RAPID PLANNING

SUSTAINABLE INFRASTRUCTURE, ENVIRONMENTAL AND RESOURCE MANAGEMENT FOR HIGHLY DYNAMIC METROPOLISES

A BRIEF OVERVIEW OF THE RAPID PLANNING PROJECT/METHODOLOGY

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STAKEHOLDER CONFERENCE 2016

NOVEMBER 9TH, 2016, KIGALI, RWANDA

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

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

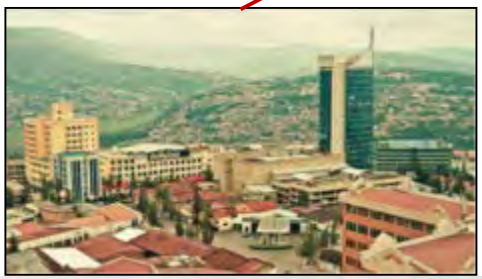
4. Implementation/practicability approach

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

RAPID PLANNING CASE CITIES

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
- Old metropolis: reference city



OBJECTIVE OF THE RAPID PLANNING PROJECT

Rapid Planning ≠ poor planning

Rapid Planning = strategic pre-planning !!!

Rapid because of:

- Common knowledge basis (capacity)
- Quick approaches for data generation & computation
- Rapid Planning tools, methods, procedures
- Common data basis for all stakeholders
- Communication schemes between stakeholders (sectors, depts, agencies, etc.)
- Strategic pre-planning: scenarios, technologies, trans-sectoral interfaces/ synergies, costs (capital & operation), quick integration of changes
- Easy update and timelines to analyse/ adjust development

METHOD APPROACH OF RAPID PLANNING

PROCESS	Data pooling	Data computation	Trans-sectoral scenario building	Scenario Simulation	Scenario result practicability
ACTIVITY	–Supply & disposal infrastructure relevant data –GIS data –Remote sensing –Determine specific data (e.g. quantity per capita and day) –Building structure –House typology –Socio-economy (income and consumption pattern)	–Identification of linkage between socio-economy and housing type –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 –Start project with “Rapid Results”
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 –Series of specific tables/ forms with input/ output masks –RP-program interface –Digital terrain model –Web interface	–Method to organising stakeholder –“Silo breakdown” method (change management techniques) –Trans-sectoral technical & other knowledge blocks –Cross Impact Balance analysis	–Simulator –Reality check method –Transferability check method	–Obstacle based planning method –Rapid Results method –Other TOC techniques

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Overall data flow (draft)

GIS

Graph. Data
(store and visualisation, classification)

Table export (Link ID and bu_class)

Table (conditioned, linkable to graph data)

Computation

Program interface (flexible basis of design for evaluation) for different subsections, time series, prognoses e.g.)

Definition:	Waste	
GIS Layer Name		
Table (T1)		
Name	Column	Unit
ID	1	ID
Area	2	sqm
X	3	Coordinates
Y	4	Coordinates
BC	5	Category
Statistical Data		
Path		
Table (T2)		
Name	Column	Unit
BC	1	Category
Resident Per Building	2	capita
Waste per capita and yea	3	kg
Glas pr capita per year	4	kg
..		
Growth factors / Year		
Resident Per Building	21	rate
Waste per capita and yea	22	rate
Glas pr capita per year	23	rate
Definition (Calculation)		
Path		
Table (T3)		
Name	Column	Formula
Year	1	Year
Resident	2	T2.2 * T2.22
Waste	3	T2.2 * T2.3 * T2.23
Glas	4	T2.2 * T2.4 * T2.24

Data collection

Census, survey, statistic reports

Table (significant data for subsections)

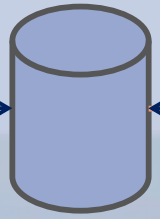
Table (result as raw data)

Simulation

Simulation / MFA

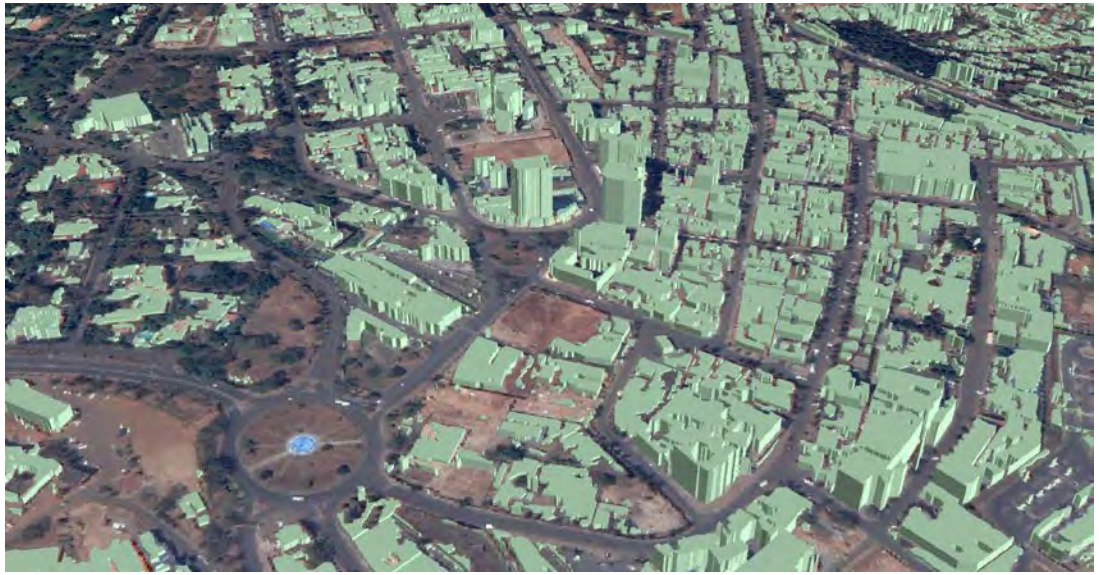
Analysis, reports

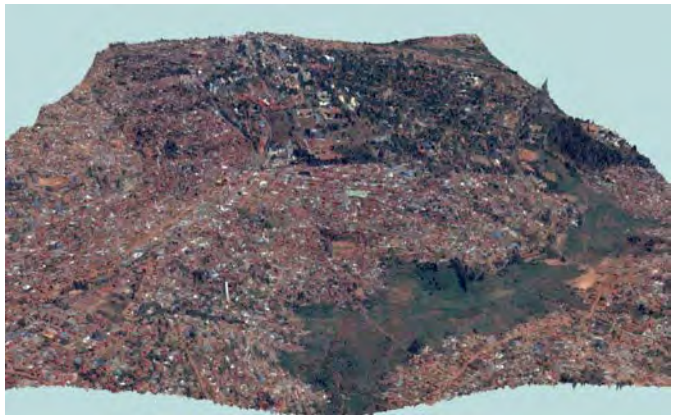
Storage
(Database, file system)



Interactive data analysis (planned web based)

