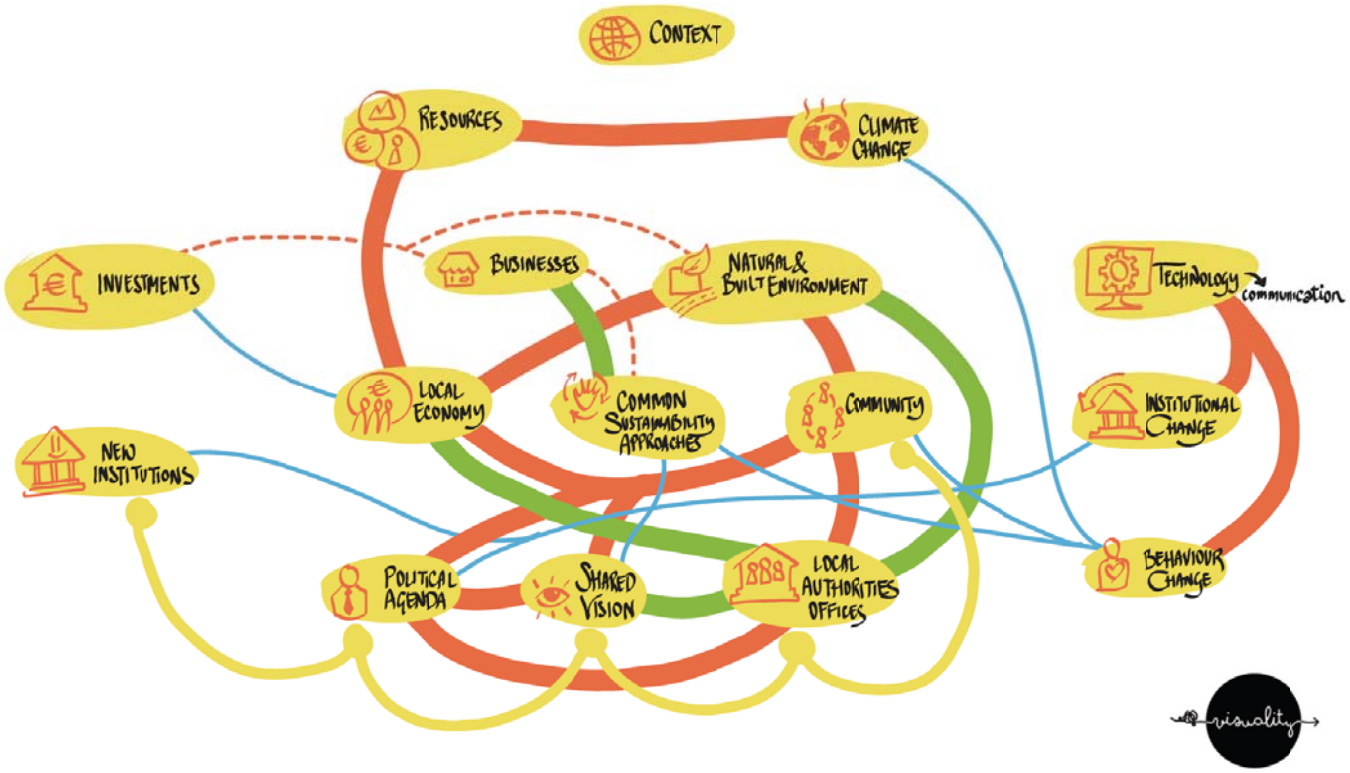
TURAS

TRANSITIONING TOWARDS URBAN RESILIENCE AND SUSTAINABILITY

INTEGRATED TRANSITION REPORT



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TURAS

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Executive Summary

Transition towards more resilient and sustainable urban futures can only be successful as an integrated undertaking. Within the scope of TURAS, Work Package (WP) 7 aims to reframe and combine local research undertaken in WP 1-6 towards knowledge that is applicable outside the original geographical locations and beyond the duration of the original research project.

