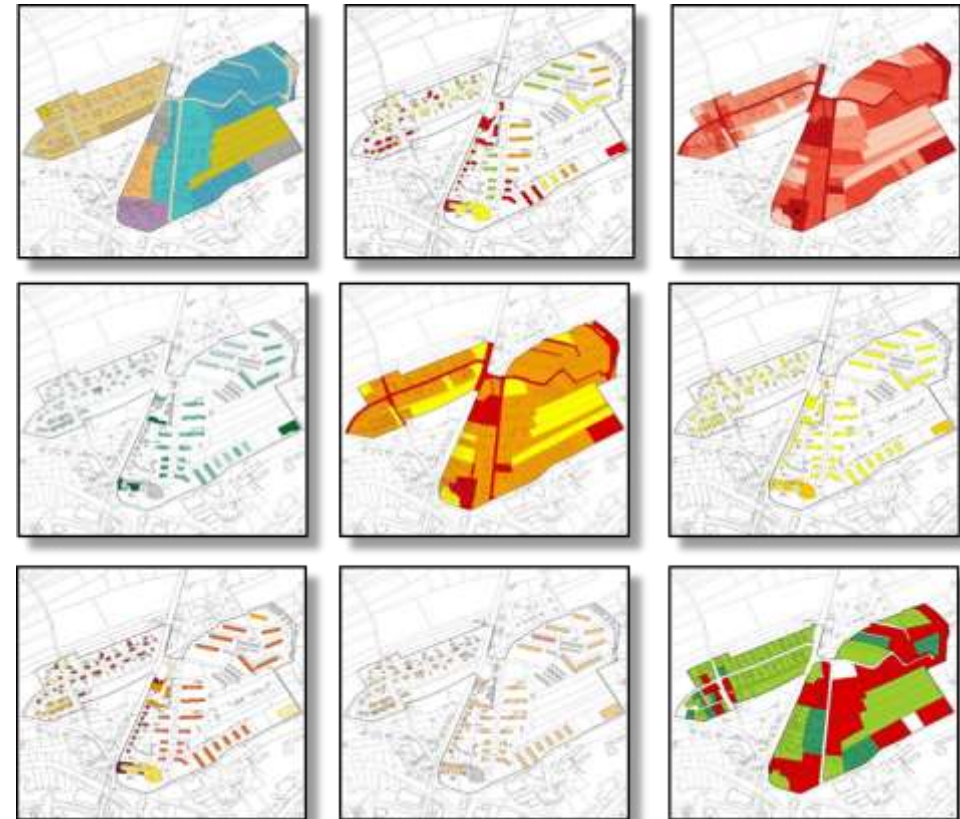
# District level



# Integrated district concept

Covers topics as ...

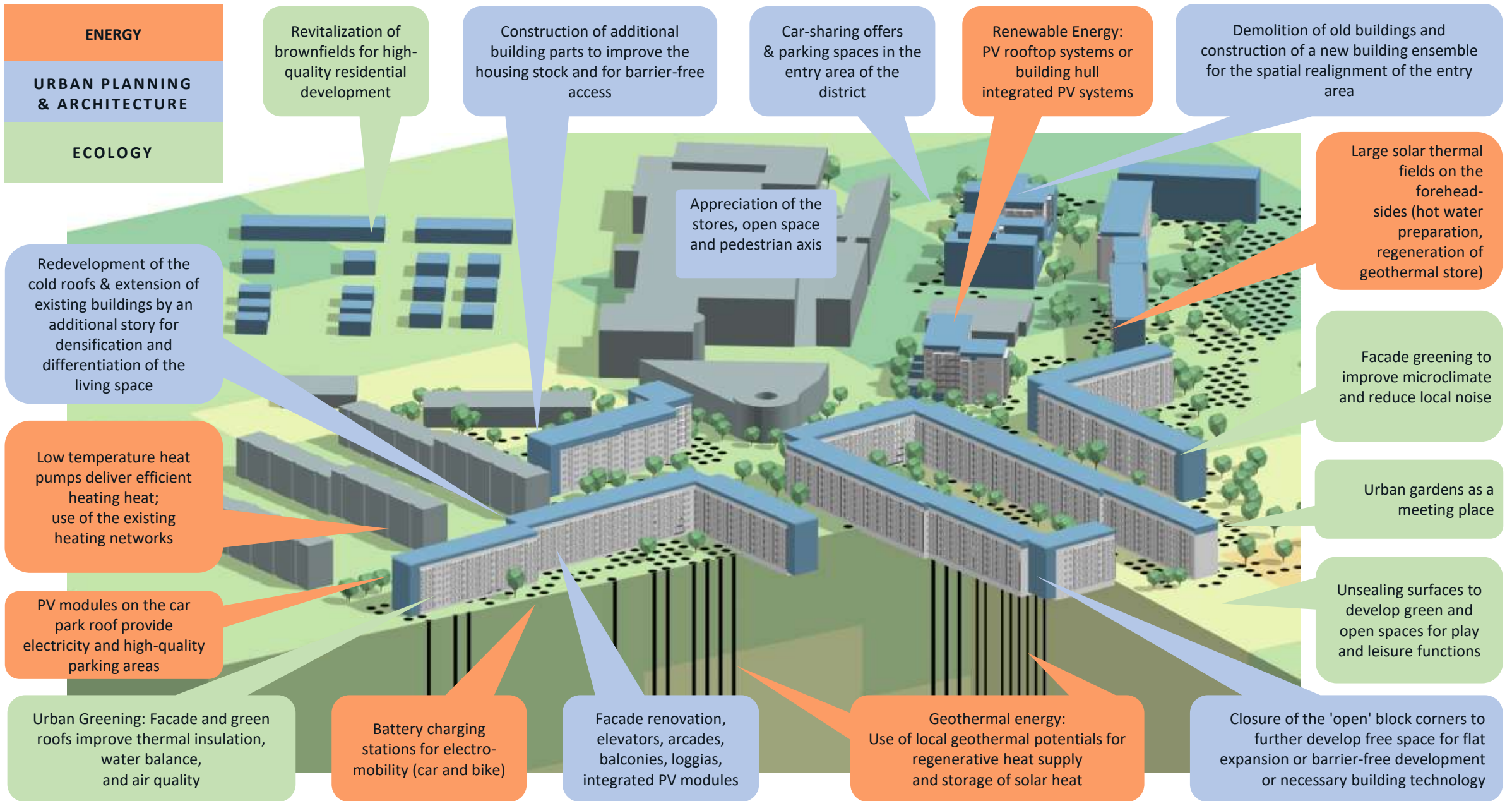
- Resources
- Mobility
- Ecology
- Urban planning
- Architecture
- Building technologies



