Rapid Planning

Sustainable infrastructure, environmental and resource management for highly dynamic metropolises

A Brief Introduction into the Rapid Planning Project/Methodology

Dieter Steinbach & Andrea Schultheis (AT-Verband / AT-Association)

Rapid Planning Mid-term Conference 2017

12-13 September, 2017, UN-Habitat, Gigiri, Nairobi, Kenya

OVERALL INTRODUCTION – NEED OF SUPPLY & DISPOSAL INFRASTRUCTURE (URBAN BASIC SERVICE)

Statements

1. Kofi Annan: „World is entering an urban Millennium“ (2001)
2. Ban Ki-Moon: „Our global struggle for sustainability will be lost or won in cities” (2012)

Phenomenon: Rapid Urbanisation

The urbanisation challenge in the 21st century is going to be felt hardest in those global regions that are currently least prepared to sustain it.

Thereby the speed and magnitude of change is unprecedented in human history

The rapid pace of urbanisation coincides with a number of challenges in urban development planning that emerged over the past three or four decades in Africa, S-Asia and SE-Asia:

- The definitive failure of master planning in many cases,
- An urban design crises, where functional urban design has a diminishing impact on how urban plans are drawn, while other factors have an increasing impact,
- The rapid informal urban growth, with rapid extension of human settlements, to a large extent without any management or planning.

OVERALL INTRODUCTION – NEED OF SUPPLY & DISPOSAL INFRASTRUCTURE (URBAN BASIC SERVICE)


Source: Bodensee Wasserversorgung


Source: Stadtwerke Stuttgart


Source: über_land


Source: SES


Source: EnBW AG

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OVERALL INTRODUCTION – VISIONS, AGENDA, PLANS – WHAT? & HOW?

Today, there are three global agreements with a high relevance for urban development:

- The Post-2015-Development Agenda defining a direction, goals, targets and a clear set of indicators on sustainable development.
- The New Urban Agenda providing a shared vision, principles and an implementation plan for housing and sustainable urban development, and providing a more extensive and holistic guidance on urbanisation.
  1. The Quito Declaration on Sustainable Cities and Human Settlements for All,
  2. The Quito Implementation Plan for the New Urban Agenda,
- The Paris Agreement setting the two-degrees-target as the upper limit for global warming.

OVERALL INTRODUCTION – VISIONS, AGENDA, PLANS – WHAT? & HOW?

The New Urban Agenda features the following sections:

157. We will support science, research and innovation, including a focus on social, technological, digital and nature-based innovation, robust science-policy interfaces in urban and territorial planning and policy formulation and institutionalized mechanisms for sharing and exchanging information, knowledge and expertise, including the collection, analysis, standardization and dissemination of geographically based, community-collected, high-quality, timely and reliable data disaggregated by income, sex, age, race, ethnicity, migration status, disability, geographic location and other characteristics relevant in national, subnational and local contexts.

158. We will strengthen data and statistical capacities at the national, subnational and local levels to effectively monitor progress achieved in the implementation of sustainable urban development policies and strategies and to inform decision-making and appropriate reviews. Data collection procedures for the implementation of, follow-up to and review of the New Urban Agenda should primarily be based on official national, subnational and local data sources, and other sources as appropriate, and be open, transparent and consistent with the purpose of respecting privacy rights and all human rights obligations and commitments. Progress towards a global people-based definition of cities and human settlements may support this work.

OVERALL INTRODUCTION – VISIONS, AGENDA, PLANS – WHAT? & HOW?

The New Urban Agenda features the following sections:

159. We will support the role and enhanced capacity of national, subnational and local governments in data collection, mapping, analysis and dissemination and in promoting evidence-based governance, building on a shared knowledge base using both globally comparable as well as locally generated data, including through censuses, household surveys, population registers, community-based monitoring processes and other relevant sources, disaggregated by income, sex, age, race, ethnicity, migration status, disability, geographic location and other characteristics relevant in national, subnational and local contexts.

160. We will foster the creation, promotion and enhancement of open, user-friendly and participatory data platforms using technological and social tools available to transfer and share knowledge among national, subnational and local governments and relevant stakeholders, including non-State actors and people, to enhance effective urban planning and management, efficiency and transparency through e-governance, approaches assisted by information and communications technologies, and geospatial information management.

OVERALL INTRODUCTION – VISIONS, AGENDA, PLANS – WHAT? & HOW?

What can we learn from the visions, agendas, discussion?

- Many commentators call for a radical re-thinking of the way cities are planned, managed and lived as indispensable in order to realise the two-degrees target for global warming set under the Paris agreement.

- A redefinition of urban planning and management in this sense requires decoupling natural resource use and socio-economic development, which needs to be based in re-developing an urban circular (metabolic) approach.

- Supply and disposal infrastructure play a critical role in contributing and mitigating to greenhouse gas emissions from human settlements

(Tollin 2016)

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SUSTAINABLE INFRASTRUCTURE, ENVIRONMENTAL AND RESOURCE MANAGEMENT FOR HIGHLY DYNAMIC METROPOLISES

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OBJECTIVE OF THE RAPID PLANNING PROJECT

Development and testing of a rapid trans-sectoral and integrated planning methodology for regional resource management and supply & disposal infrastructure

1. **Data**

   Rapid data generation, computation, management

2. **Knowledge capacity/ empowering**

   Knowledge blocks, Rapid Planning WiKi, Rapid Planning academy (capacity development)

3. **Planning process** (regional resource management and supply & disposal infrastructure)

   Trans-sectoral technologies, trans-sectoral scenario simulation, strategic pre-planning

4. **Implementation/practicability approach**

   Silo breakdown, change processes (stakeholder), rapid decision taking processes

SCIENTIFIC CONSTRUCT AND DERIVATION

Scientific construct of the core elements of Rapid Planning method/ approach

1. Generation of specific planning values
   ➲ to calculate and characterise material flows in the supply & disposal infrastructure metabolism of a city or region

2. Identify interlinkages of related technologies
   ➲ to create trans-sectoral synergies and for added value in local application

3. Develop and provide necessary measures, tools and procedures
   ➲ to develop local capacities for practical application

4. Develop and provide necessary measures, tools and procedures
   ➲ to integrate the RP approach into the existing planning system

SCIENTIFIC CONSTRUCT AND DERIVATION

#1. Generation of specific planning values

Hypothesis: There is an relation between spatial manifestation and material flow in dependency of consumption patterns (residential areas) or categorised type of use (industry, commerce, public).

