Sustainable Development
of Urban Regions

SURE Reference Picture

Status Quo, July 2023

HafenCity University Hamburg
TECHNISCHE HOCHSCHULE LÜBECK
TÜVRheinland®
Precisely Right.

Sustainable Development
of Urban Regions

1 The SURE Reference Picture 3

2 Status Quo of the SURE Reference Picture 7

3 Outlook & Self-Reflection on the Process 9

1 The SURE Reference Picture

The SURE *Facilitation & Synthesis Research Project* provides scientific and organizational support for the overall funding priority of SURE and its ten respective projects. One task is the scientific integration and synthesis of the findings. A central question of this synthesis research is how impacts can be observed in the context of *sustainable development of urban regions*. After all, the intended impacts are embedded in the complex context of global challenges, the transdisciplinary nature of urban and spatial research, and the multi-layered funding priority of SURE that includes ten projects (plus F & SR) across different regions, topics, numerous interventions as well as actors.

In order to approach this complexity, the *SURE Reference Picture,* which represent intended impacts (references) for each project as well as for the overall funding priority were developed. All the Reference Pictures are structured according to the SURE focus topics and show the targeted references as well as the intended ways to get there (*achievements)*. In addition, the achievements were categorized from *intention to program to action*. On a meta level the picture reveals development issues, urban challenges and respectively questions for future scientific research.

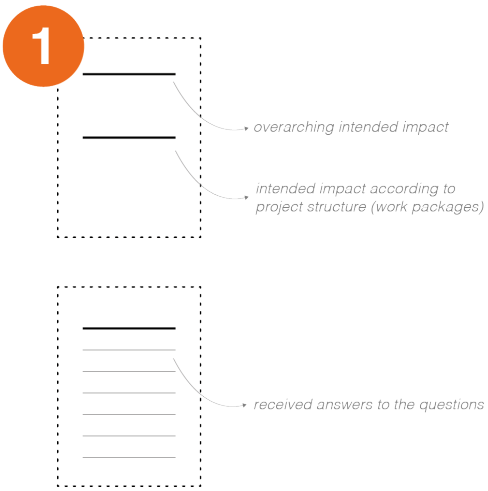
Internally, the SURE Reference Pictures offer the opportunity to continuously reflect the progress towards impact. With the support of the SURE Reference Picture, it is possible to monitor – throughout the whole project cycle – whether specific references can be achieved or have changed and may need to be adjusted. In this way, it is possible to intervene during the process in a purposeful manner and, for example, to reinforce certain activities.

Externally, the SURE Reference Picture represents a way to locate the SURE funding priority on the international stage. For example, the reference picture can be used to identify in what way and depth the *Sustainable Development Goals* are addressed.

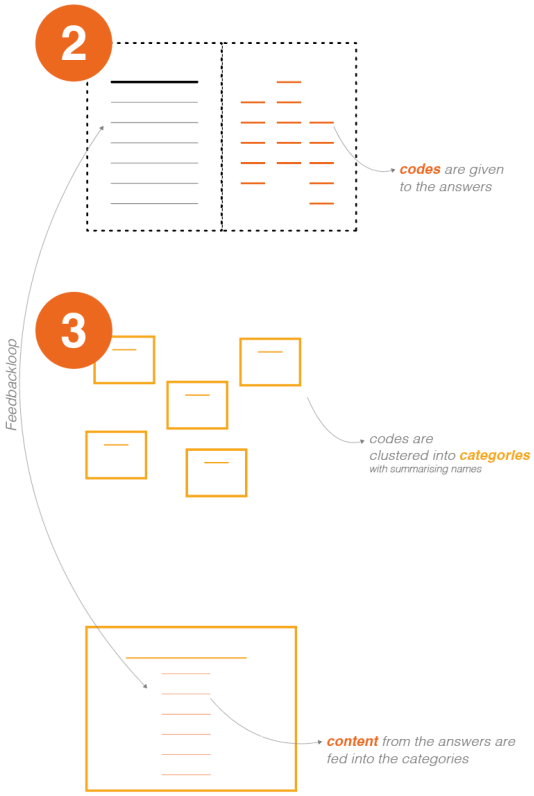
Based on the identified references, the SURE *Facilitation & Synthesis Research Project* is currently developing tools to establish and support an individual culture of reflection (SURE Toolbox, coming soon).