WP7 activities are thus focused on the development of **"Integrated Transition Strategies"** (ITS), which reorganize and structure the output of TURAS research into larger transferable entities while developing and applying a guiding conceptual framework.

This **Integrated Transition Framework** draws on a diverse set of conceptual foundations in resilience and transition management research, with strategic spatial planning (SSP) being its main frame of reference. Termed "Integrated Transition Strategy" (ITS) or **"4Corner"-Framework**, it is oriented along the four basic steps of SSP and consists of four main modules defined as **System** or "creating systemic knowledge", **Vision** or "developing shared visions", Strategy or "developing adaptive strategies" and **Project** or "implementing pilot projects".
It integrates the descriptive analytical concept of resilience with the normative concept of sustainability and has been developed to inform a planning approach that encourages transition.

As a first step towards integration, WP7 developed and applied a methodology that would allow for a translation of **research on and for specific locations** to **applicable products for generic locations**. During the course of WP7 activities, separable units of research activities (called **"Activity Units" or ACUs**) were first identified by the academic partners and then re-packaged and structured according pre-defined categories informed by the 4Corner framework and provided by WP7.

The resulting **"Catalogue" of ACUs** aimed at providing an overview of implementable TURAS output. Each ACU contains information related to the underlying challenging urban situation addressed by the activity, the visions it corresponded to, needed resources, details on implementation and the main contact person. In the long run, WP7 aims to supplement this basic information with additional content such as **expected resilience trade-offs and long term sustainability impacts**.

Parallel to the translation of specific research outcomes into generalized, transferrable and cross-locational content, a second strand of WP7 activities sought to facilitate the generation of localized strategies that would integrate, apply and test TURAS output. To this aim, the Integrated Transition Strategy (ITS) framework was used as a tool to guide (TURAS) cities through a process of developing their own localized transition strategy, referred to as **City Integrated Transition Strategy (City ITS)**.

The creation of individual City ITS's was employed in order to identify connections and establish **generic links** between a complex set of urban challenges and available Activity Units (ACUs) for any given city. At the same time, City ITS Development also presented an intermediate step towards the development of **individual city narratives** that serve to capture

and disseminate local transition experiences and tacit process knowledge generated in TURAS locations.

As a next step, relationships between urban challenges and Activity Units will need to be strengthened and related to a generic approach that can be easily understood, interpreted and applied by cities outside and beyond TURAS. WP7 thus suggests the development of integrated topical strategies, (so-called "**Starter Projects**") that combine relevant applicable ACUs within the 4C framework.

Ultimately, combining an easily accessible choice of generic but thematically integrated transition strategies with individual localized transition narratives presents a new and distinctive approach to **transition knowledge management** that will be further developed and elaborated in collaboration with local TURAS partners in the course of upcoming WP7 activities.

1. Introduction

Transition towards more resilient and sustainable urban futures can only be successful as an integrated undertaking - in terms of urban stakeholders, in terms of sustainability domains, in terms of urban systems, in terms of urban (policy) issues and in terms of the context in which the urban-regional agglomerations are embedded.

1.1 Scope of this document

Work packages (WP) 7 activities are focused on the development of "Integrated Transition Strategies" (ITS), which combine the output of TURAS research undertaken by WP 1-6 into larger entities while developing and applying a guiding framework (Integrated Transition Framework). The herewith related tasks to which this document refers are "T7.1 Identification of synergies between WP2-6" and "T7.2 Demonstration of Integrated Transition Strategy in TURAS partner cities".
This document reports and reflects on the activities executed under these tasks and reports on the related milestones "MS38 Transition Strategy Workshop" and "MS39 Circulation of Transition Strategy". Finally, it makes the connection to the third WP7 milestone "MS40 Publication of Transition Strategy" and the second WP7 deliverable "D7.11 Final Transition Guidelines" by outlining the next steps towards and the expected nature of this deliverable.