**ENERGY**

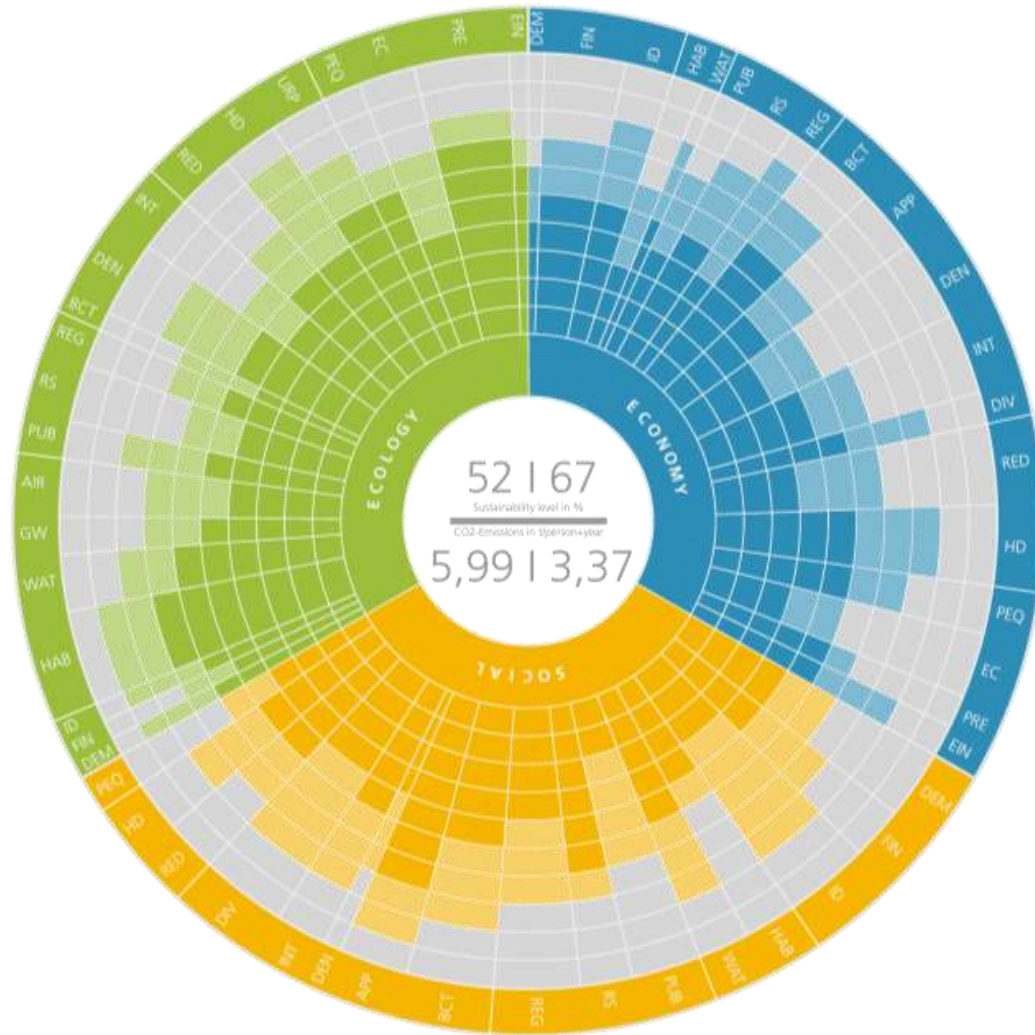
**URBAN PLANNING  
& ARCHITECTURE**

**ECOLOGY**





# Integrated District Concept



Synergies and economies of scale lead to ...

- 30-60 % reduction of greenhouse gas emission
- Supply by renewable energies increased to 30 - 100 %



**ENERGIEWERKSTADT®**



# General conditions for urban redevelopment

## Federal

- Climate protection plan 2050
- German Action Strategy on Climate Change
- funds especially for district concepts

## State

- Additional climate protection laws
- Funds separate or additional to federal funds

## Municipality

- Additional regulations on climate, energy supply, ...
- Identify redevelopment areas connected to special funds or tax-favors



# PIQ – Projects in the district

- Promote integrated district concepts and their realization
- Facilitate access to funds
- Up to 85 % funding
- All municipalities in Thuringia can participate





# Smart neighborhood - smood®

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MARCUS MEISEL

# smood® - VISION

We are convinced that energy consumption can be reduced by 30-80 %.

Together we create livable, efficient, environmentally friendly neighborhoods.