Development of a "vehicle" by means of identification, classification and categorisation of spatial characteristics (e.g. area, building), type of use and representative measurements of material flows to generate planning values which are "good enough".

Residential areas	Commerce, public	Industry
Interlinkage between consumption pattern = lifestyle class, building types and material flows	Interlinkage between "categorised type of use", space or number of customers and material flows	Interlinkage between "type of industry", number of employees and material flows

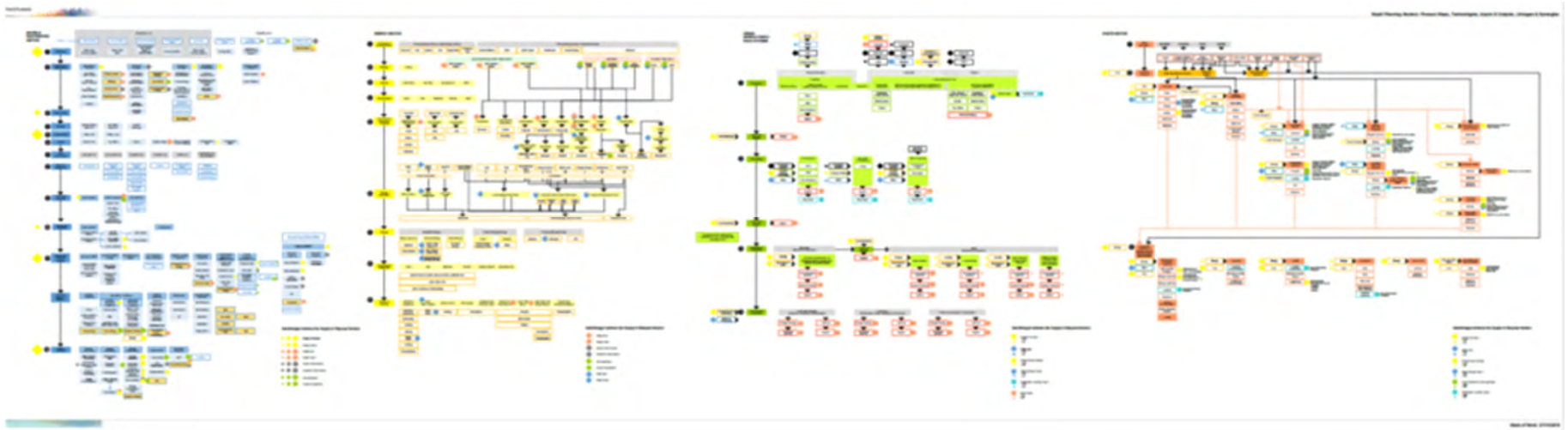
SCIENTIFIC CONSTRUCT AND DERIVATION

#2. Identify interlinkages amongst supply and disposal technologies

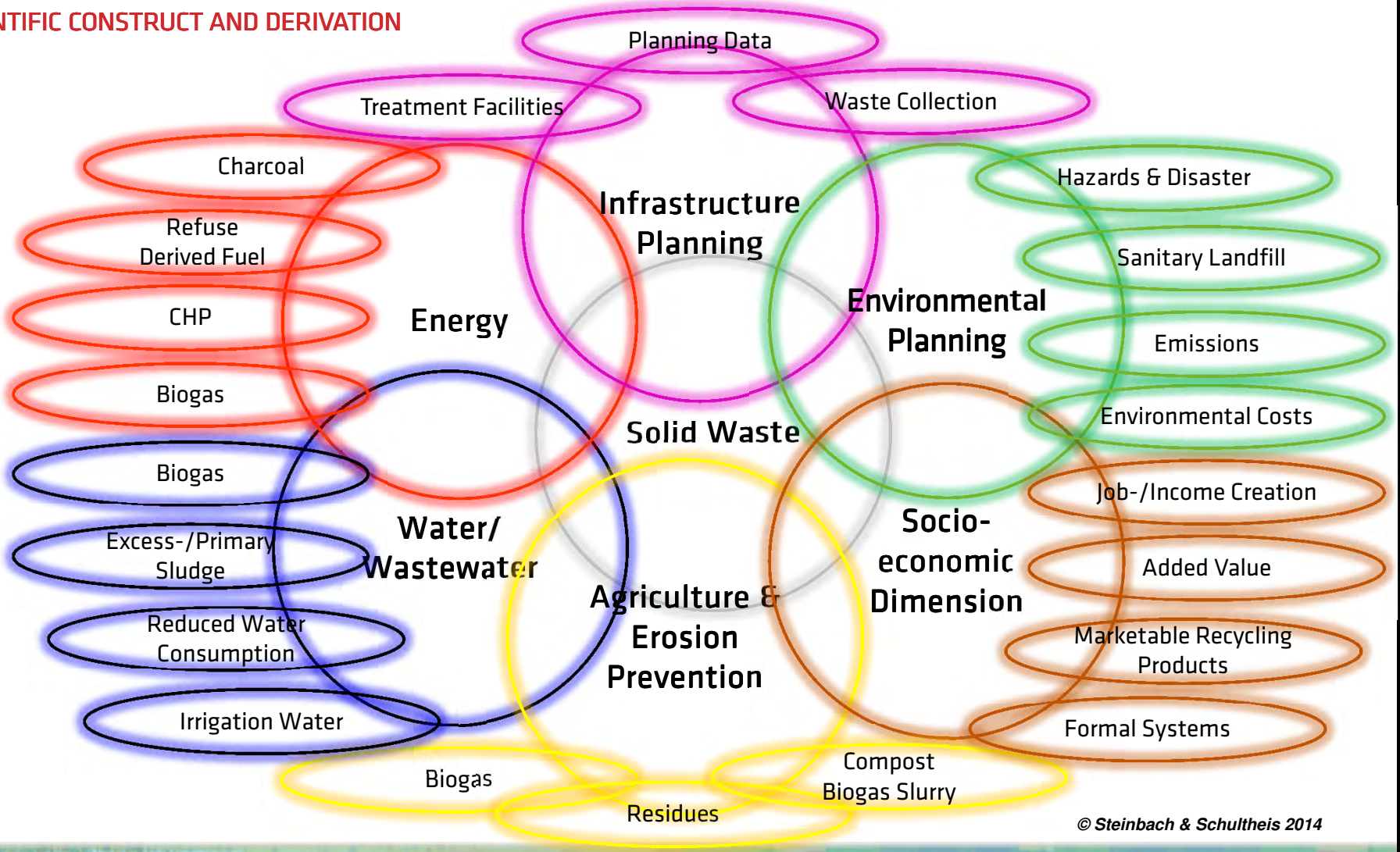
There are interlinkages between supply and disposal technologies to create potential trans-sectoral synergies in local application (trans-sectoral approach).