While WP7 activities are classified as "demonstration activities", basic research in terms of theoretical and conceptual frameworks as well as applied research on feasible methodologies for urban-regional authorities, agencies or institutions was necessary in order to fulfil the above tasks. However, these research activities and their outcomes and findings are not in the focus of this report. They are summarised in this introduction and are in the remainder of the document only referred to as far as the respective information is needed in order to understand the (past and up-coming) work process as described in this report.

This report covers the first phase of WP7 which concentrated on the development of a local version of an "integrated transition strategy" in each TURAS cities. This activity was undertaken in order 1) to **test a first version of a framework** that can "guide non-partner cities through the development of their own transition strategies based on TURaS outcomes" (DoW, p.32); 2) to **test the output of WP1-6** in another TURAS city; and 3) to **transfer knowledge** between different TURAS partners. The resulting **"city ITS" documents** are the main output of this phase, and this document aims at providing relevant background information. The documents themselves are accessible via the links provided in the Appendix of this document.

1.2 General role and objectives of WP7 in TURAS

In TURAS WP7 objectives evolve around the demonstration and integration of research output. This includes issues of knowledge transfer ("learning") beyond the original geographical location and stakeholder settings, as well as issues of integrating output in order to create new synergies ("innovation"). In a more classical understanding WP7 can be framed as the synthesis work package of TURAS, whereas concrete activities are strongly influenced by the concepts of "resilience", "sustainability" and "transition" as well as a focus on strategic urban-regional planning.

'Spatially applied resilience at the moment is perceived being strong on the political agenda but weak in terms of a secured academic basis as well as application, implementation and finally evaluation. This is especially true for the holistic inter- and transdisciplinary concept of "urban" resilience. Nonetheless, it is perceived as replacing "sustainability", often used interchangeably or even as opposed to old-fashioned "sustainable development" approaches.
In TURAS WP7 was set in place to close several of these gaps, combining (or integrating) top-down and bottom up approaches, scientific knowledge and practice, discipline and discipline, quantitative and qualitative research, and sustainability and resilience.

Beyond general goals of EU research such as research demonstration and application of research for innovation, at the end of our journey (*irish:* turas) WP7 specific objectives are
…to develop and apply a framework which integrates top-down and bottom-up approaches of different stakeholders within this project;
…to reframe research towards applicable knowledge for the transition of our society towards more sustainable trajectories;
…to come to one project "narrative", which means we all have to "travel" together even if our scope for looking at the passing-by "urban environment" will be a different one;
…to have an interesting, plausible story – about the journey as well as concrete activities – that other EU cities are begging to hear.'
(Excerpts from the WP7 presentation of the 1st TURAS annual meeting)

1.3 General approach and methodology

Proposed starting point was the definition (top-down) of urban space as an "agglomeration of operations of service networks building a stabilised environment for human means". Resilience and sustainability are primarily properties inherent in these systems describing their behaviour. They share the notion of stability, but they refer to different types of stability. Further developed into "paradigms of planning" they imply two different, sometimes even contradicting types of behaviour. All activities in TURAS aimed at "improving" the urban (stabilised) space while negotiating between competing interests by taking on a systemic perspective. By identifying synergies and inhibitions on the operational level (bottom-up) the goal was to learn what "planning for and under resilience" can be and how it complements the sustainability paradigm.

Evolving Methodology

Given the 5 year duration of the project and the inherent uncertainties, WP7 followed a modular incremental approach. Embracing a complex adaptive systems perspective with its "learning paradigm", recently gained knowledge was applied to re-view and adjust the ongoing process:

Module 1 was about developing the conceptual basis for defining the key terms WP7 operated with, and how to operate with them in TURAS as a research project as well as in the trans-disciplinary context of strategic urban-regional planning. Main result was a conceptual framework for operating with urban resilience – originally in the context of strategic spatial planning (SSP) and planning theory, but embedded in trans-disciplinary sustainability research ("**resilience framework**").