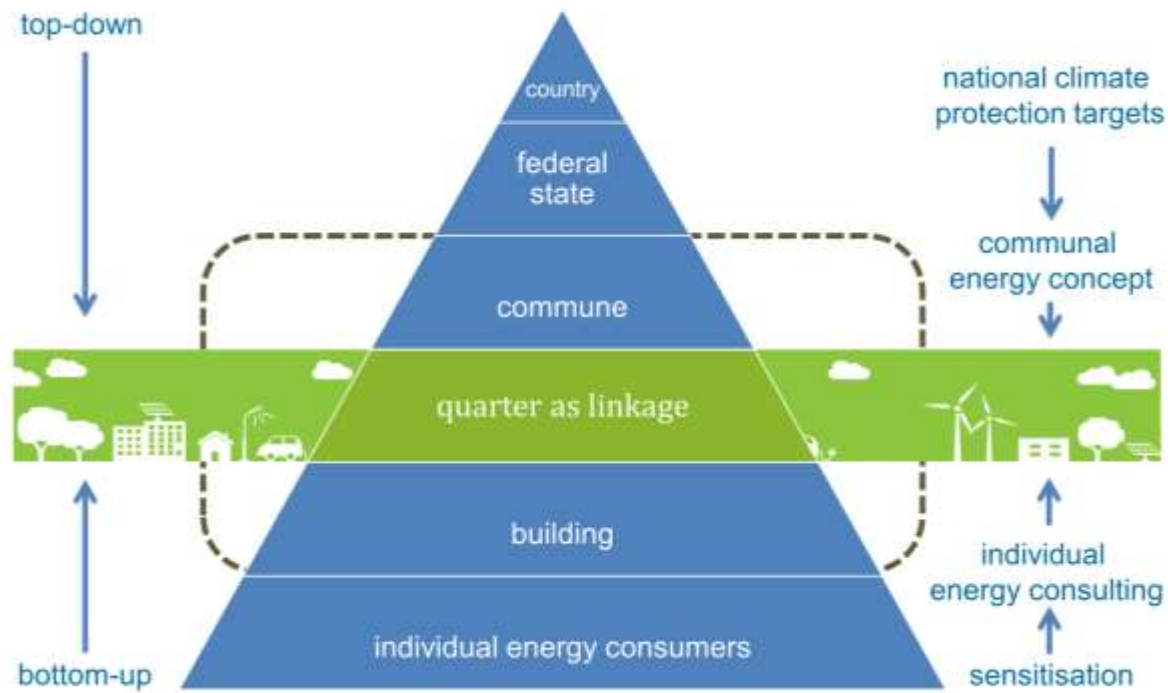
We accomplish this by helping housing companies becoming energy service providers. At the same time, we support their tenants with it.

For this we develop the technology platform smood.





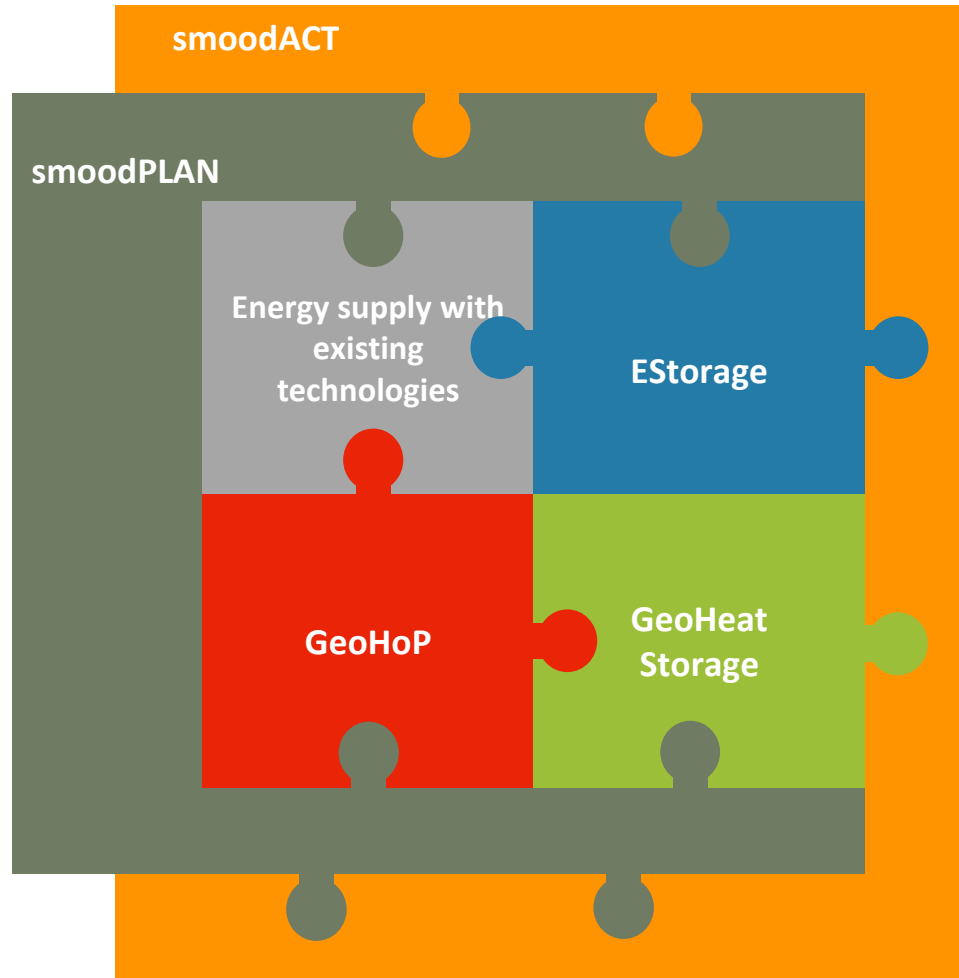
# smood® - CONCEPT



- high increase in efficiency is derived from the role of the neighborhood as the decisive spatial unit
- the essential energy optimization potential lies on the scale of the neighborhood.
- “neighborhood” as an energetically coherent spatial unit



# smood® - JOINT PROJECTS



smoodPLAN

(digital) district-analysis and -planning

GeoHeatStorage

district (geo-)heat storage

GeoHoP

district heat development (geothermal energy)

EStorage

district power storage ("neighborhood battery")