Development of the SURE Reference Picture

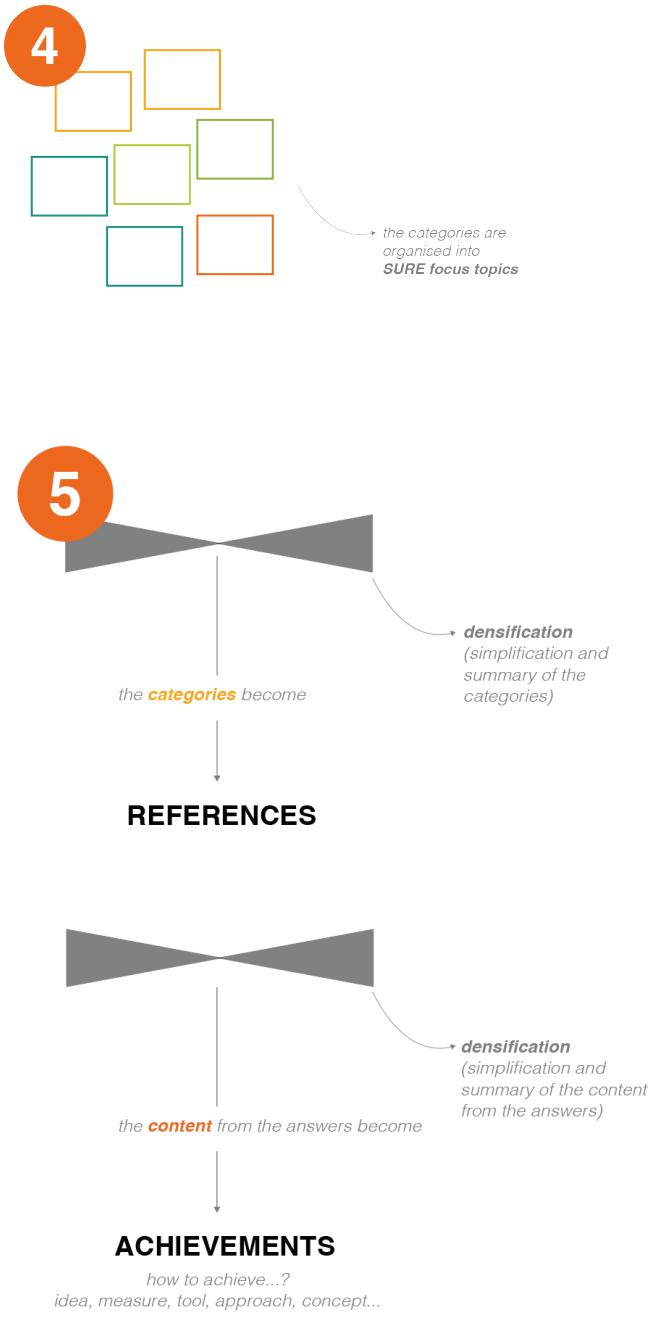
In general, the Reference Picture is based on the *Questionnaire on Intended Impact* answered by the SURE projects (summer 2022). Using the *Grounded Theory*, these answers have been analysed in a multi-stage coding process. The Grounded Theory is a qualitative research method that uses a systematic set of procedures to develop an inductively derived, object-anchored theory about a phenomenon (e.g. Corbin, Juliet; Strauss, Anselm (1996). Grounded Theory. Grundlagen Qualitativer Sozialforschung, p. 8). The development process of the Reference Pictures is shown below:



The **first step** consisted of receiving and previewing the answers by every project received through the *Questionnaire on Intended Impact* (summer 2022).



In a **second step**, codes were assigned to the answers given by the projects. **Step three** involved clustering the codes into categories. In multiple feedback loops the answers from the questionnaire were fed into the categories as well. This verified that the assigned categories still make sense after the simplifications. After this verification, they became *superordinate* categories, which were filled with content of the questionnaires.



In the **fourth step**, the categories were organised into the 6 SURE Focus Topics.