Interlinkages can derive e.g. from single process steps of technologies or facilities as a whole – whether these become synergies is depending on the local context.

The reconcilement supports optimised resource management & regional added value.



SCIENTIFIC CONSTRUCT AND DERIVATION



SCIENTIFIC CONSTRUCT AND DERIVATION

#3. Capacity development for practical application

Develop and provide necessary measures, tools and procedures such as a "Change Strategy", RP Knowledge System and tailor-made Capacity Development.

SCIENTIFIC CONSTRUCT AND DERIVATION

#1.-4. Practical approach

For method development:

- Different urban characteristics of cities to be covered
- Problem field: rapid urbanization
- Representative to cover different shapes e.g. climate or cultural influences

Three case cities

+

Old metropolis as reference city

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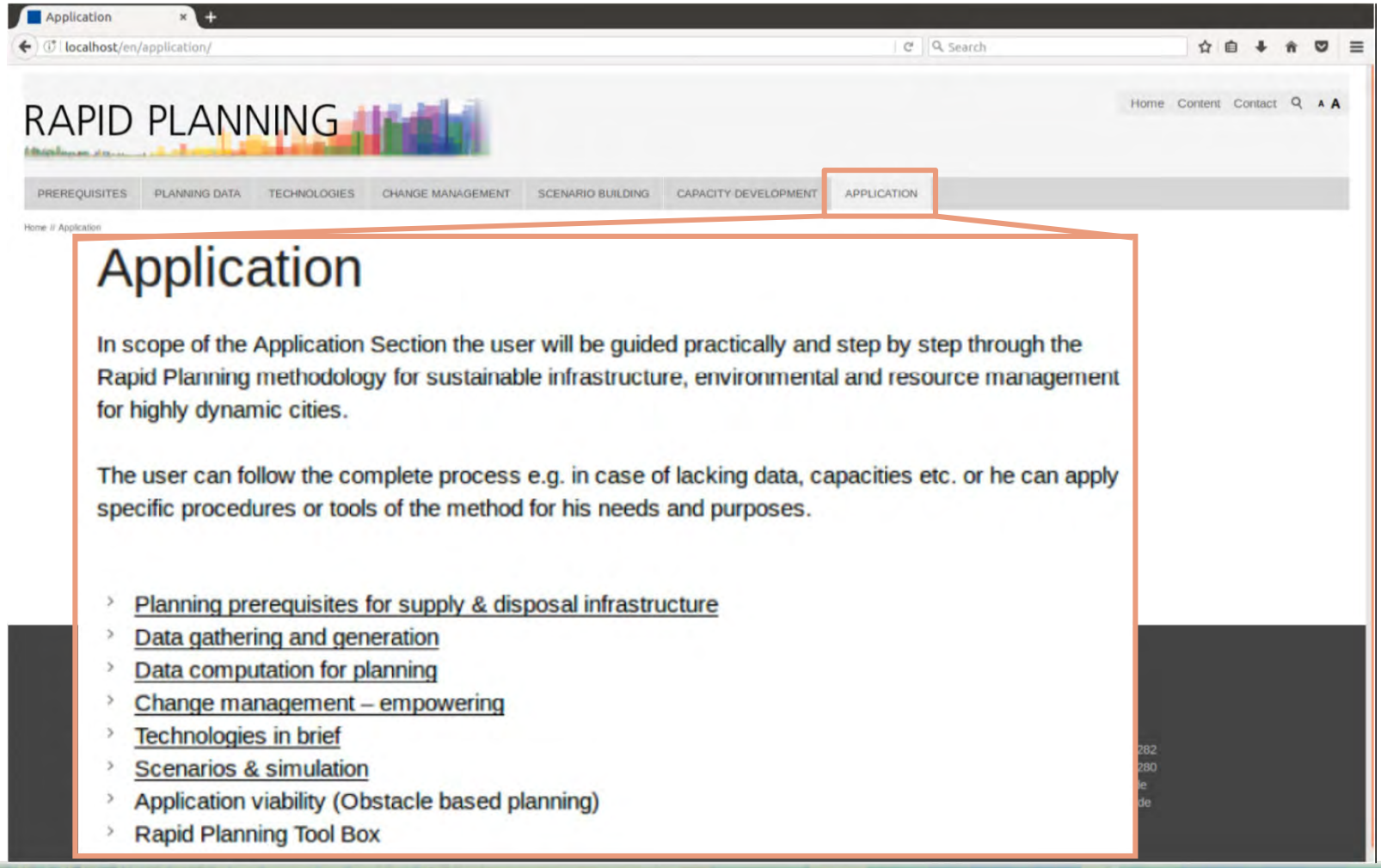
METHOD APPROACH OF RAPID PLANNING