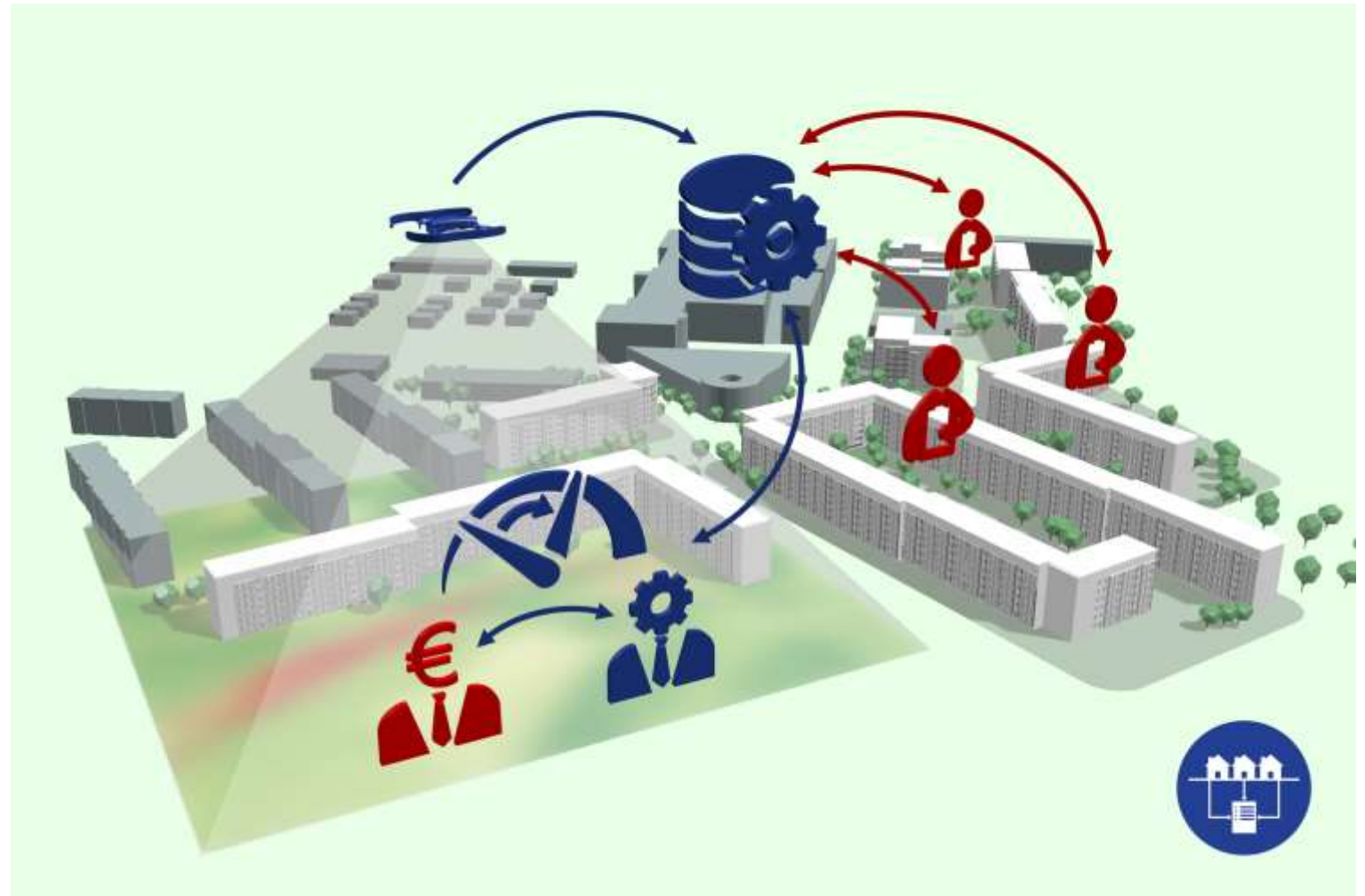
smoodACT

(digital) district control and operation



# smoodPLAN

PROVIDE CONSISTENT,  
STANDARDIZED PLANNING  
AND REDEVELOPMENT



# GeoHeatStorage

AQUIFER THERMAL ENERGY  
STORAGE AS TECHNICAL  
STRUCTURE



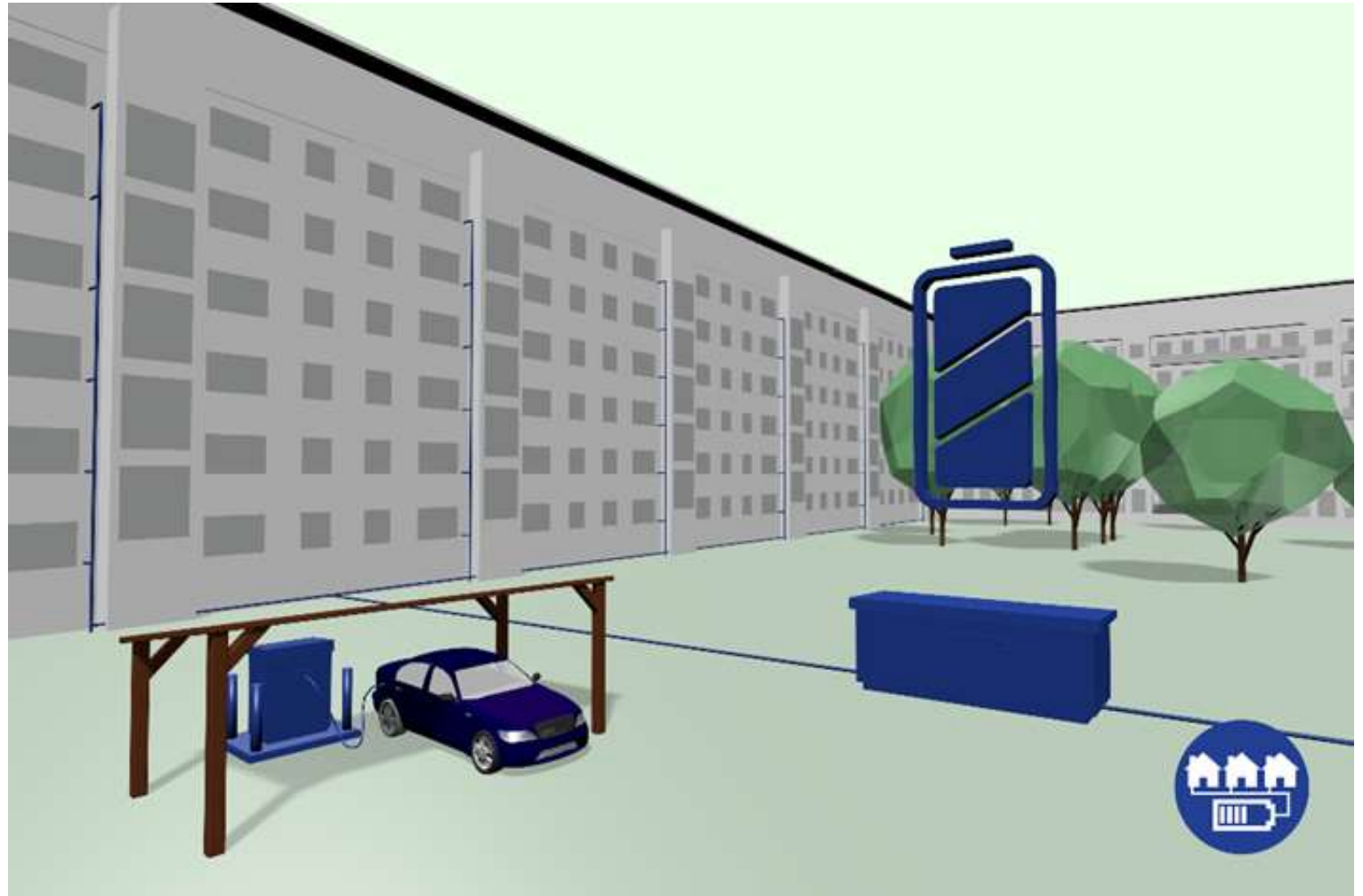


# HORIZONTAL DRILLING METHOD FOR THE EXTRACTION OF GEOTHERMAL ENERGY



# EStorage

STORAGE FACILITY FOR  
ELECTRICAL ENERGY



# smoodACT

CROSS-SECTORAL ENERGY  
SERVICES IN BUILDINGS AND  
NEIGHBORHOODS





# smood® - international



Washington DC, 2018

[www.smood-energy.de](http://www.smood-energy.de)  
in 2020 also in English



smood® is an exhibit  
at the World Expo in Dubai 2020



إكسبو 2020  
دبي، الإمارات العربية المتحدة  
DUBAI, UNITED ARAB EMIRATES





# Thank you so much for your attention.



The innovative regional growth core  
**"smood® - smart neighborhood"**  
 comprises 17 companies, four  
 research institutes, and one  