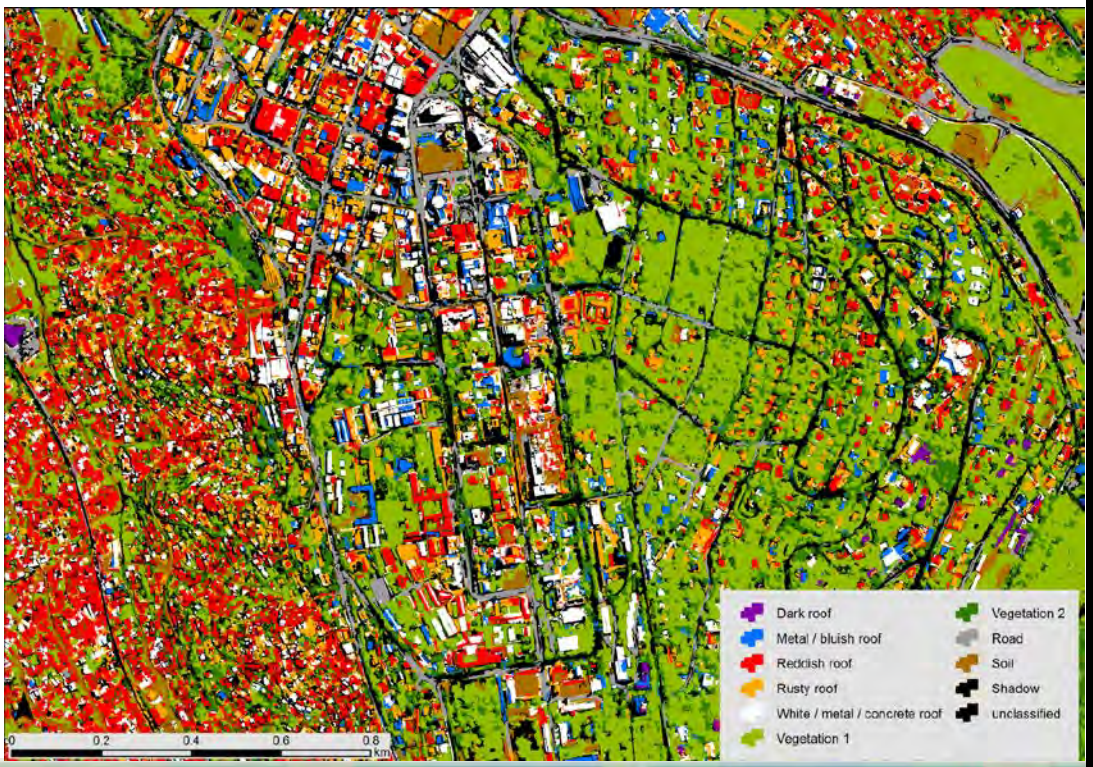
DETECTION OF BUILDING STRUCTURE/ TYPE (EXAMPLE KIGALI, RWANDA)





PROCESSING & ANALYSIS OF SPATIAL DATA: UNIVERSITY OF TUBINGEN

DETECTION OF BUILDING STRUCTURE/ TYPE (EXAMPLE KIGALI, RWANDA)



PROCESSING & ANALYSIS OF SPATIAL DATA: UNIVERSITY OF TUBINGEN

IDENTIFICATION OF TESTING AREAS (ACCUMULATION OF SAME HOUSE TYPES) & MATCHING HOUSE TYPES TO TYPICAL (RESOURCE) CONSUMPTION PATTERNS (EXAMPLE KIGALI, RWANDA)

TOOL:
QUESTIONNAIRE (APP) FOR SOCIO-ECONOMIC DATA COLLECTION

RESULT:
TESTING AREAS IN KIGALI

DEVELOPMENT & IMPLEMENTATION: IUWA, AT-VERBAND

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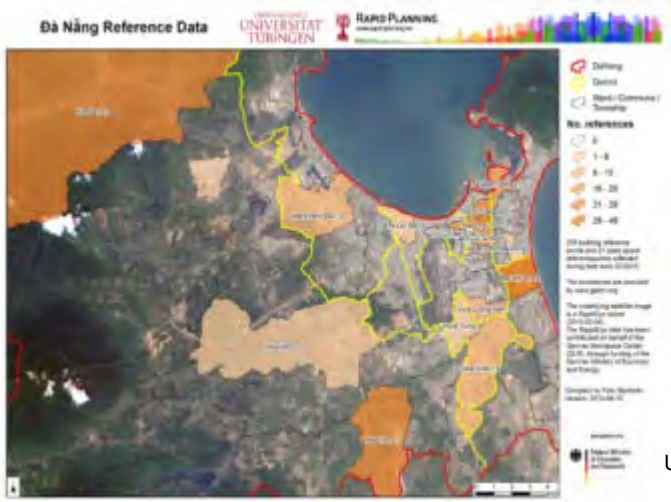
PRACTICAL SPECIFIC DATA GENERATION (COSTLY/TIME CONSUMING)



UNIVERSITY OF TUBINGEN

AT-VERBAND & TAKATAKA SOLUTIONS

IGNIS PROJECT

IN ADDITION: CROWD MAPPING ???

CROWDMAP.COM

HARAVA BY DIMENTEQ OY

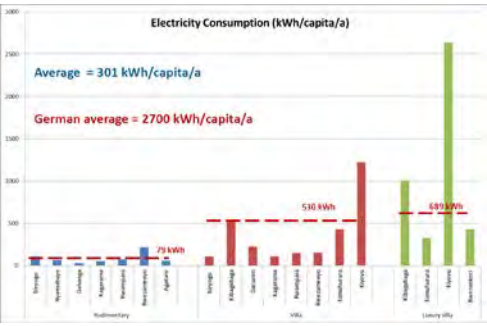
METHOD TO CALCULATE 3D BUILDING MODELS & ATTRIBUTES (EXAMPLE KIGALI, RWANDA)

Building standard	
Category	
DisplayType	Textures
FlatRoofTexture	/Nyaurenge/assets/roofs...
FloorCount	1
FloorHeight	4
PersonsPerBuilding	0
RoofType	Hip
SlopeRoofTexture	/Nyaurenge/assets/roofs...
Type	5 (Object)
WallTexture	/Nyaurenge/assets/walls...
baseFloorHeight	2

Reports

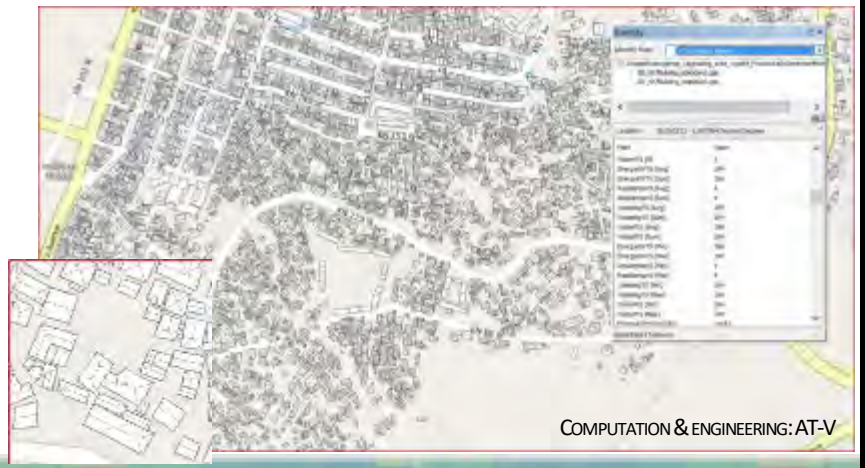
Report	N	%	Sum
Building Area	1	0.00	119.90
Count of flats	1	0.00	1.00
Energy [kW/Y] 5	1	0.00	184.00
Floor Area	1	0.00	119.90
Gross Floor Area	1	0.00	119.90
Residents in 5	1	0.00	4.00
Waste [kg/Y] 5	1	0.00	184.00