The **fifth step** contained several densification processes, in which the categories were simplified to build references (summaries of the categories). The references derive directly from the project team's answers of where they want to achieve a positive change and can therefore be seen as the self-set impact goals of the SURE projects. The detailed answers how or by what the projects aim to achieve impact were simplified as well and are listed as achievements. For the development of the SURE Reference Picture for the funding priority the individual references from the individual projects as well as achievements were summarized and condensed in several loops.

Figure 1 *Development of the SURE Reference Pictures (own illustration)*

Achievements help to reach the respective references and are based on their nature clustered into intention, program, or action. This gradient from intention to program to action is represented through a gradient from dark to light colour (see figure 2).

Intention: Achievements that are an *idea* or a *support* belong to the class ***intention*** (example: strengthening the academic learning partnership for structural transformations of urban-rural regions).

Program: Achievements that can be understood as *measures*, *concepts* or *strategies* are considered as the class ***program*** (example: development of concepts for water-sensitive development).

Action: Concrete achievements such as *labs* or *tools* fall into the class ***action*** (example: flood risk maps highlighting the most vulnerable infrastructure).

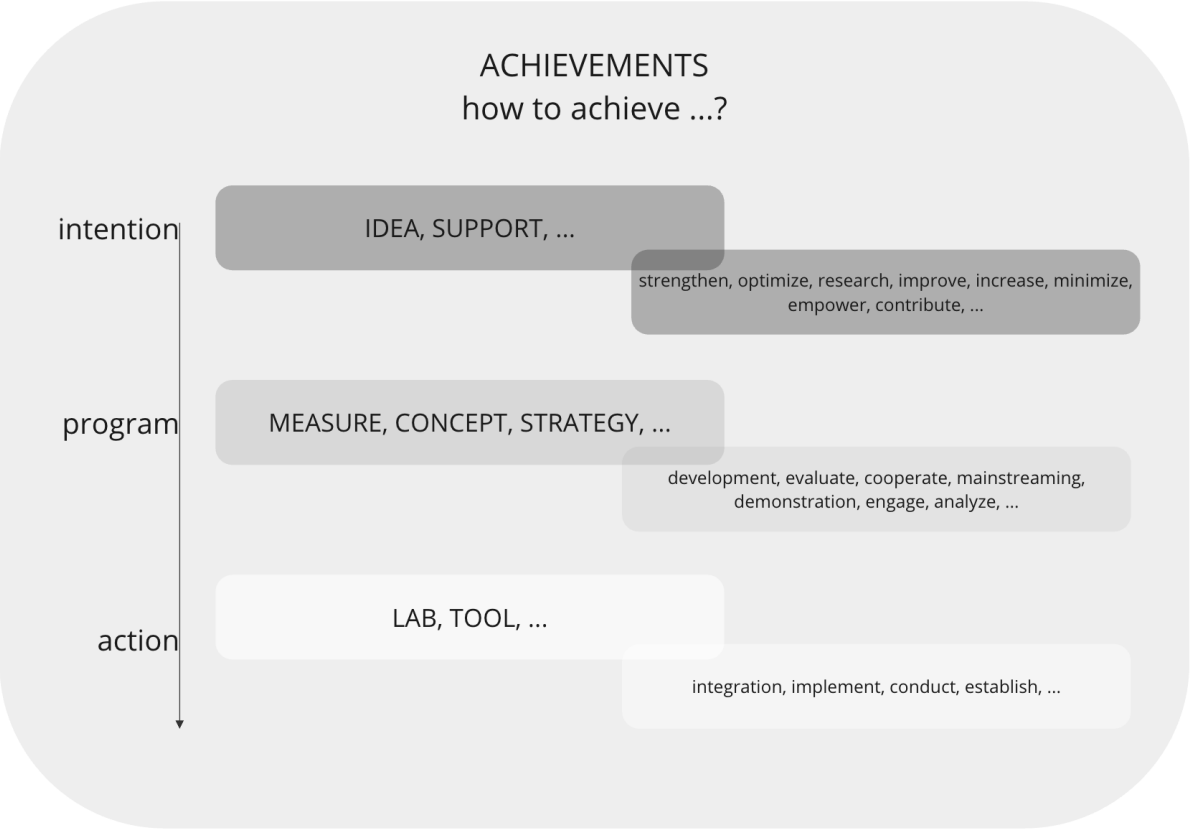


Figure 2 *How to achieve…? (own illustration)*

Following the outlined procedure, 1) an overarching Reference Picture for the entire SURE funding priority, and, 2) individual Reference Pictures for each of the SURE projects were developed. The latter were discussed in peer-to-peer meetings with the respective SURE projects and then reflected upon, adapted, and modified again. Based on the changes made to the individual Reference Pictures of every SURE project, a modification of the SURE Reference Picture for the funding priority was made. The current state of the overall SURE Reference Picture (July 2023) is presented in this document (see part 2).