 association in the Central Thuringia  
 region.



Bundesministerium  
für Bildung  
und Forschung

supports smood®  
with 10 million €





# Transformation in rural areas

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DANIEL CEBULLA

# approach

- hardly any preparatory work
- lack of potential for complex processes
- very limited financial resources available
- goal: availability of an easy-to-use tool
- assistance in motivating
- overcoming the barriers to entry due



# implementation - modular structure in versions

## TRAIL STARTER

free of charge

municipal key data

theoretical heat and  
power requirements  
for residential buildings

newsletter/general  
information

## TRAIL PLUS

registration/payment

thematical modules

selection of individual  
actions  
question assistant and  
evaluation criteria

technology options

## TRAIL PRO

registration/payment

scenario  
Development

accuracy  
increasement

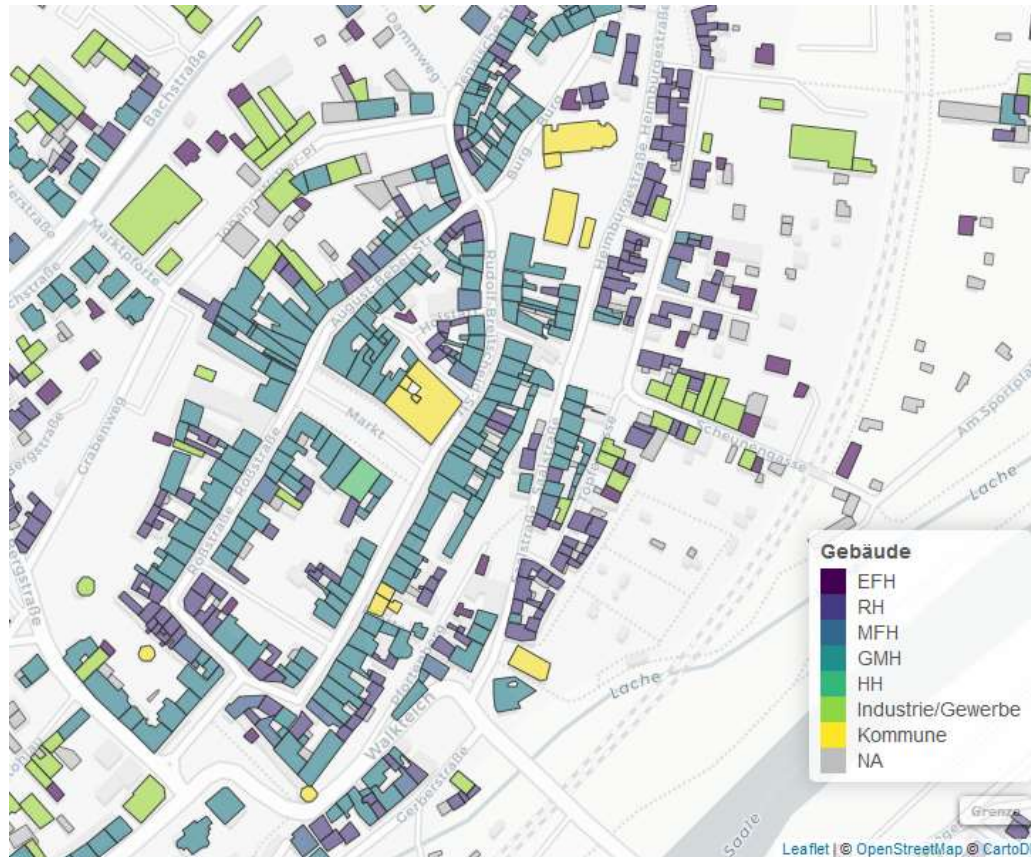
...