COMPUTATION & ENGINEERING: AT-V



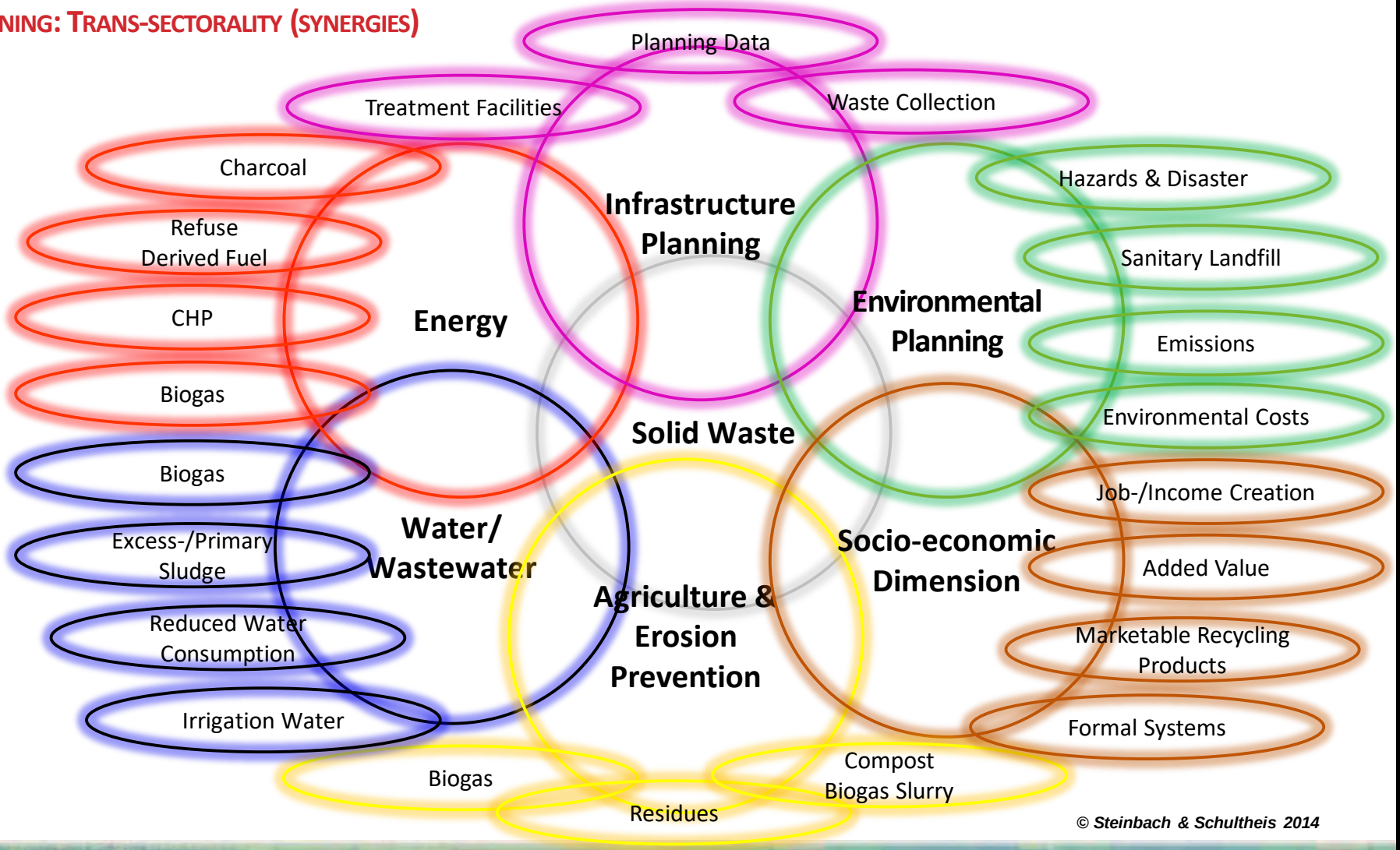
Electricity (kWh/a)	Per Capita
Luxury villa	689
Villa	530
Rudimentary	79
LPG (kg/a)	
Luxury villa	33
Villa	28
Rudimentary	14
Charcoal (kg/m)	
Luxury villa	15.76
Villa	16.10
Rudimentary	15.32
Water (l/d)	
Luxury villa	502
Villa	254
Rudimentary	42

DATA GATHERING & ANALYSIS: UNIVERSITY OF STUTTGART



COMPUTATION & ENGINEERING: AT-V

PLANNING: TRANS-SECTORALITY (SYNERGIES)



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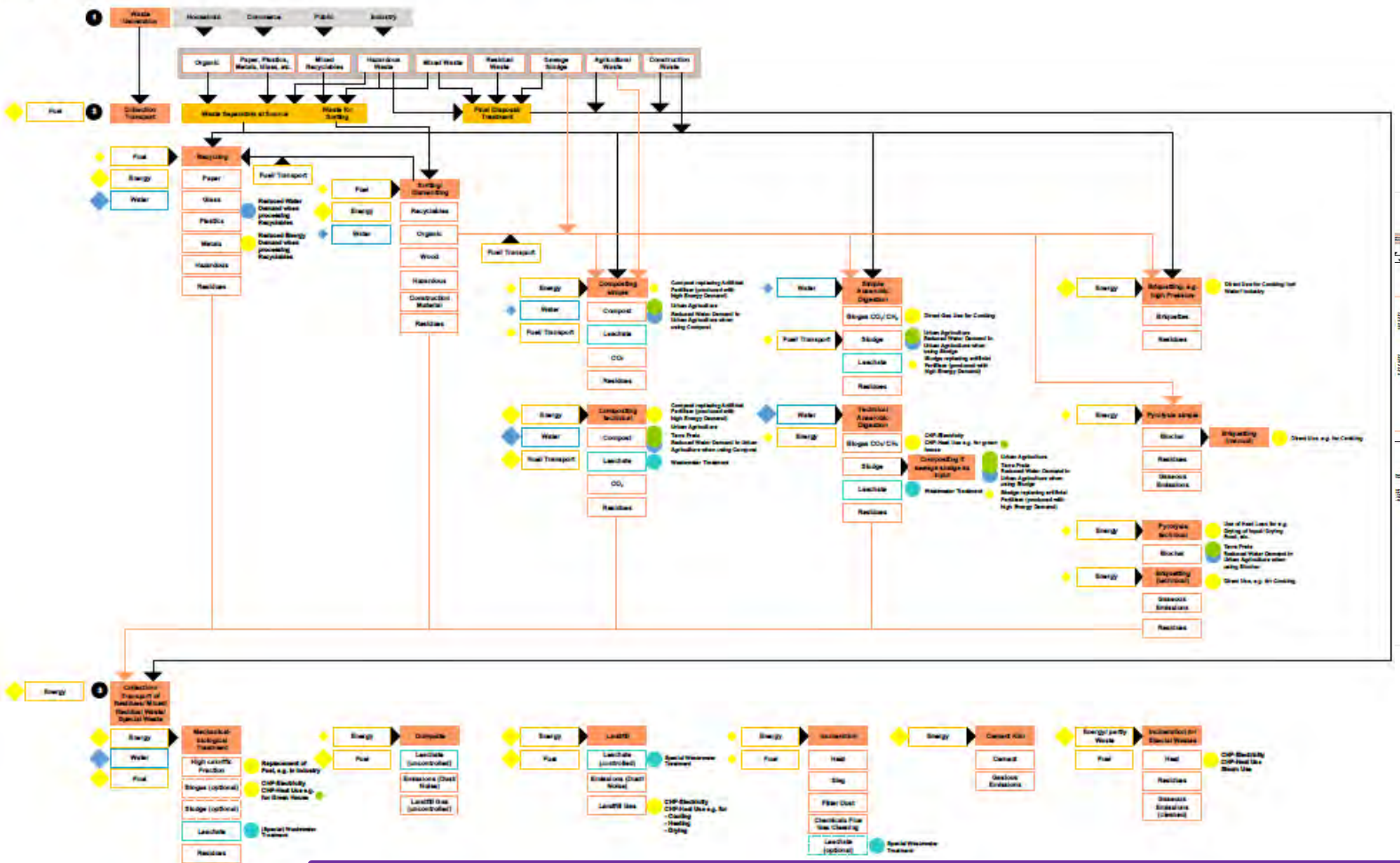
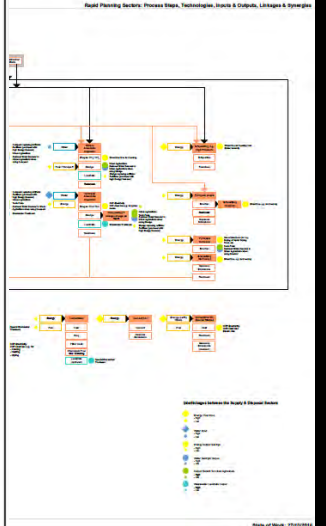
WASTE SECTOR