2 Status Quo of the SURE Reference Picture

On the next page the SURE Reference Picture as it appears in July 2023 is illustrated. Changes to the December 2022 (before the modifications made during the peer-to-peer meetings) status are marked (◆). In this regard, it is also important to emphasize that even this current version is neither final nor static, but constantly evolving to account for the changing nature of critical reflection processes.

FOCUS TOPIC

INTEGRATED PLANNING & DEVELOPMENT

INTENDED REFERENCE

urban resilience

- strengthening the resilience of the city to climate change impacts
- strengthening the resilience of the city to environmental changes
- integration of climate change impacts & environmental changes
- development of a vision, an urban strategy
- development of recommendations & measures for climate change adaptation
- development of impact assessments to assessing the impacts of land use change
- greening the energy usage
- integration of climate change concerns into the existing legislative and policy frameworks
- creating a methods package (toolbox)
- tools for the evaluation of possible future of urban development/realization of land use changes

INTENDED REFERENCE

need-based planning

- optimized planning processes
- contemporary & demand-oriented urban planning
- development of benefit distribution maps
- development of strategies & plans
- integration of recommendations into current & future strategies

INTENDED REFERENCE

participatory transformation

- empowerment of the local government's capacity (local level)
- strengthening citizen participation
- increased awareness of need for close cooperation with local actors
- increased awareness of need for practice and implementation-orientation
- investigate the modus operandi of planning
- demonstration of added value of strategic, participative & future-oriented planning as an effective policy tool
- demonstration of benefits of participation in the development of new planning tools
- demonstration of economic potential of integrative planning
- development of a conceptual framework for inclusive transformation processes
- development of an implementation plan of concrete pilot projects & interventions
- development of integrated implementation strategies
- adaption of the Roambild-planning approach
- development of interdisciplinary conceptual tools
- engagement of practitioners, decision-makers and local stakeholders
- development of integrated, participative transformation scenarios
- development of a joint vision
- support the formation of networks and coalitions by local nuclei from the sustainable building sector
- establishment of participative planning platforms
- concept & implementation of a public exhibition on the regional development vision
- conducting a system analysis
- conducting participatory workshops
- establishment of living labs
- establish a joint learning system

INTENDED REFERENCE

sustainable neighborhood development

- strengthening the resilience of neighborhoods & settlements
- integrated approach
- human-oriented, participatory approach
- improvement of the housing and living environment
- development & improvement of the quality of public spaces
- cooperation with local implementation partners
- establishment of living labs (with implementation partners)
- implementation of criteria for sustainable neighborhood development in regulatory frameworks

INTENDED REFERENCE

urban sustainability & urban quality of life

- strengthen & implement sustainability on site
- reframing urban development to being a means to mitigate climate change
- sustainable transformation management
- improved understanding of the need for integrated urban development approaches
- strengthening people-oriented approaches among local urban planning actors
- reframing cities as a carbon sink
- maintain greenhouse gas emissions stored in the building stock
- capacity building & empowerment
- development of an integrated urban development strategy for thermal comfort improvements
- development of a curriculum for university courses
- conduct a demonstration project

INTENDED REFERENCE

transformation of informal settlements

- strengthening resilience, reducing social vulnerability
- risk minimization for residents
- improvement of local solutions & approaches
- upgrading and resettlement of informal settlements
- development & testing of solutions for the resettlement of vulnerable informal settlements
- development, testing & application of solutions for the upgrading of vulnerable informal settlements
- (extended) modeling of risk trends with resettlement and upgrading options
- (further) development of the urban growth model with urban morphological aspects
- researching selected best practices pilot cities & successful policies
- livelihood study adapted to multiple hazards
- application of solutions for the upgrading of vulnerable informal settlements
- application of solutions for the resettlement of vulnerable informal settlements
- application of scientific findings into policy advice
- conducting household studies