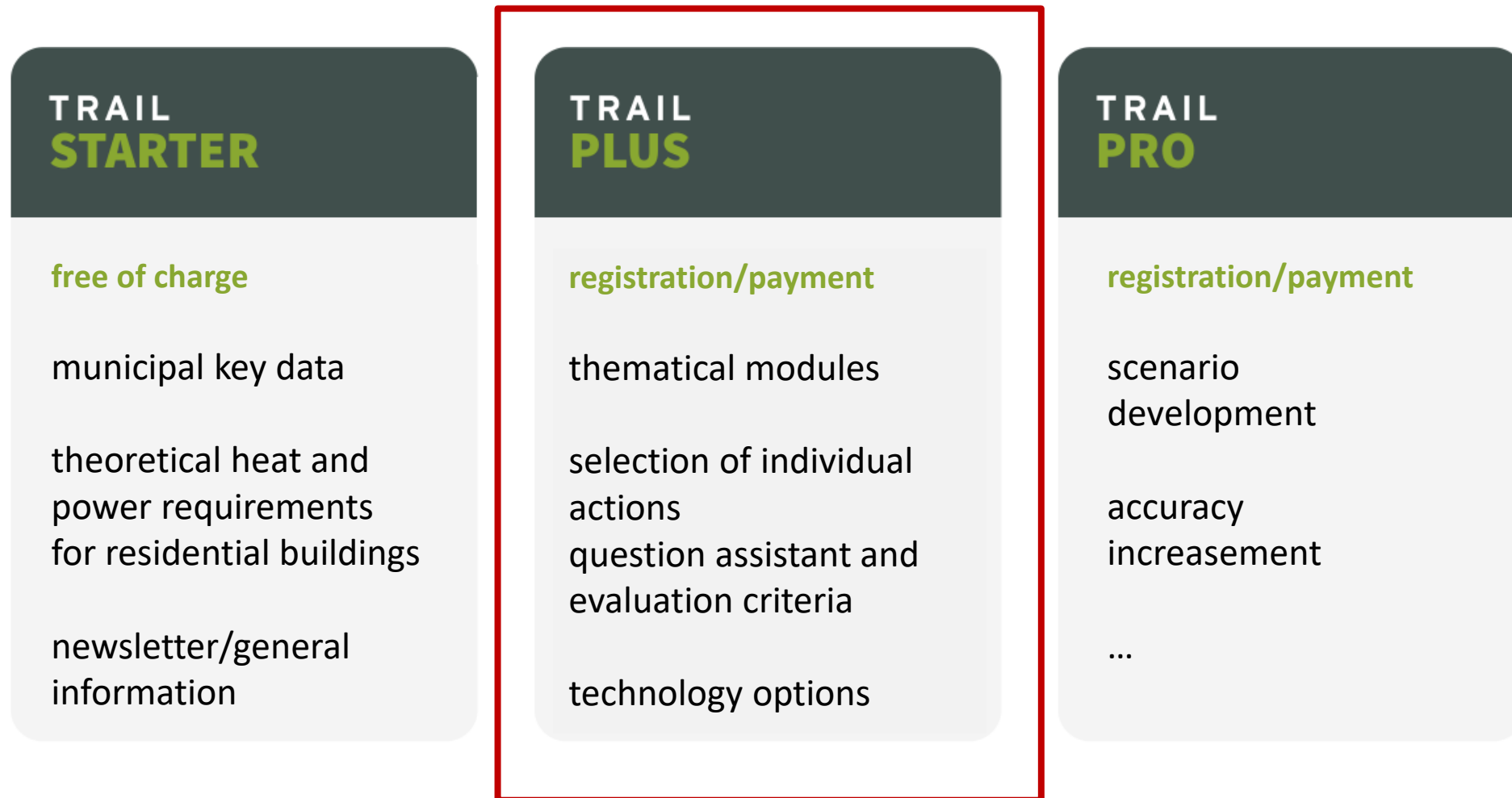


# TRAILstarter – typification of residential buildings

building related



# implementation - modular structure in versions



# TRAILplus – Division into modules



general actions



municipal/public buildings



street/open-area lighting



residential buildings



trade/industry/agriculture



technology options



activation and participation



energy sources and renewable energies



# TRAILplus – actions and handling instructions



Transformation im ländlichen Raum

## Energetische Untersuchung Teilbereich[e]

- Vorbereitende Maßnahmen für die vertiefende energetische Untersuchung (z.B. Integrierte Quartierskonzepte)
- Planungsinstrumente können u.a. sein:
  - Bearbeitung eines integrierten Orts- bzw. Quartiersenergiekonzeptes
  - Ausweisung eines Sanierungsgebietes aufgrund:
    - Bezug zu Wohn- und Arbeitsverhältnisse gemäß energetischen IST-Zustand) oder aufgrund best. § 2 Nr. 2 BauGB (mit Ausweisung auf Maßnahmen
    - Beschluss einer Entwicklungsplanung gemäß § 11

Anspruchspartner:

- Verwaltung / Politik

Notwendige Akteure:

- Energieverantwortlicher in Kommune / Energie- oder Bürgermeister, Kommunalverwaltung
- Externe Planer, Wohnungsunternehmen, Energieversorger

Voraussetzungen / Stolpersteine:

- Personelle Mittel / Kapazität innerhalb der Kommune
- Mitwirkungsbereitschaft von Akteuren
- Finanzielle Mittel für die Erarbeitung / Umsetzung

Nächste (Mini-) Schritte:

- Auswahl eines näher zu untersuchenden Teilbereichs Untersuchung notwendig wird, z.B. aufgrund von:
  - Bestehendem hohen Energiebedarf / Energieverlust (vgl. TRAILstarter, Karten zum theoretischen Wärme- und Strombedarf)
  - Synergieeffekten mit Unternehmen aus Gewerbe
  - Mitwirkungsbereitschaft der Eigentümer
  - Bestehenden Potentialen zur Nutzung Erneuerbarer (vgl. TRAILplus, Karten im Modul EE – Energiepotentiale)
- Festlegung der Abgrenzungen des Untersuchungsgebietes
- Aufstellung der Untersuchung / notwendigen Planungsleistungen
- Prüfung der Kosten und Finanzierbarkeit
- Bereitstellung von Basisdaten, wie u.a. Lageskizzen, Luftbilder
- Vorbereitung der Beteiligung der Eigentümer von SO:
  - Wohnungsunternehmen i.V.m. Einzelgesprächen
  - Unternehmen aus Gewerbe, Industrie, Handel o. Dienstleistungen
  - Handlungsanleitung HL\_GIL\_OIL\_Datenerhebung
  - Private Eigentümer von Wohnimmobilien (ggf. i. kommunale Öffentlichkeitsarbeit)