Module 2 built on these conceptual foundations. Different sustainability and transition related approaches were compared, using strategic spatial planning as frame of reference. Main result was an integrated (conceptual) framework for sustainability transitions in the context of strategic urban-regional planning ("**ITS framework**").

Module 3 drew both from modules 1 and 2 in order to reframe the research activities undertaken under WP1-6. Based on the development distinguishable entities within TURAS research (so called "activity units" (AU)) a methodology was applied to come from "research on" via "research for" cities finally to generic "applicable products". Main result was the homogenised collection of reframed and partially restructured TURAS output in an on-line format called the "TURAS Catalogue".

Module 4 concurred with module 3 and related to both module 2 and 3 with an iterative work process: The module 2 integrated framework was used for developing **local (strategic) narratives** (referred to as City ITS) in order to match the activity units developed in phase 3 with locally diverse situations. The experience of this process re-informed both the phase 2 framework as well as the phase 3 "activity units".

These resulting adjustments will be incorporated into the further development of the Catalogue as well as the city narratives in a second "finalising" phase of modules 3 and 4.

Module 5 aims at the development of a **final framework** for "integrated transition" (ITS framework), informing potential application of TURAS results beyond geographical locations and duration of the original TURAS project ("sustainability of research"). It is expected to manifest itself in three variations according to the three (research) levels WP7 dealt with: Planning theory, trans-disciplinary methodologies and urban-regional planning practice.

Partners involved

WP7 activities involved 23 out of the 28 partners and referred to and worked with content from each of the 6 topical work packages WP1-6. Practical collaboration in terms of co-production was undertaken on the one hand with the stakeholder group of TURAS' Local authority and public institution partners, encompassing 11 local or regional authorities, agencies or public institutions. On the other hand a strong working relationship was established with the leading academic staff of WP 1-6, acting as an interface between WP7 and the highly specialised research fields. This ensured quality control of content as well as efficient management.

1.4 Research perspective

Despite WP7 activities being classified as "demonstration", conceptualising and methodological research was undertaken to fulfil the diverse tasks relating to both the transfer and combination of research output from WP 1-6 and to the development of a framework for the strategic application of this output by public (planning) bodies on an urban-regional level.

In terms of operation, those research activities were taken into account by ITS related budgets, embedded in RTD activities in each of the WP 1-6. As outlined earlier, these

activities are not at the core of this report, but are used selectively in order to support the achievement of the task in WP7. According to the incremental approach outlined above, the focus of interest evolved and related research questions were accordingly developed and adjusted throughout the 5 methodological modules. In the beginning 4 main (topical) "research components" were identified (Figure 1: Excerpt from TURAS WP7_factsheet.pdf), supplementing the "methodological modules".

From an ITS perspective the following challenges and related (research) question are considered as being of interest, even though not all of them were fully adopted by the methodology of WP7 or by another WP at the time of this report.

I In the context of SSP, what is urban resilience and how does it relate to sustainability? (module 1)

- I.1 What **conceptualisation of sustainability** is suitable for linking sustainability transition and strategic spatial planning ("Anschlussfähigkeit")?
  - I.1.1 How is sustainability conceptualised in the context of trans-disciplinary "**sustainability transitions**", how in the context of "**strategic spatial planning**"?
  - I.1.2 How do the conceptualisations of sustainability transitions and strategic spatial planning **relate** to each other?
- I.2 What **conceptualisation of "urban resilience"** is suitable for (operationalisation for trans-disciplinary research and operation in) strategic spatial planning?
  - I.2.1 How is "**urban resilience**" conceptualised in recent literature relevant for urban-regional planning? How is "urbanity" understood in this concept?
  - I.2.2 How is **resilience** conceptualised in (discipline-specific) literature related to strategic spatial planning?
  - I.2.3 How do discipline-specific conceptualisations **relate to and match** with a holistic concept of urban resilience?