NEXT PROJECT PHASES

PCS RE OS	Data gathering and pooling	Data computation	Trans-sectoral scenario building	Scenario Simulation	Practicability & Transfer
ACTIVITY	– Supply & disposal infrastructure relevant data – GIS data – Remote sensing – Building structure – House typology – Socio-economy (income and consumption pattern) – Determine specific data (e.g. quantity per capita/day) – Stakeholder analys	– Identification of linkage between socio-economy and building type – Cataloguing – Merging spatial data (RS, BS, HT) and specific values – Data consistency check – Applying rule-based method to calculate 3D building models & building attributes	– Trans-sectoral planning/ design – Break down "silo thinking" (change management) – Trans-sectoral capacity building – Baseline scenario definition – (Trans-sectoral) Scenario building S1-Sn – Practical "Entry Projects" at begin	– Transfer of scenario design into simulator – Transfer data into simulator – Run scenario simulation – Output: strategic pre-planning – Transfer into planning procedures – Reality check – Transferability check	– Definition of "thematic goal" (= scenario result) – Definition of "defining objectives" – Development of an I.O map – Sequencing in time – Proposal to start project with "Rapid Results" – Application within context of UN-Habitat Urban Lab
RP TOOLS	– Questionnaires – Maps, surveys, census, statistics – Satellite image processing tools – Methods to determine specific planning values – Apps (data coll.) – Housing photo documentation	– GIS, database, file system – Catalogue (building type, UST) – Series of specific tables/ forms with input/ output masks – RP-program interface – Digital terrain model – Web interface	– Method to organising stakeholder – Change strategy – "Silo breakdown" method & Empowering WS – RP-knowledge system: (trans-sectoral technologies, capacity development, tool box	– Simulator – Reality check method – Transferability check method	– Obstacle based planning method – Rapid Results method – Other TOC techniques – Applicable RP method/ roadmap

FOLLOWING THE RAPID PLANNING APPLICATION ROADMAP (RAPID PLANNING KNOWLEDGE SYSTEM)



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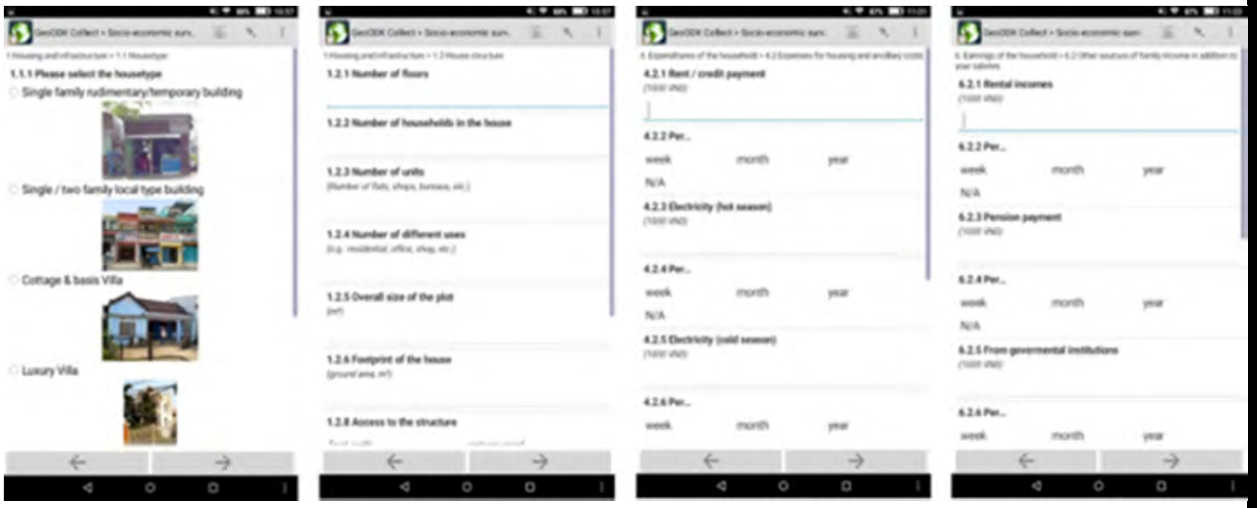
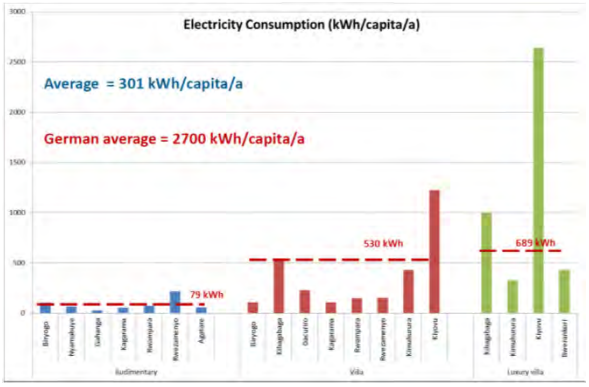
SPATIAL DATA – BUILDING STRUCTURE – LIFESTYLE CLASSES – SPECIFIC PLANNING VALUES – MFA