INTENDED REFERENCE

harmonised urban-rural planning policies

- initiation of integrated, sustainable & inclusive transformation processes
- demonstration of added-value of local actor participation
- development of guiding principles for strategic urban-rural planning
- development of tools for strategic urban-rural planning
- development of a technical urban-rural planning governance toolkit
- conducting science-policy dialogues
- conducting capacity building workshops with local government officials

INTENDED REFERENCE

references & reflection

- fostering self-reflection
- learning from experiences & generate implementation potential
- elaboration of references
- highlight the intended impact of the funding priority
- validation of findings & results
- development of a model for impact monitoring
- development of a reference & reflection framework
- establishing a culture of reflection
- tools for reflection
- project specific impact frameworks
- present the intended impact in holistic manner
- reference picture for the SURE funding priority
- project specific reference pictures
- applying tools of reflection in the SURE context

FOCUS TOPIC

ECOSYSTEM SERVICES & NATURE-BASED SOLUTIONS ·

INTENDED REFERENCE

resilience of ecosystems (ES)

- expansion & qualification of systems for climate change adaptation
- protection, improvement & increase/ enhancement of urban ES & their ES services provided
- contribution to the improvement of air quality
- improving the understanding for ecological challenges
- identification of barriers & opportunities for potential hybrid & ES-based solutions
- recording & evaluation of individual ES services
- preparation of impact assessments for the evaluation of heat adaption measures
- preparation of impact assessments for the evaluation of air quality
- development of a comprehensive plan of concrete pilot projects & interventions
- development of integrated implementation strategies
- identification of synergies and trade-offs between single ES services
- development of ES specific indicators
- adaption of established methods for the assessment and evaluation of ES & supplementation with innovative assessment and evaluation approaches
- analysis of case studies at district and sub-district level (hazard)
- implementation of ecosystem service concepts in green infrastructure planning
- integration of ecosystem-based approaches into flood risk management
- GIS-based approach for integrated & spatial ecosystem services assessment of hard and options
- development of a GIS- based toolbox for spatially explicit assessment of multiple ES

INTENDED REFERENCE

nature based solutions

- strengthening resilience through nature-based solutions
- increased understanding of potential impacts of nature-based solutions
- air quality improvement
- adaption & implementation of measures & policy recommendations for green blue infrastructure development
- development of nature-based solutions for climate adaption
- creation of scenarios of future urban developments
- establishment of labs as a place for information & exchange
- implementation of an exhibition with multimedia & digital elements
- implementation of events for the exchange of experience & knowledge
- elaboration of target group-specific education & information materials

INTENDED REFERENCE

green-blue infrastructure (GI)

- understanding practical GI planning conditions
- enhancement of existing GI and enable local planners
- understanding practical GI planning conditions
- nature of current quality explicit in planning goals, challenges & barriers
- support of local decision-makers
- integration of ecosystem services in all planning phases
- adaption & implementation of measures & policy recommendations for green blue infrastructure development
- implementation of GI service concepts in green infrastructure planning
- use, planning, implementation of green-blue infrastructure
- development of a method package for spatial planning of green infrastructure
- application of scenarios for the spatial planning of green infrastructure
- GIS-based toolbox for spatial planning of green infrastructure
- development of manuals & tutorials for spatial planning of green infrastructure
- implementation of master plans at sub-district level
- conducting an exhibition with multimedia & digital elements
- elaboration of target group-specific education & information materials
- establishment of labs as a place for information & exchange
- assessing the impact of different pathways of possible future urban development
- supporting further development of GI planning conditions through a toolbox application

INTENDED REFERENCE

water use patterns

- understanding local capacities for the construction of IS infrastructures
- understanding the local context for example existing wetlands and - solutions
- evaluation of urban development dynamics
- analysis of water use patterns & water-related vulnerabilities
- identification of possible hybrid and nature-based solution
- development of tools for analysis
- conducting living labs
- development of a guideline for hybrid and nature-based solution

INTENDED REFERENCE

transferable solutions & implementation

- fostering solutions for the preservation of resources
- ensuring the implementation of innovative, transferable solutions