Figure 1: Excerpt from TURAS WP7_factsheet.pdf

II How can a transitional (strategic) framework for urban-regional institutional bodies look like? (module 2+5)

- II.1 What is the **common story** that European cities could share? What means "transition" for urban-regional authorities, agencies or public institutions?
  - II.1.1 What are existing approaches dealing with "transition", "sustainability" and "resilience"? How do the related frameworks, if there are any, look like? What are commonalities between them?
  - II.1.2 How do "TURAS projects" relate to this framework?
  - II.1.3 What are commonalities between these local activities in TURAS? How do they relate to "transition", "sustainability", "resilience" and "SSP"?
- II.2 What **kind of framework** is suitable, conceptual or methodlogical?
  - II.1.1 How can the framework show different levels of governance and time scales? How can it mirror the "systemic perspective" resilience brings in?
  - II.1.2 Who will use this framework?

III How can cities integrate research findings into their local context? (module 3+4)

- III.2 What enables **cities** to identify relevant scientific knowledge and take on research output?
  - III.2.1 What knowledge do cities have? What knowledge do they need? How to make hidden local knowledge visible?
  - III.2.2 What structures and processes are relevant for integrating research into urban practice?
- III.1 What makes **scientific knowledge** relevant, "applicable" and useful?
  - III.1.1 How and to what extent can scientific output be re-framed in order to tackle real world problems?
  - III.1.2 How can cities be part in a process of co-production of knowledge?

IV How can resilience be employed in the context of (strategic) spatial planning? (module 1+5)

- IV.1 How can "urban resilience" as a strategic objective be operationalised for urban-regional planning (practice)?
- IV.3 What does resilience as a "new" strategic objective mean for the sustainability paradigm of strategic spatial planning.
- IV.3 What does the employment of resilience mean for (strategic) spatial planning, in theory and in practice?

2. Developing the Conceptual Basis

One of the core challenges in WP7 was to operate between top-down and bottom-up approaches that led to practical tensions such as the need or expectation for „ready-to-use" working definitions on the one hand and the evolutionary bottom-up structure of project on the other hand. The few concepts outlined below are the therefore to be seen as working definitions for WP7, in order to enable "smooth" communication.