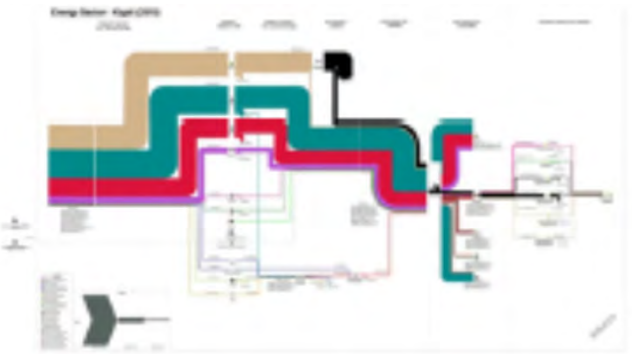
PROCESSING & ANALYSIS OF SPATIAL DATA: UNIVERSITY OF TUBINGEN



DEVELOPMENT & IMPLEMENTATION: IUWA, AT-VERBAND



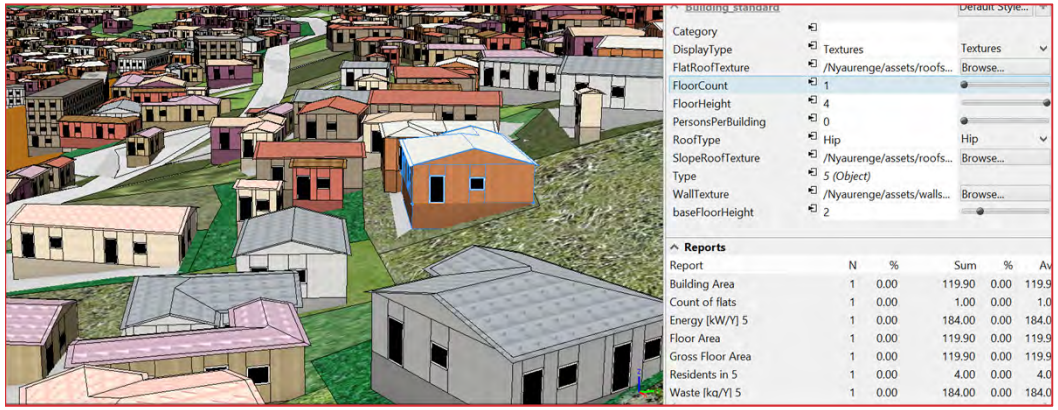
DATA GATHERING & ANALYSIS: UNIVERSITY OF STUTTGART

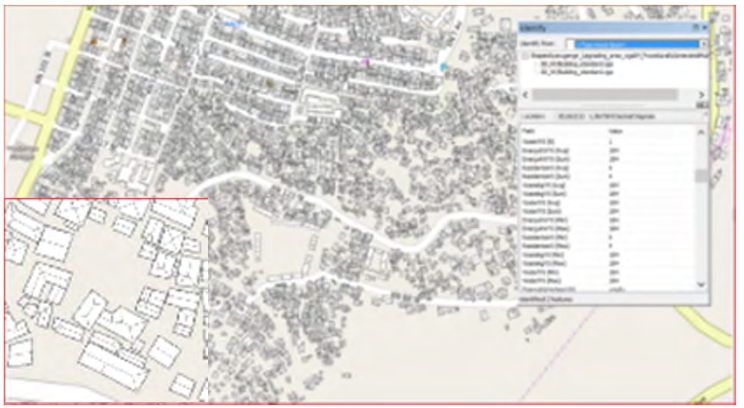


MFA: IFEU

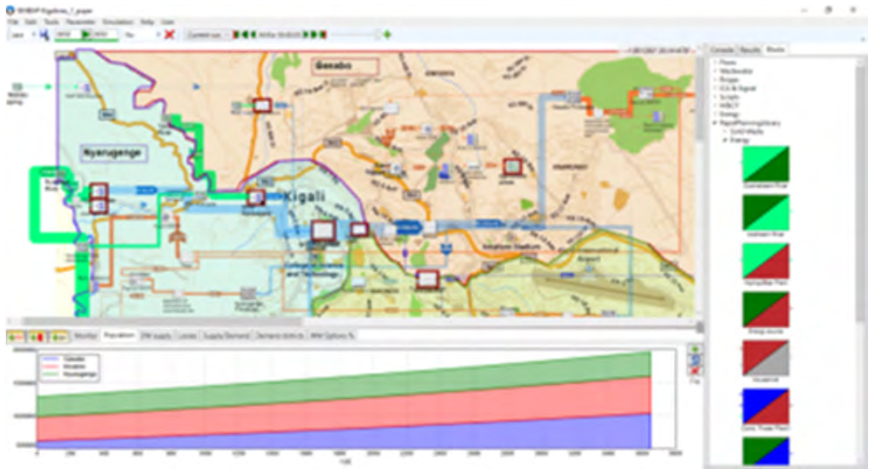
TODAY'S SESSION 1

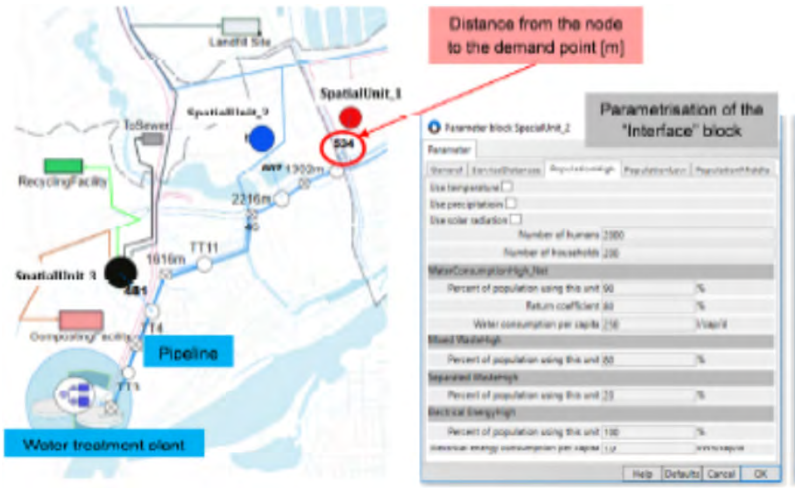
DATA COMPUTATION – SIMULATION TOOL – SCENARIO DEVELOPMENT





COMPUTATION & ENGINEERING: AT-VERBAND