➲PLEASE HAVE A LOOK AT PRINTOUT/ BANNER OF ACTUAL STATE OF WORK➲

SIMULATION, EVALUATION AND DISCUSSION OF SCENARIOS

Trans-sectoral Capacity Development & Participation

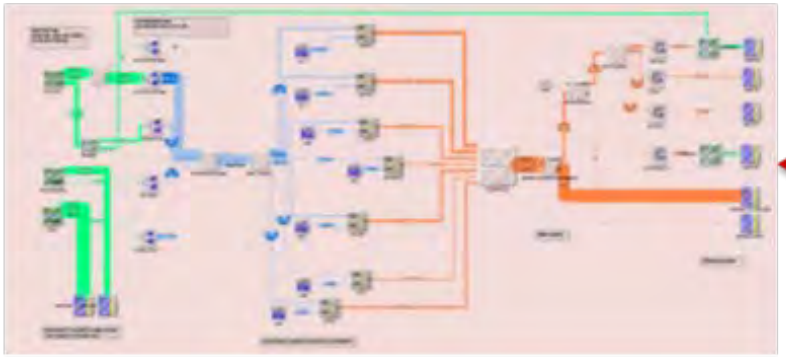
Scenarios

A B C

Input data

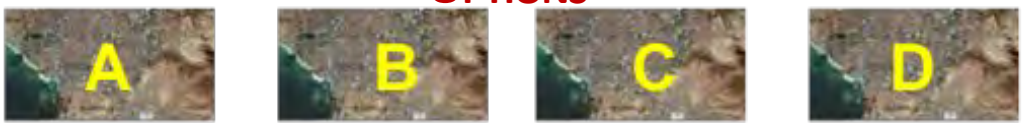
Transsectoral Modelling of Da Nang

Output results



(Photo credit: RP team)