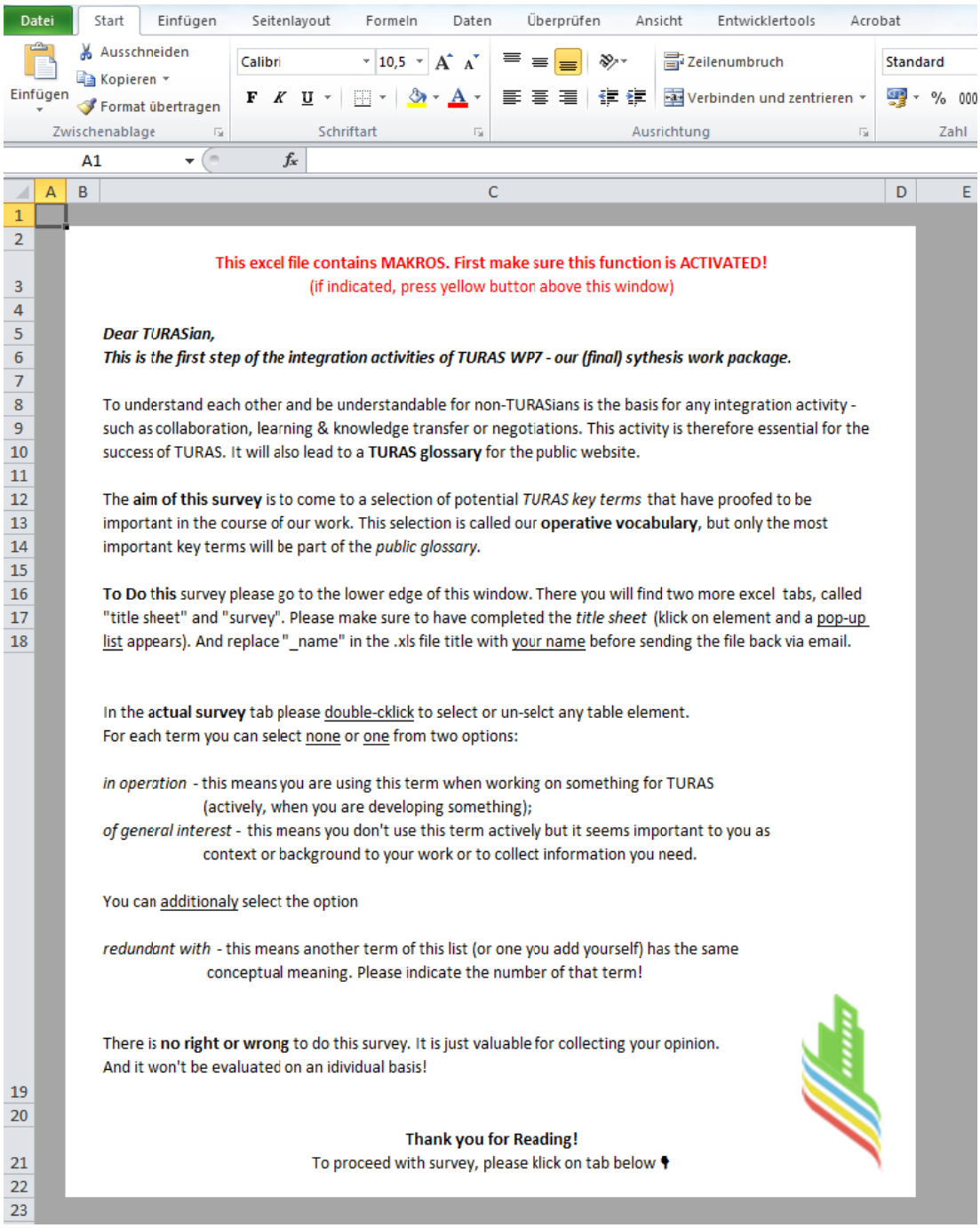


Figure 2: Key Term Methodology - Individual Survey I

2.1 Key Term Methodology

The definitions of the majority of the TURAS key terms are embedded in the "Key Term Methodology" (c.f. TURAS Key Terms Survey_Name), aiming for joint definitions of shared concepts in working groups and finally being compiled into the TURAS glossary on the website. This activity was aimed to improve internal as well as external communication, by identifying and defining a set of the key terms used in TURAS and in the Catalogue. The iterative process started with a survey on an individual level. It was Excel based to ensure high accessibility by all partners (Figure 2 + Figure 3: key Term Methodology – Individual Survey).

No	Potential Key Terms	*The Term is used by you directly for your work in TURAS:* in operation	*The Term relates not directly to your work but is relevant for giving context to your work in TURAS* of general interest	*The term has the same meaning as another term in this list (select No. from pop-up list):* redundant with
19	climate change adaption	yes	yes	
20	climate change infrastructure	yes	yes	
21	climate change mitigation	yes	yes	
22	climate change planning	no	yes	
23	climate-neutral infrastructure	no	yes	
24	closed-circuit systems	yes	yes	
25	cohesion	yes	yes	30
26	collaborative decision-making	yes	yes	
27	collaborative processes	yes	yes	
28	collaborative urbanism	no	yes	
29	communication	yes	yes	
30	community cohesion	yes	yes	25
31	community involvement	yes	yes	
32	community land use	yes	yes	
33	compact development	no	no	
34	complexity	yes	yes	
35	comprehensive urban management	no	yes	
36	connectivity	yes	yes	
37	creative design	yes	yes	
38	cutting edge science	no	yes	

Figure 3: Key Term Methodology - Individual Survey II

The result led to a hierarchically organised selection of terms, the "TURAS operational vocabulary", which established the basis for a project glossary containing the definitions of the most important key terms within TURAS. Further conceptualisations were done jointly in topical working groups. WP7 strives for a browse-able and printable version of the glossary, possibly open to the public for commenting or even editing in the way a wiki is (e.g. http://www.turas-cities.org/wiki/wp7/urban).