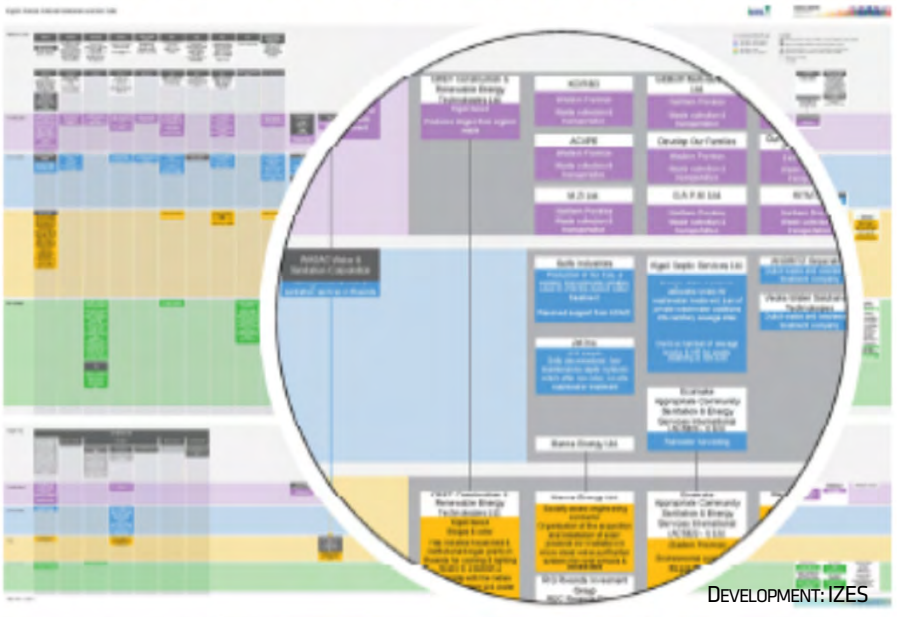


COMPUTATION & ENGINEERING: IFAK

➲ TODAY'S SESSION 2 ➲

STAKEHOLDER PARTICIPATION ENHANCEMENT – CHANGE MANAGEMENT

DEVELOPMENT: AT-VERBAND



DEVELOPMENT: IZES

DEVELOPMENT: AT-VERBAND

➲ TODAY'S SESSION 3 ➲

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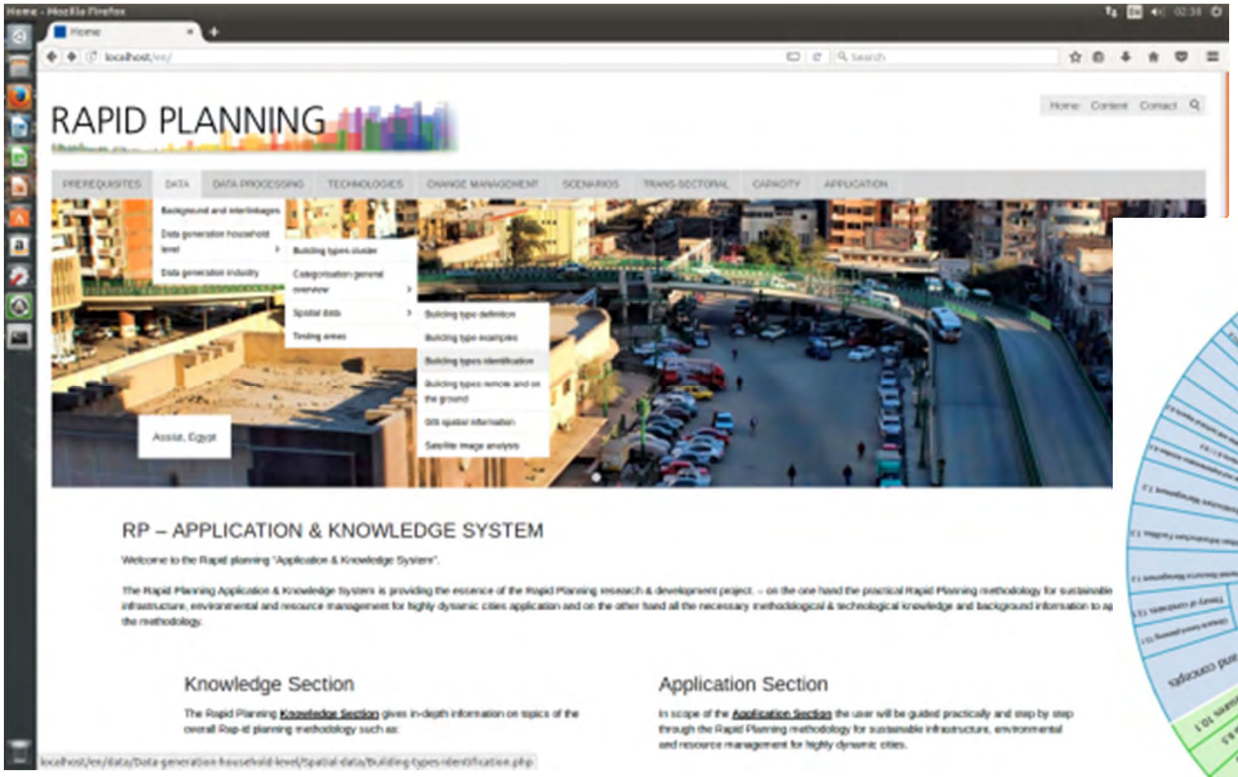
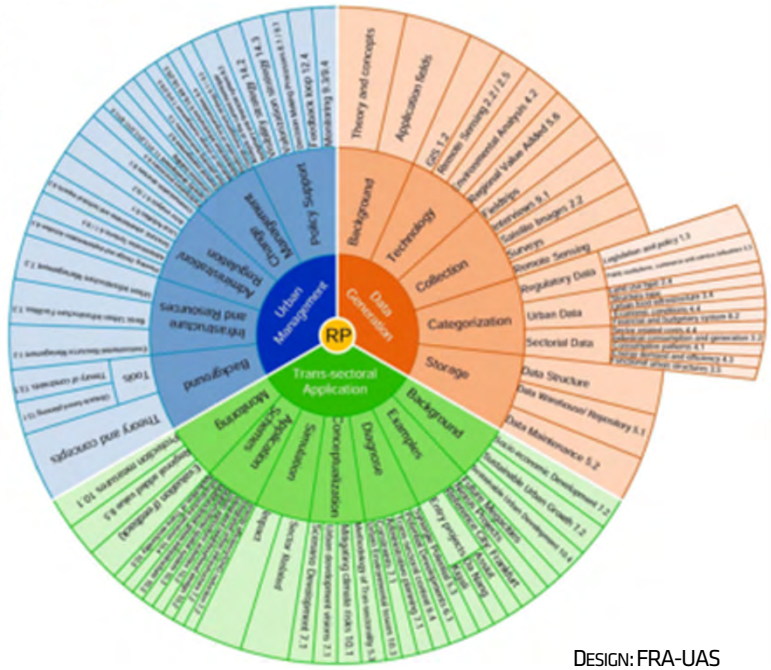
EMPOWERING & CAPACITY DEVELOPMENT– RP KNOWLEDGE SYSTEM – TRANS-SECTORAL TECHNOLOGY SYNERGIES