INTENDED REFERENCE

agricultural processes

- integration of circular economy, nature-based solutions & integrative planning
- development of approaches to circular economy pathways of nutrient & water products
- development of scalable utilization concepts to enhance material & nutrient circulation
- development of guidelines for nature-based & multi-functional farming
- development of guidelines for suitable, feasible & environmentally-sound agricultural practices

FOCUS TOPIC

RESSOURCE EFFICIENCY & MITIGATION

INTENDED REFERENCE

preservation & improvements of buildings

- maintaining existing usages
- preservation of traditional buildings
- preservation of buildings by maintaining their usage
- indoor comfort improvements
- relieving vernacular houses of climatic pressure
- relieving traditional houses of development pressure
- limiting use of primary energy
- bridging past & future in the process of urban development
- maintenance of heritage value in hot & humid climate
- empowerment of academics
- limiting of monetary/ cost
- strategies for old, wooden, residential houses
- integrated urban development strategy (thermal comfort improvements)
- development & improvement of natural (building)-materials
- integrated urban development strategy for indoor comfort improvements
- evaluation of hypothetical impacts of a set of recommended solutions to improve thermal comfort
- design & implementation of integrated, economically sustainable solutions
- establishment of a basic model for the evaluation of thermal & indoor comfort

INTENDED REFERENCE

sustainability in the building sector (new construction)

- construction of sustainable buildings
- transdisciplinary co-production of knowledge
- understanding of prevailing (urban and regional) characteristics in the context of the building sector
- coalitions through front-runners from the building sector
- development of a transition agenda
- development of a transition governance approach
- adaptation of guidelines and certificates for green building to core features & political processes
- identification of front-runners
- implementation of a sustainable building roadmap
- solid cooperation with local stakeholders
- development of technical engineering criteria
- conducting sustainable building arena
- conducting sustainable building incubator

INTENDED REFERENCE

sustainable, water sensible urban transformation

- (re)generistic approaches to urban water management
- mitigation of hazards strengthened by climate change
- systematic, water-sensible urban transformation
- management of urban water resources
- polycentrical management
- resolve environmental-economic conflicts (e.g. water-settlement relations)
- improvement of water-related services of public interest
- reducing pressure on urban water resources
- development of visions, urban mission statements & scenarios
- rating of the relationship between water & urban development dynamics
- analysis of water use patterns
- analysis of water-related vulnerabilities
- concepts for a water-sensitive & resilient urban development
- development of new multi-stakeholder cooperation structures
- development of a positive-oriented research network (expansion/management of urban water resources)
- development of a new regulatory-political environment
- tools & instruments for future-oriented strategic urban planning
- implementation of strategic pilot projects
- implementation of living labs

FOCUS TOPIC

RISK MANAGEMENT & RISK REDUCTION

INTENDED REFERENCE

disaster prevention & mitigation

- risk management through spatial planning
- planning-out risks
- linking risk governance & spatial planning
- mainstreaming into disaster management regulations & practices
- mainstreaming into planning processes
- modeling risk trends
- development & testing of disaster management approaches
- fostering disaster risk through spatial planning for settlements, infrastructure & ecosystems (e.g. development of a catalogue of risk mitigation planning & preliminary) mechanisms
- technology & knowledge transfer to farmers and disaster-related, training & practice of the learned principles
- supporting decision-making on the level of pilot sites
- supporting decision-making on the level of policy-making
- implementation of living labs
- implementation of a PhD-program
- implementation of training courses

INTENDED REFERENCE

disaster preparedness & response

- strengthening the resilience of the civil society
- provision of knowledge
- inclusive, cultural sensitive risk prevention programmes for civil society
- involvement of volunteers
- analysis of the use of digital media & apps for disaster response & preparedness
- conception of operational precautions for economics
- business-continuity-strategies
- development of educational preparedness programmes

INTENDED REFERENCE

flood & disaster risk reduction & risk transfer

- identification of risk reduction, risk transfer, adaption on demands & solutions
- optimized strategies, plans & planning processes
- development of a multi criteria evaluation catalogue
- definition of an enabling environment for risk transfer solutions
- implementation of risk transfer solutions
- refinement of a portfolio of potential risk reduction options, risk transfer & financial solutions
- integration of recommendations into current & future strategies
- conducting regional best-practice workshops
- conducting workshops on risk transfer solutions
- implementation of public & private insurance initiatives
- conducting geodata analysis, earth observation, risk & vulnerability assessment
- conducting risk preparedness workshops
- risk profiles