Mögliche Fördermittel:

Für die Planung und Umsetzung kann ggf. eine Finanzierung gefunden werden. Mehr Informationen hierzu finden Sie unter:

[www.trail-energy.de/fundingprogramme/GIL\\_OIL](http://www.trail-energy.de/fundingprogramme/GIL_OIL)

Modul ALLOMERIE  
Maßnahme ALL 04

## Effekte der Maßnahmen

Investitionskosten	Investitionsenergiekosten	Investitionspotential	Zeitraum bis zur Wirkung der Maßnahmen	Organisatorische Auswirkungen	Maßnahmen für SO	Beeinflussung durch Kommunen
gering bis 25.000€	n.A.	n.A.	gering 0-2 Jahre	mittel	ja	erstellt

Beispiele:

- vorant Bewertung: später dynamische Entwicklung Datenbank „Beispiele“

Entwicklungsplanung gemäß § 105 Abs. 6 BauGB

Positiven Energiepotenzial, Konversionsfläche wird Wohngebiet mit Verpflichtung zur Nutzung energieeffizienter Infrastruktur

Handlungsschritte:

- vorant Bewertung von TRAIL-Handlungsoptionen, TRAIL-Textbausteine-Verfahren, Leitlinien, ...
- später dynamische Entwicklung Datenbank „Handlungsschritte“

Leitfaden „Klimaschutz und Stadtplanung Augsburg“

TRAIL-Informationenmaterial:

- TRAIL-Handlungsanleitung: „Vertiefende Datenerhebung für Gewerbe, Industrie und Landwirtschaft“ (GIL, OIL, HL)
- TRAIL-Formulare: „Daten-Erhebungsbogen für Gewerbe, Industrie und Landwirtschaft“ (GIL, OIL, FO)
- TRAIL-Karten: „Theoretischer Wärme- und Strombedarf für Wohngebäude“ in TRAILstarter sowie „Energiepotentiale zu unterschiedlichen Energieträgern“ in TRAILplus, Modul Energieträger Erneuerbare Energien

15.08.2019 | Seite 2/2

36 Action sheets

1 handling instruction

4 investigation forms

7 information sheets

7 maps (like EE-Potential)





# TRAILplus – evaluation criteria

investment costs



potential cost savings



potential CO<sub>2</sub> savings



time required for implementation



effort for organizational



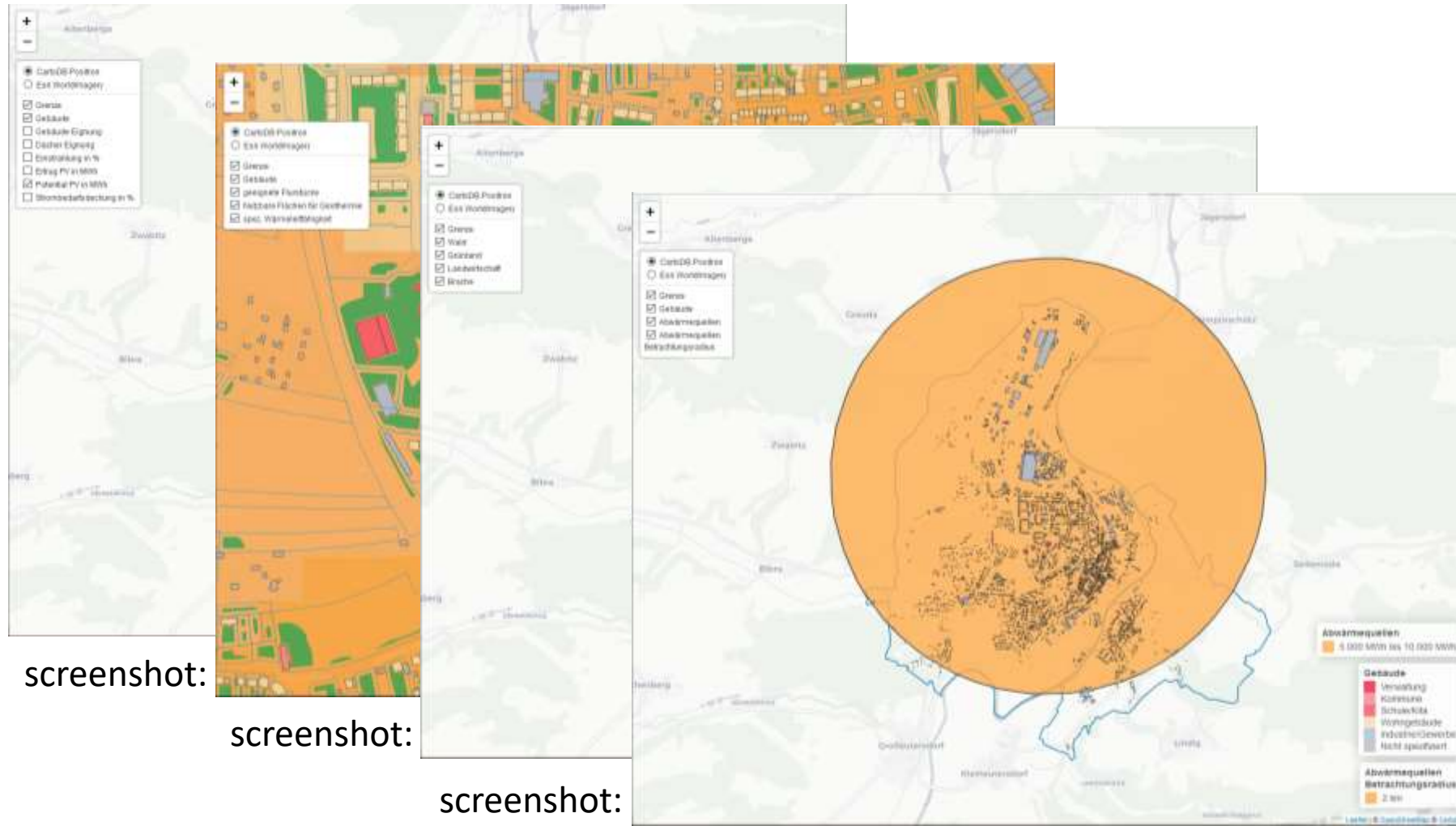
impulse effect for third parties



influence of municipality



# renewable energy potentials



screenshot:

screenshot:

screenshot:

screenshot: potential waste heat.





# Digital citizen participation

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SOPHIE HÖGL



## City planning: Different types of public participation





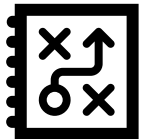
# Reasons for citizen participation?



Enhancement of dialogue  
between city and inhabitants



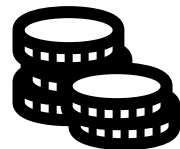
Visualise plans and  
processes



Advance planning through more  
substantial analysis



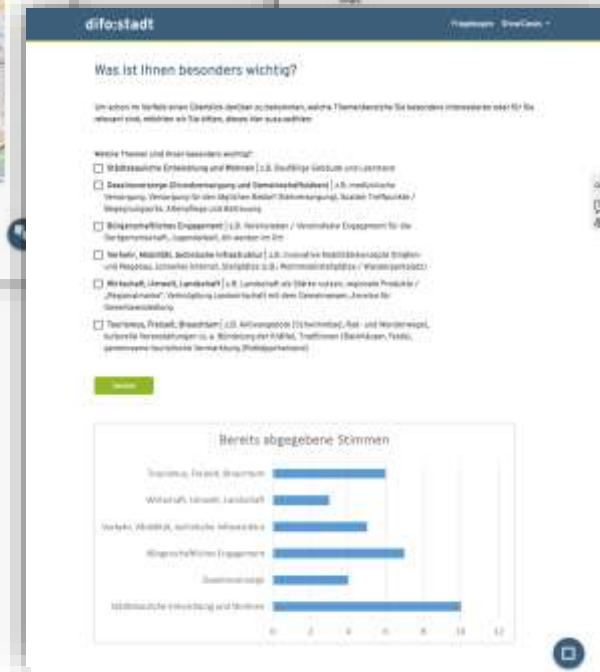
Increase of public  
acceptance



More efficient planning and  
sustainable results meeting the demands



# Example: difo:stadt



**MACHT MIT!**  
Auf welchen Freiflächen in Weimar bewegt Ihr Euch zum Skaten, Biken oder Ballspielen?

**ONLINE-UMFRAGE**  
[www.quaas-stadtluchs.de/spielen/](http://www.quaas-stadtluchs.de/spielen/)

Anzeige - ohne Kennzeichnung - dauert 10 Minuten

**OHNE EUCH BEWEGT SICH NICHTS!**  
Gewinne einen von 25 Gutscheinen!

FRAGEN? Dann melden Euch bitte bei Lisa Selah im Kinderbüro Weimar:  
telefon: 03671 434999 / kinderbuero@stadtwieimar.de  
[www.kinderbuero-weimar.de](http://www.kinderbuero-weimar.de)

Karte Büro weimar



**4. Welche der vorhandenen Flächen nutzt Du ab und zu oder regelmäßig für Ballspiele, zum Skaten, Biken oder für andere Sportarten? Du kannst insgesamt bis zu vier Flächen angeben.**

Klicke auf die Karte für eine größere Darstellung. Hierin zeigen nummerierten Punkte in der Karte verortete und eine öffentliche Fläche zum Skaten, Biken oder Ballspielen.

**Erste Fläche: Ich nutze die Fläche mit der Nummer:**

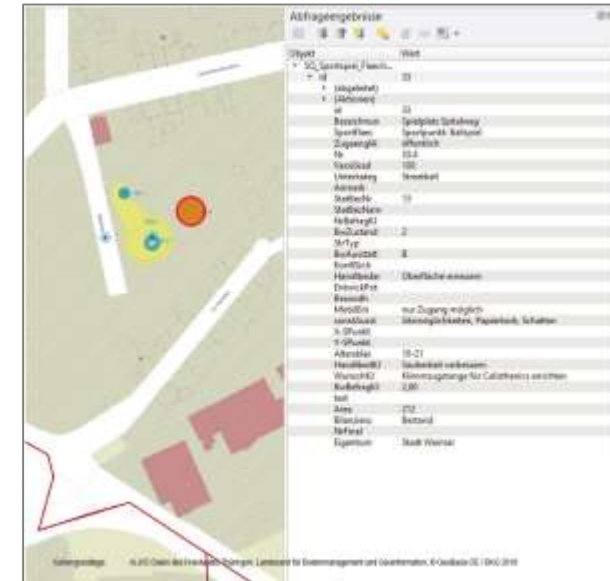
Suchen auf der Karte, welche Nummer die Fläche hat, die du nutzt, und trage diese in das Feld ein.

**Bewerte diese Fläche mit einer Schulnote zwischen 1 und 6.**

1 = sehr gut, 2 = gut, 3 = befriedigend, 4 = ausreichend, 5 = mangelhaft, 6 = ungenügend









# Digital citizen participation



Increased participation



Reach more diverse target groups



More flexibility for participants



Time efficiency for planner and for participants



Does not replace other forms of participation



Data security and reliability



# Reasons for digital citizen participation



Enhancement of dialogue  
between city and inhabitants



Visualise plans and  
processes



Advance planning through more  
substantial analysis



Increase of public  
acceptance



More efficient planning and  
sustainable results meeting the demands





# Thank you for your attention

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