DEVELOPMENT: AT-VERBAND



DESIGN: FRA-UAS

➲ TODAY'S SESSIONS 2+3+4 ➲

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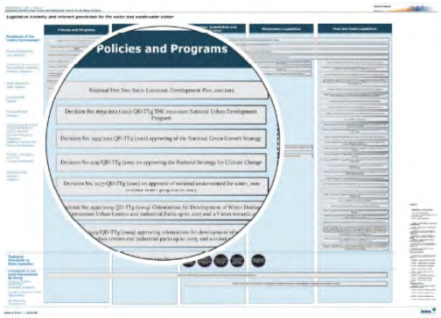
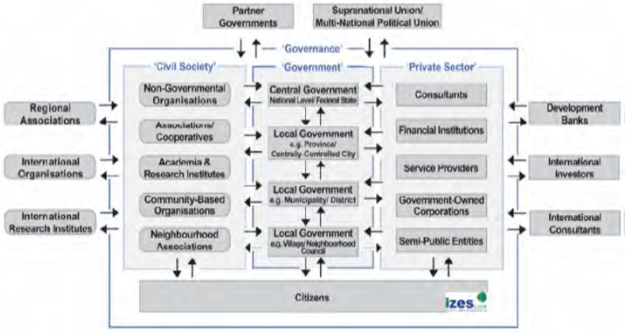
SCENARIO SIMULATION: UPCOMING