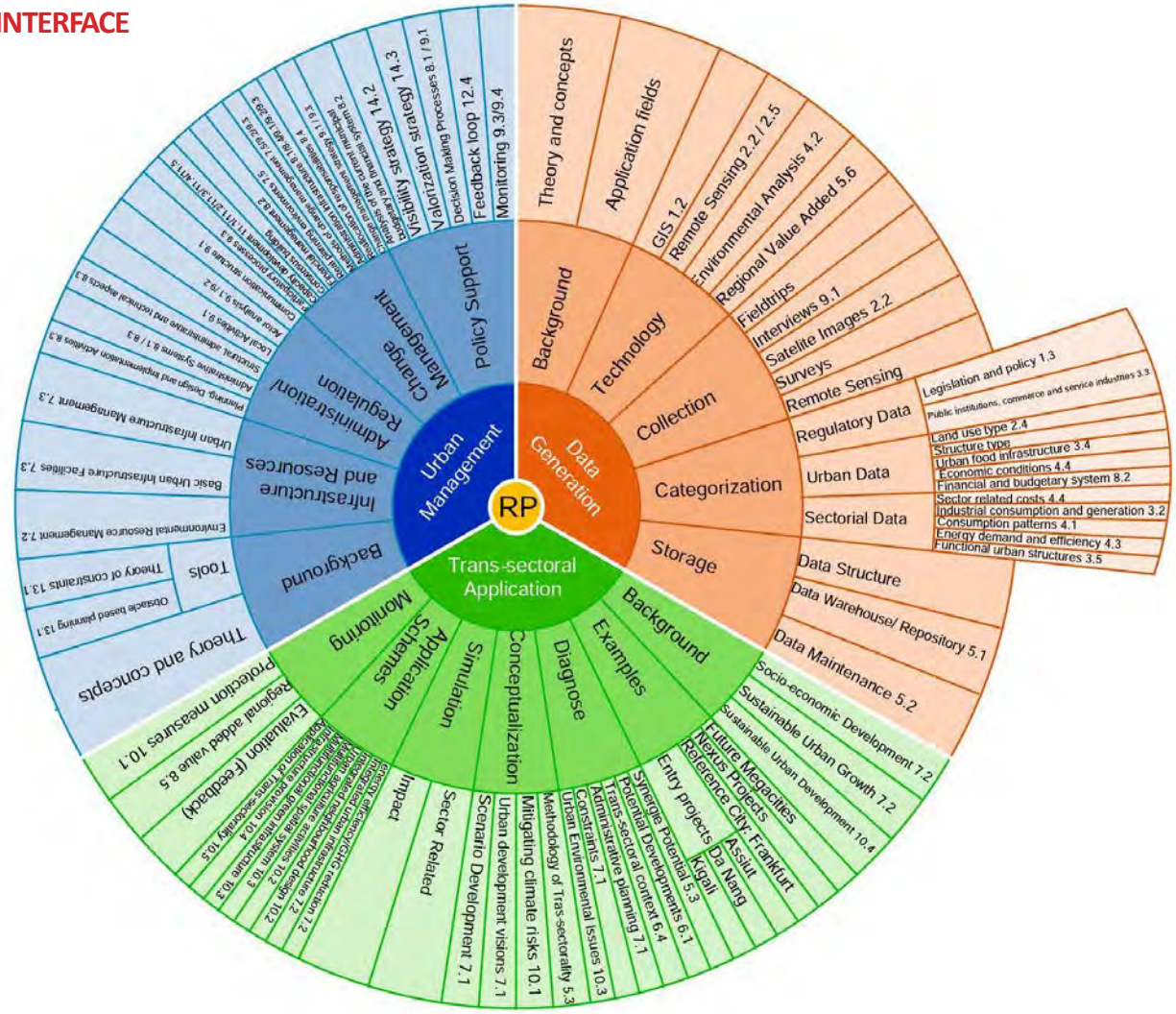
OPTIONS



Discussions, recommendations for strategies and plans

STRATEGIC PRE-PLANNING

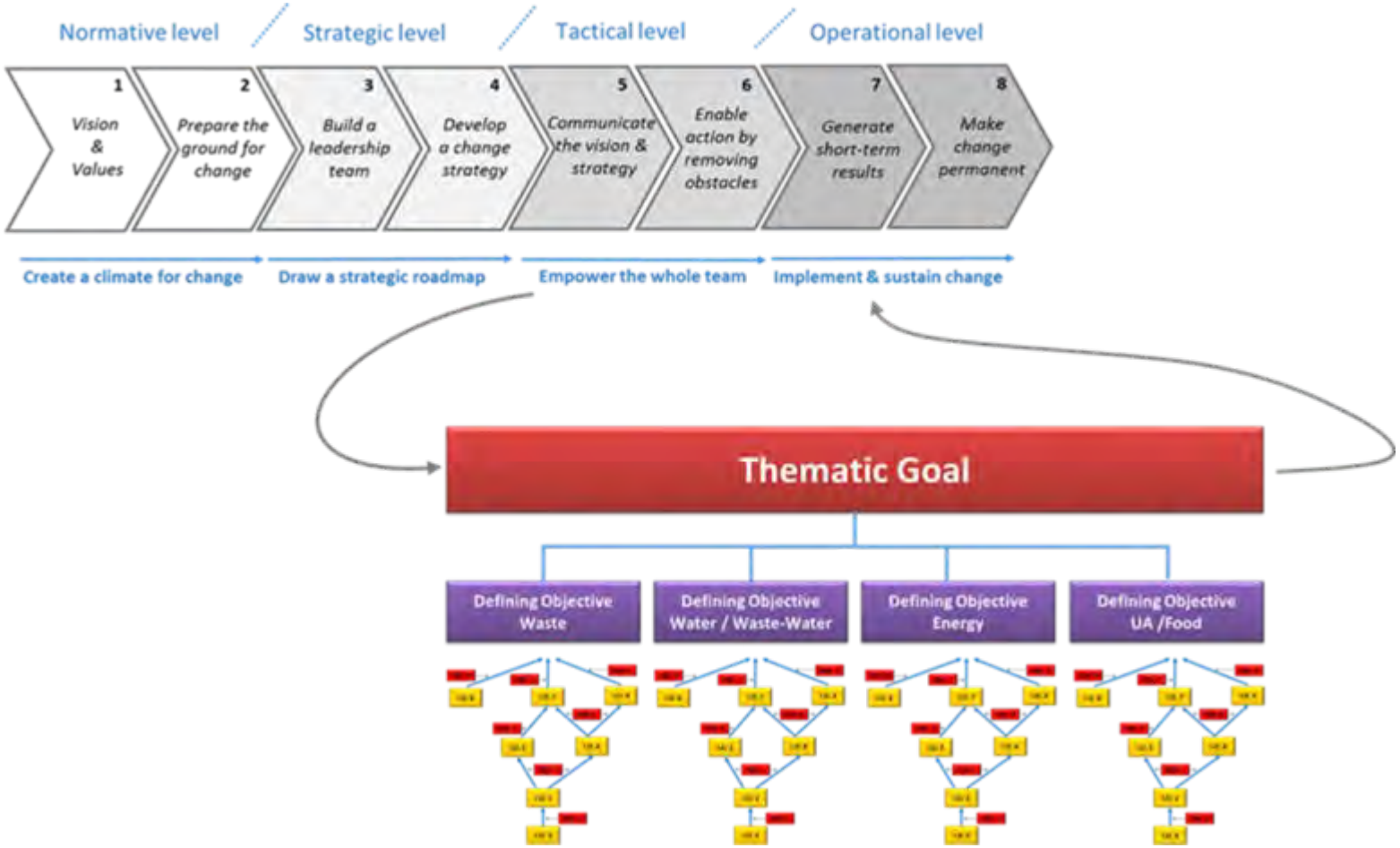
CAPACITY DEVELOPMENT INTERFACE



DESIGN: FRA-UAS

PRACTICABILITY APPROACH (CAPACITY BUILDING & APPLICATION / CHANGE MANAGEMENT)

RAPID PLANNING INTEGRATED TRANS-SECTORAL CHANGE MANAGEMENT CONCEPT

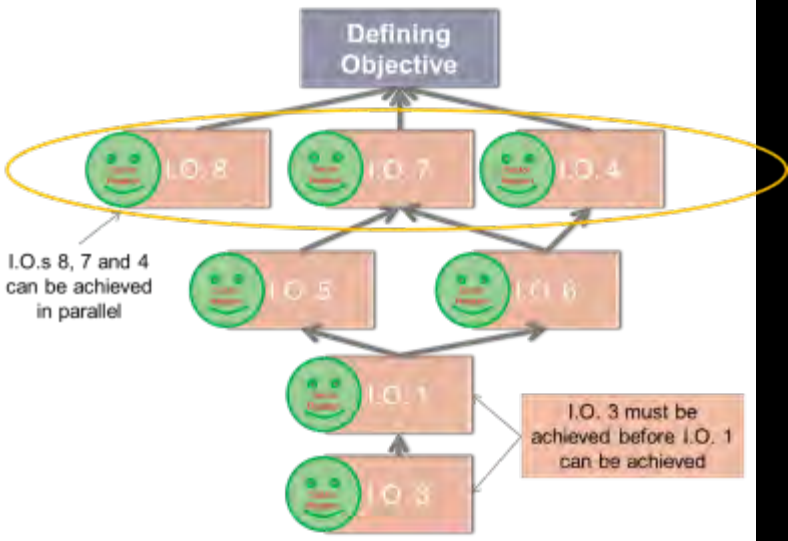


DEVELOPMENT: AT-VERBAND

THEMATIC GOAL DRIVEN EMPOWERING WORKSHOPS TO ASSIST CHANGE MANAGEMENT IMPLEMENTATION

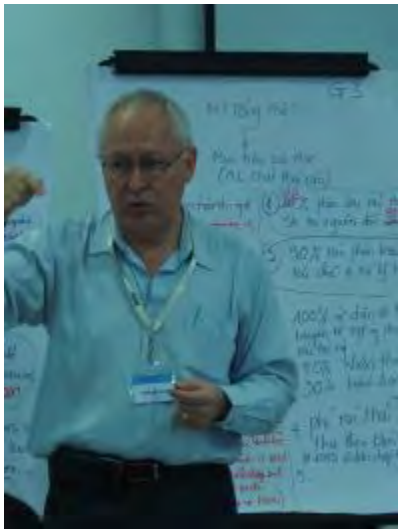
Main steps:

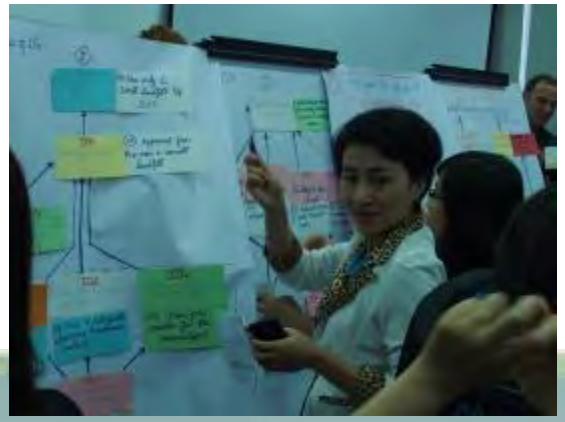
- Define a single, temporary, and qualitative ***Thematic Goal*** shared by all members of the (leadership) team and valid for every RP sector
- Gain agreement on clearly verbalised ***Defining Objective(s)*** that we want to achieve in the near future and which contribute(s) to the *Thematic Goal*
- For each objective, create a list of ***obstacles*** that prevent us from achieving the objective
- For each obstacle, develop an ***Intermediate Objective (I.O.)*** which, when we achieve it, we will have overcome that particular obstacle
- Sequence the intermediate objectives in terms of logic and time. The result is an ***Intermediate Objective Map (I.O. Map)***



DEVELOPMENT: AT-VERBAND

"EMPOWERING WORKSHOPS FOR INTEGRATED, TRANS-SECTORAL SUPPLY & DISPOSAL INFRASTRUCTURE MANAGEMENT – PART 1: SOLID WASTE MANAGEMENT"