INTENDED REFERENCE

build-back-better strategies

- fostering lessons learned from post-disasters (Covid-19)
- identification of formal & informal networks before & after covid
- establishment of an exchange platform of future-oriented, innovative business models (Covid-19)
- concepts for implementation

INTENDED REFERENCE

flood risk management

- analysis & simulation of future flood risk
- developing impact-based flood risk maps (infrastructure assets & natural systems)
- developing distribution maps on advance urban planning & disaster risk management
- develop cost-benefit rankings for different adaption measures
- sensitizing decision-makers for natural risks
- student research projects on topics of flood risk management
- development of guidelines
- implementation of adaption measures into future development strategies & plans
- integrated measures into legislative & policy frameworks
- conducting regional best-practice workshops
- tool for cost-benefit analysis of measures
- risk preparedness workshops
- water-risk-check-tool

INTENDED REFERENCE

flood risk information

- cultivate long-term partnerships
- integration of climate change effects & anthropogenic changes
- risk information system (tool)
- tool to discuss planning & future scenarios
- meta-database on risks
- highlighting of best-practice assets & natural systems (e.g. ecosystems) more at risk

· SURE'S (INHERENT) PHILOSOPHY

INTENDED REFERENCE

· facilitation & support

- support of partners & projects to increase the intended impacts
- capacity development, building & knowledge exchange
- highlight synergies between projects and facilitate collaboration
- support in identifying linkages between the knowledge/ any topics in identifying linkages between the knowledge/ any topics in identifying linkages between the knowledge/ any topics

3 Outlook & Self-Reflection on the Process

For the SURE *Facilitation & Synthesis Research Project*, several challenges arise in the process of developing the SURE Reference Pictures. In general, the process of finding the references is complex, as a large amount of information has to be condensed while not losing information. The high number and diversity of given answers results in many codes that are tough to compare and difficult to group in simpler categories. For this reason, it can be that the references seem vague in some cases. In addition, there is the challenge of extracting/ abstracting the overall Reference Picture of the SURE funding priority from the projects' individual Reference Pictures.

Another challenge is the use of both English and German language. Since some of the questionnaires were answered in German, the references and achievements have to be translated into English. Especially in the peer-to-peer meetings, it is noted that some translations need to be adjusted to use consistent terminology.

In the beginning, the questionnaires are analysed with the help of Grounded Theory and by paper and pen. This involves the risk that not all information is recorded in detail, and some is overlooked. As a consequence, from today's point of view, a certified software would ease the coding process. On the opposite, the methodology of analogue work is very close to the material, which results in a high level of knowledge among the analysts. By having at least two people review and analyse each material, the assignment to categories and simplifications are done in double check. The numerous feedback loops and discussion sessions, in which fitting terms, references and structures are developed, prove to be particularly helpful. This intensive work leads to finding terms that simplify the complex SURE Reference Pictures in its presentation and still represent the intended impacts (to a certain extend). Even if this abstraction leads to general references, this is necessary in order to create an overall SURE Reference Picture, which illustrates the intended impacts of the whole funding priority. Therefore, the coding process – following the Grounded Theory – allows for open and unbiased assumptions. The strength of this procedure can thus be seen as a *learning while doing*, in which codes, categories, references and achievements are developed from the material and thus tailored precisely to it.

In summary, the SURE Reference Picture shows the intended references of the whole funding priority and is not to be understood as static – it can evolve parallel with changing references and intended impacts. Since the SURE projects operate in complex urban environments and deal with multiple issues, conditions may change rapidly, to which SURE projects may lead to changes in references.

At the same time, the Reference Picture acts as a mirror for self-reflection through which *different aspects* can now be seen in a *different light*. For the purpose of reflection, the *SURE Facilitation & Synthesis Research Project* develops methods and tools (SURE Toolbox) as an offer to support, among other things, self-reflection processes which can be applied to the picture. The SURE Toolbox will be published in autumn 2023.