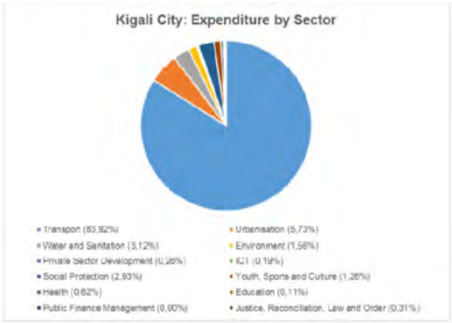
POLICIES



GOVERNANCE

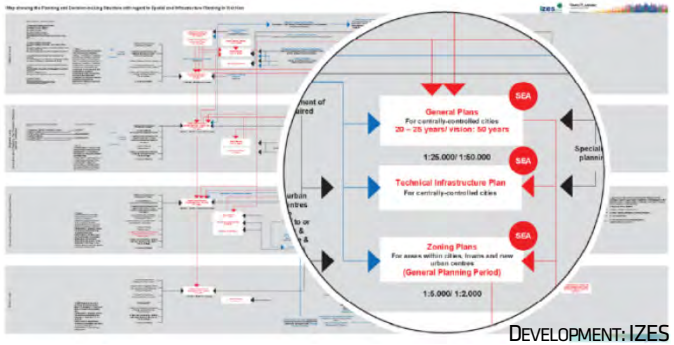


ECONOMY



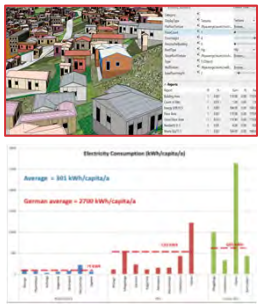
DEVELOPMENT: IZES

PLANNING SYSTEM

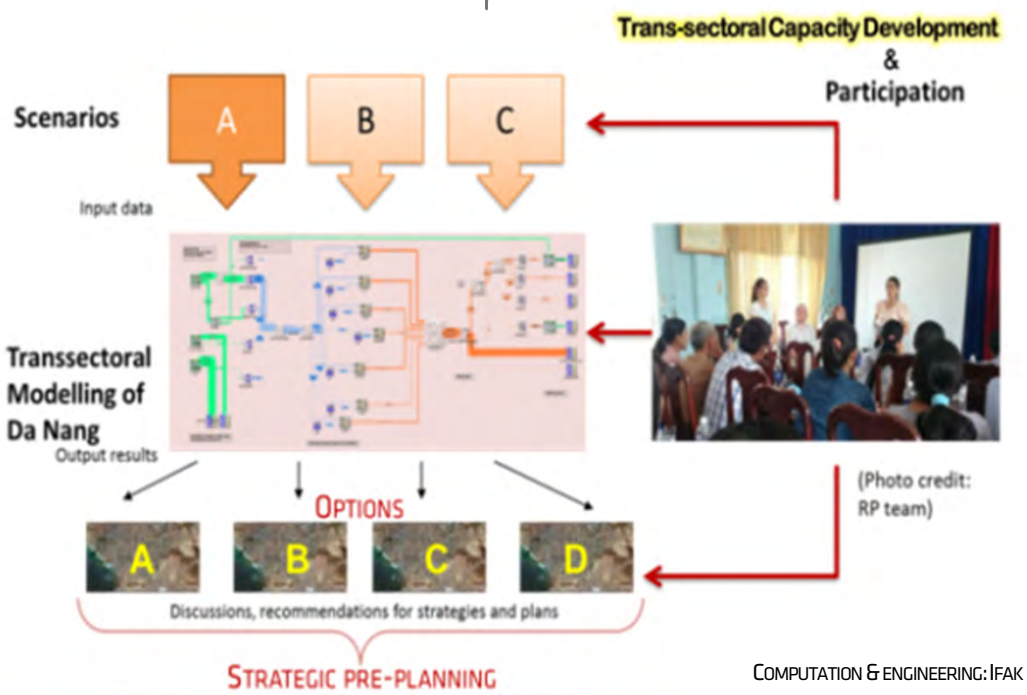


DEVELOPMENT: IZES

PLANNING VALUES



DEVELOPMENT: RP



COMPUTATION & ENGINEERING: IFAK

➲ NEXT PROJECT PHASES ➲

PLANNING AND PRACTICAL APPLICATION SHOWCASES – ENTRY PROJECTS IN CASE CITIES

Linking resource flows in Nyarugenge

„Initiator water kiosk“
Structural improvement, solar panel, fruit trees, open space improvement

„Sponge School Concept“
Slow, spread, infiltrate, collect, cycle

„Decentral grey water treatment“
Water reuse for gardening and cleaning, cycle, infiltrate

„Green buildings“
Green supply and disposal infrastructre, Building material calculator

„Linking the Agri. Coop.“
Waste collection, composting, food sale, water treatment

„Multi-level waste flow“
Plastic waste selling point, bio char production, composting training

Visualization by TU Berlin

DESIGN: TU BERLIN

TRANSFERABILITY OF THE RAPID PLANNING APPROACH

Opportunity for checking transferability in the context of existing strategic planning interventions in the UN-Habitat Urban Planning and Design Lab's partner cities.

The Lab and RP both are aiming at a tangible outcome in form of providing a "strategic preplanning", a set of tools or frameworks, technological options and information on costs implications for choices made, all able to support urban planning or structural change.

The Lab itself puts emphasis key issues on the principles for urban planning, their supporting rules, regulations and financial mechanisms as a key prerequisite for detailed plans.

RP is complementing this scope by being able to determine key parameters for integrated trans-sectoral planning for supply and disposal infrastructure, providing options as a function also to institutional, regulatory and financial considerations.

UN-HABITAT URBAN LAB'S PARTNER CITIES

UN-HABITAT URBAN LAB'S INTERVENTION IN TACLOBAN, PHILIPPINES

UN-HABITAT URBAN LAB'S INTERVENTION IN ACCRA, GHANA

➲ TOMORROW'S SESSION 6 ➲

CONCLUSION – INCREMENT VALUE OF THE RAPID PLANNING APPROACH

Rapid Planning ≠ poor planning

Rapid Planning = holistic strategic pre-planning

Rapid and effective because of

- Balanced set of Rapid Planning enabling tools and know-how
- Common knowledge basis (capacity e.g. in technologies etc.)
- Capacities to be on eye-level with private companies, donors etc.
- Common data basis for all stakeholders
- Quick approaches for data generation & computation
- Communication schemes between stakeholders (sectors, department, agencies, private etc.)
- RP methodology is trans-sectoral, thereby maximising cost-efficiency and maximising the resource efficiency at various scales of intervention in the urban metabolism
- Easy update, quick integration of changes and timelines to analyse/ adjust development
- Focus on the question of HOW to achieve the WHAT

Have we heard about WHAT before? – Yes sure!

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RAPID PLANNING TEAM & PARTNER

AT-Association, association for the promotion of socially & environmentally appropriate technologies

UN-HABITAT FOR A BETTER URBAN FUTURE

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IUWA Heidelberg The Institute for Eco-Industrial Analysis

Ostfalia Hochschule für angewandte Wissenschaften

izes gGmbH Institut für ZukunftsEnergieSysteme

ifak Institute for Automation and Communikation (ifak), Magdeburg

University of Stuttgart Germany

FRANKFURT UNIVERSITY OF APPLIED SCIENCES

ifeu Institute for Energy and Environmental Research (IFEU)

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Thank You!
[English]

Cảm On!
[Vietnamese]

Danke!
[German]

Murakoze!
[Kinyarwanda]

Shukran!
[Arabic]

AT-Verband/AT-Association	UN-Habitat
Waldburgstr. 96 70563 Stuttgart Germany	United Nations Avenue, Gigiri Nairobi Kenya
Mr. Dieter Steinbach Ms. Andrea Schultheis	Mr. Sebastian Lange Ms. Laura Petrella
rp@at-verband.de	sebastian.lange@unhabitat.org

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