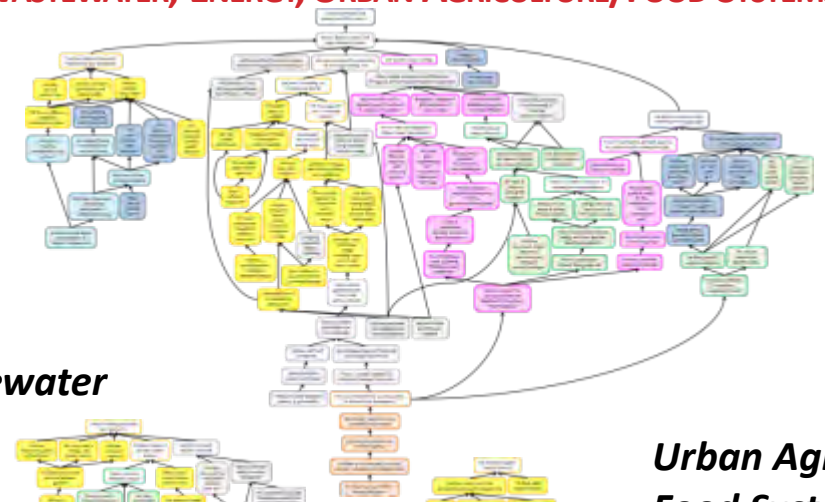




IMPLEMENTATION: AT-VERBAND, DISED, UN-HABITAT, IZES

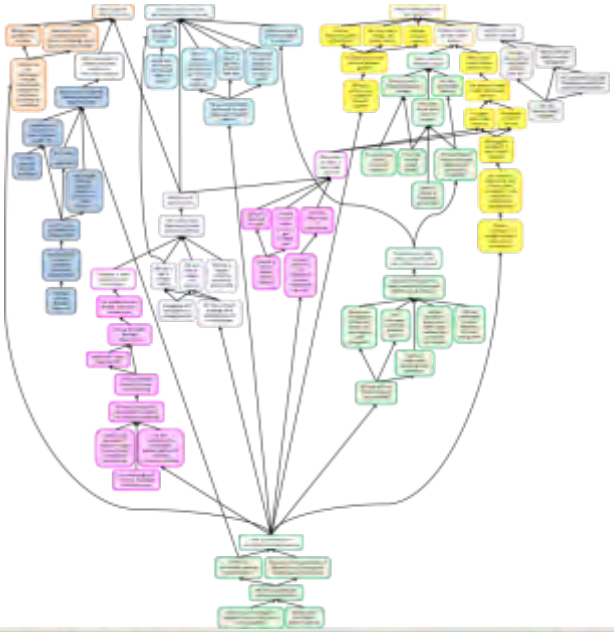
"EMPOWERING WORKSHOPS ON SOLID WASTE, WATER/WASTEWATER, ENERGY, URBAN AGRICULTURE/FOOD SYSTEMS; CONSOLIDATED I.O. MAPS

Solid Waste

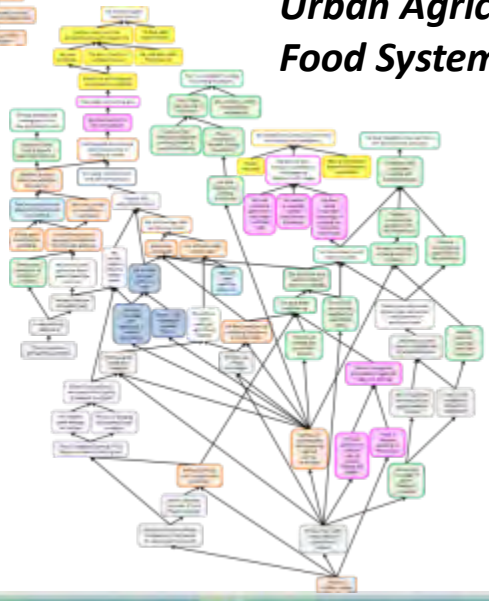


Energy

Water/Wastewater



Urban Agriculture/ Food Systems

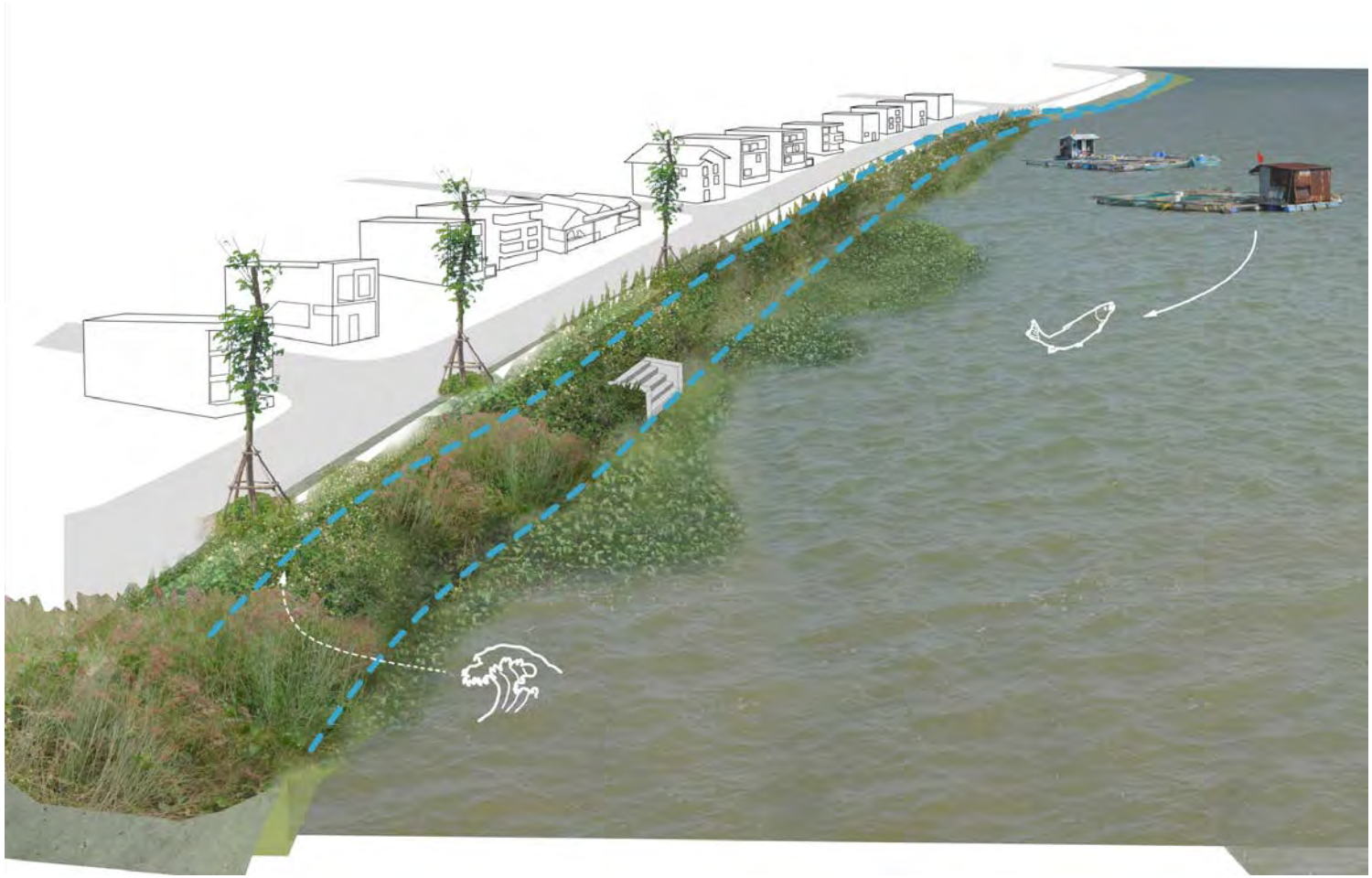


STRATEGIC FIELDS TO STRENGTHEN TRANS-SECTORAL THINKING, PLANNING & ACTING [SUPPLY & DISPOSAL INFRASTRUCTURE]

DEVELOPMENT: AT-VERBAND, IZES

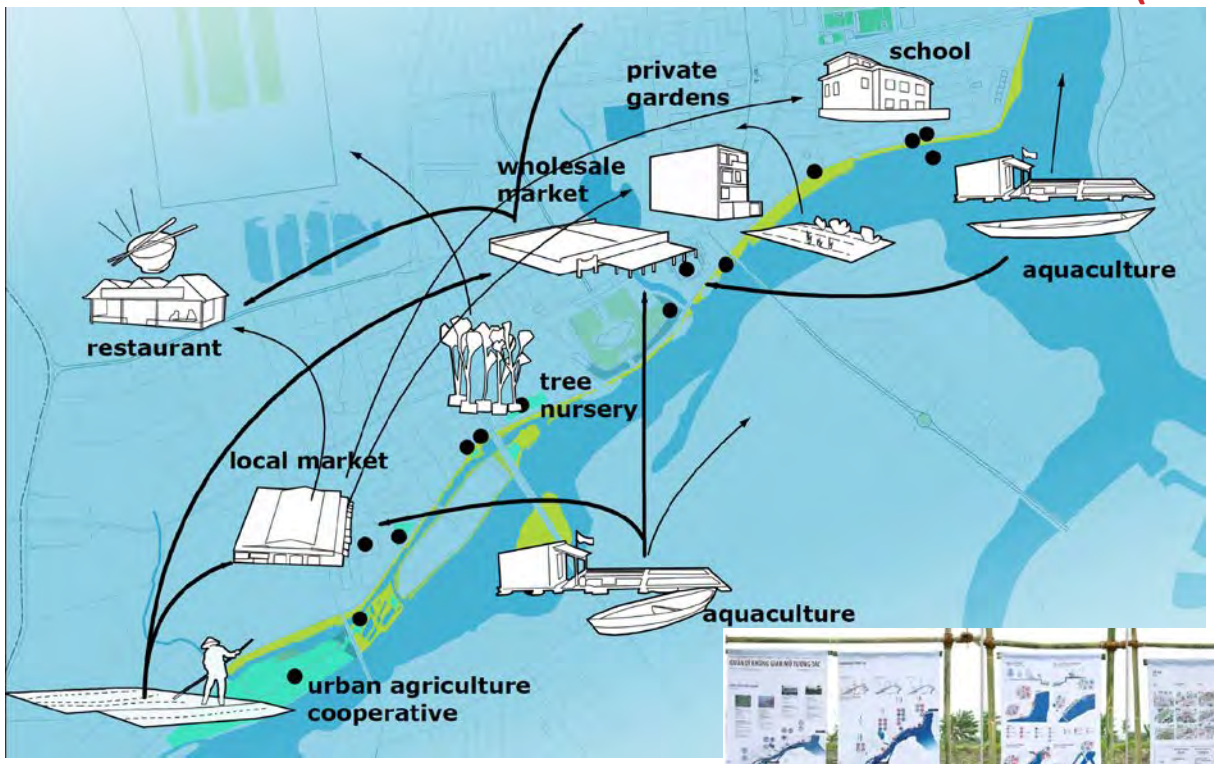
ENTRY PROJECT INTEGRATED RIVERBANK MANAGEMENT IN CAM LE DISTRICT

EXISTING RIVERBANK



DESIGN: TUB

ENTRY PROJECT INTEGRATED RIVERBANK MANAGEMENT IN CAM LE DISTRICT (VISION APPLICATION OF MODULES)



DESIGN: TU BERLIN

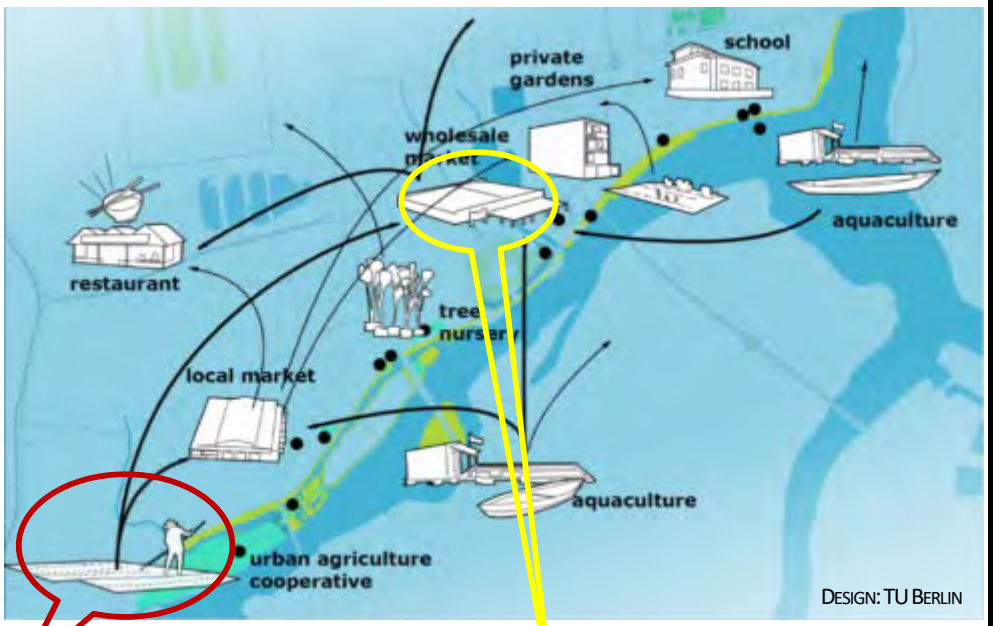
SUMMER SCHOOL OUTPUT: RIVERBANK MANAGEMENT EXHIBITION MARCH 2016

IMPLEMENTATION: BTU / TU BERLIN

ENTRY PROJECT – INTEGRATED RIVERBANK MANAGEMENT IN CAM LE DISTRICT (RESOURCE VALORISATION MODULE ORGANIC WASTE)

THEORETICAL COMPOSTING TRAINING

IMPLEMENTATION: AT-VERBAND



PRACTICAL COMPOSTING TRAINING AND TRAINING FACILITY

IMPLEMENTATION: AT-VERBAND

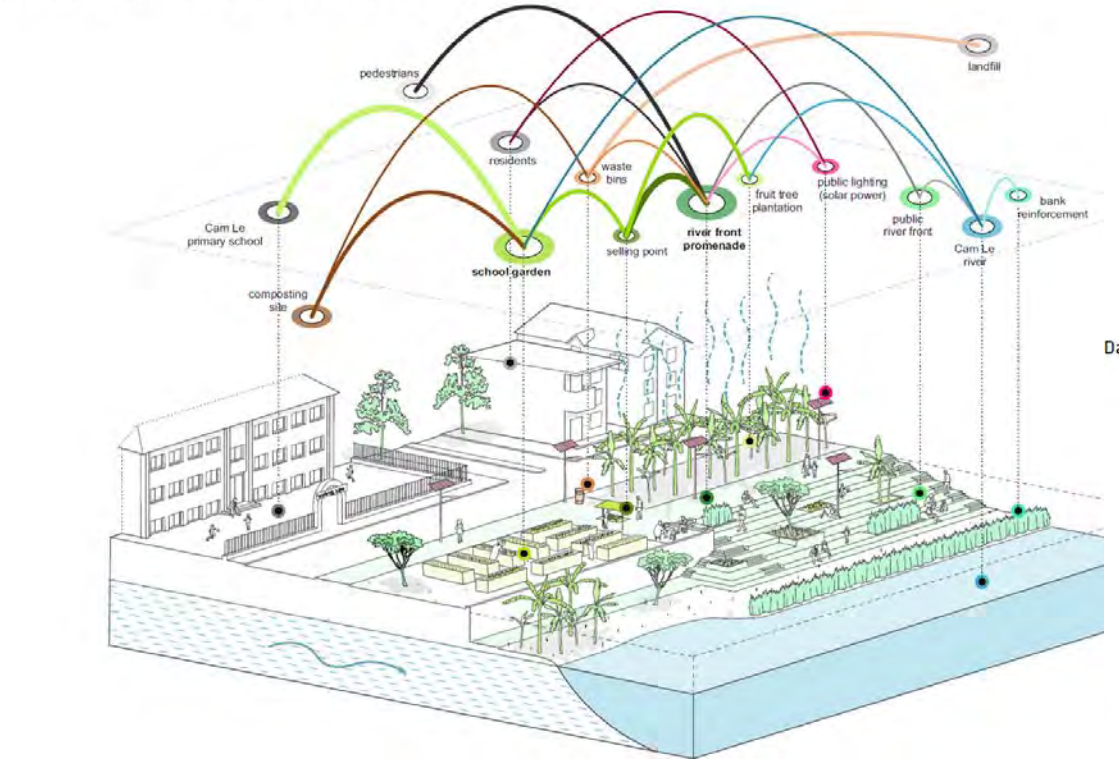
IMPLEMENTATION: AT-VERBAND

COMPOST QUALITY ASSURANCE

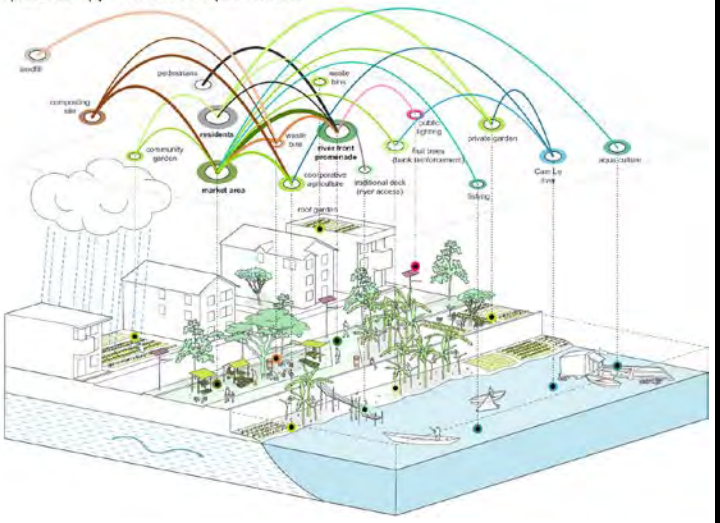
CHO DAU MOI HOA CUONG

ENTRY PROJECT - INTEGRATED RIVERBANK MANAGEMENT IN CAM LE DISTRICT: POSSIBLE APPLICATION OF MODULES

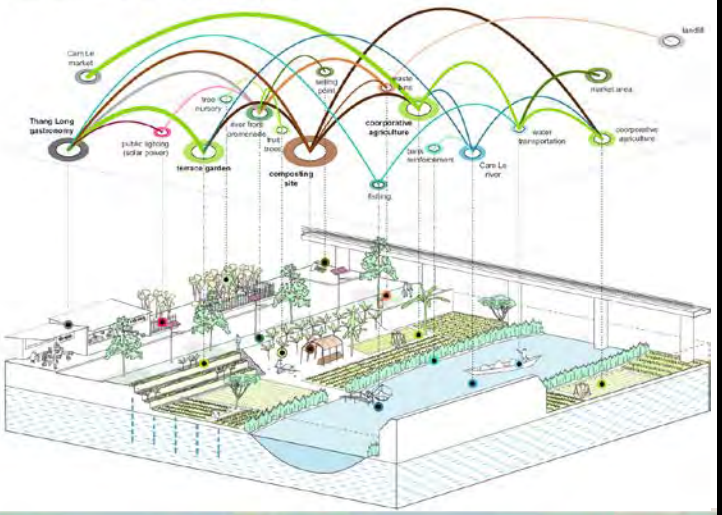
DaNang - possible application ‚public river front'



DaNang - possible application ‚food promenade'



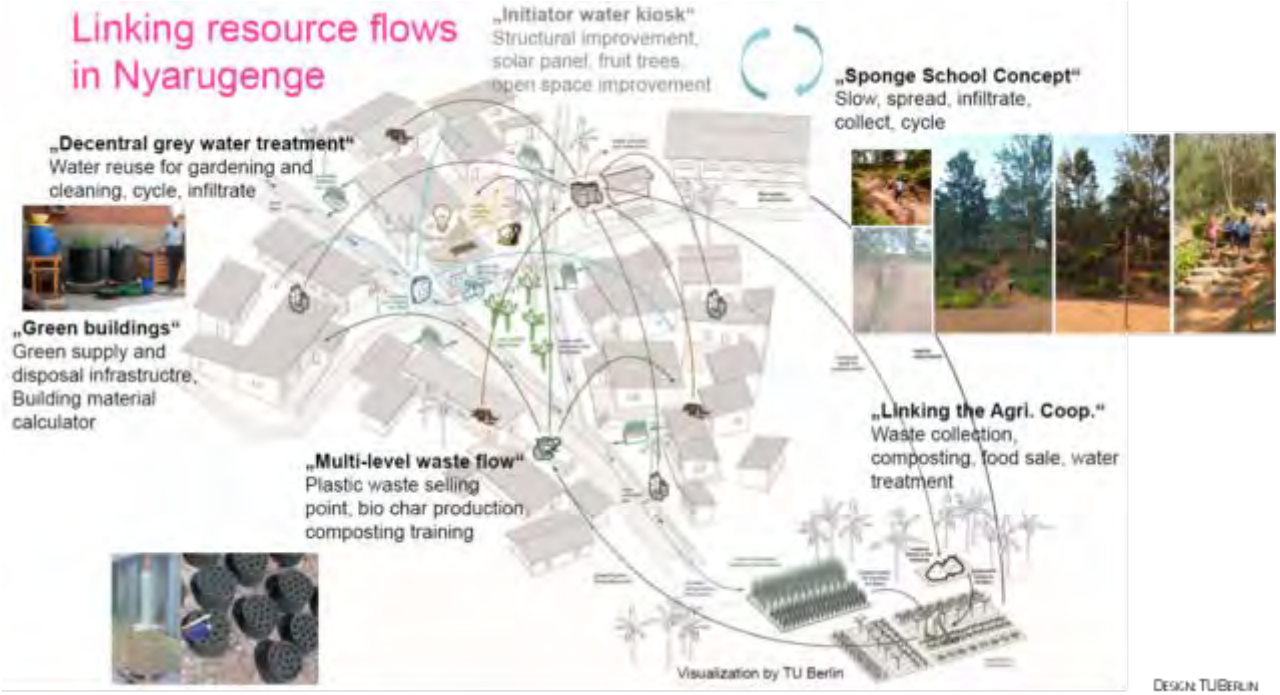
DaNang - possible application ‚river side fields'



DESIGN: TU BERLIN

ENTRY PROJECT

➔ ***Specific presentations during Stakeholder Conference & excursion***



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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

EBERHARD KARLS UNIVERSITÄT TÜBINGEN

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)

b-tu Brandenburg University of Technology Cottbus - Senftenberg

Technische Universität Berlin

WASAC Water & Sanitation Corporation

UNIVERSITY OF RWANDA

UN-HABITAT Vietnam FOR A BETTER URBAN FUTURE

Thank You!
[English]

Cảm On!
[Vietnamese]

Danke!
[German]

Murakoze!
[Kinyarwanda]

Shukran!
[Arabic]

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