2.2 Conceptualisation of WP7 Key Concepts

On space, strategy and strategic spatial planning

WP7 has a rather broad definition of spatial planning that might be different to definitions used in WP2-6: It follows a "relational conception[s] of spatiality" that sees "space not as a container but as something that is dependent on the processes and substances that make it up" (Davoudi und Strange 2009). Based on this definition of space, spatial planning in WP7 encompasses not only management and development of urban sites (space) and built structures but all sectors whose processes (or services) constitute the "urban" (see corresponding paragraph) space: water and food distribution, personal transport, waste management and sanitation, socialisation and culture, health and recreation, telecommunication and power supply, trade and industrial production as well as greening infrastructure and ecosystem-services.
Such defined spatial planning in our understanding becomes finally strategic by its orientation on shared goals or visions (e.g. regional competitiveness, sustainable development, accessibility, economic growth), longer-term and resource-led thinking as well as interlocking of organisational (regulating) and developmental aspects of planning (Vallée 2012). Strategic spatial planning, as used by WP7, is an incremental (stepwise) collaborative process of creating visions and implementing short term action, based on constant analysis and building of consensus.
Using the term "strategy" itself bears a potential for misunderstanding as it can mean: a) the art, skill or methodology of planning and directing operations towards a goal (which in spatial planning encompasses but is not restricted to making and employing plans) or b) the plan of action itself for such an enterprise. To avoid such misunderstanding WP7 avoids the term "strategy" and uses the following terminology: The overarching body of thinking condensed in a certain structure or set of rules for the process of planning (including production of plans) is called a "strategic framework" (see definition a) above); when this structure is filled in, or the set of rules is followed and translated into steps of action, we call the resulting product a "strategic plan" (see definition b) above).
A "strategic plan" is a framework for action. This means: Opposite to a "project plan" a strategic plan is concerned with decisions rather than material; its effect is not determinate but changing with the developing frames of reference; its time horizon is dependent on the problem and not limited to project phasing; the interaction of stakeholders is continuous and cannot stop with the adoption of the plan (Faludi 1973).

Urbanity and urban systems

Generally "urban / urbanity" was framed as a property that describes the status of being in, showing the attributes of or being related to a city or a town. To understand these umbrella terms WP7 looked closely at their connotations. Both derive from the Latin noun "urbs", which means city or town. "Urbs" was also used for the city of Rome itself, the centre and capital of the Roman Empire. Therefore it also connotes a sense of **centrality** – all roads lead to Rome – which again implies intensified **societal interaction** and (if ritualised) **culture** .

Urbanity and cities originate in the moment when nomadic tribes found out about growing crops. This shift from herding (basically the first social-ecological system) to agriculture (the

second social-ecological system) launched a process of emancipation: Being less dependent from the moods and inconvenience of nature.
Rather than following the pasture with the seasons, hay and crops were harvested. And rather than wandering around for water, stand posts were built. Urbanity therefore also connotes **constancy** (or stability over time). But this stored harvest and built facilities were now immobile and therefore in need of protection against enviers. Protection measures were set up (night watch) or built (city walls). Therefore urbanity also connotes **security** (or stability of matters). With the city wall there was an official border, and with the border there was an official urban system. This urban system developed sub- (or lat. infra-) systems. These systems are called **infrastructure systems**. Therefore WP7 uses "urban" as opposed to sectorial or relating to specific urban sub- (infra-) structures.
There can be identified three "sets" of **urban services** which have developed over time until today. The first set of services relates to rigid infrastructure systems: a stable dwelling or a wall for protection. The second set of services relates to mobile infrastructure systems: flows of water, goods, transport or energy. Both sets refer to material infrastructure systems. The third set of services relates to immaterial or virtual infrastructure systems: communication, governance or education. The material and virtual infrastructure systems are sometimes referred to as "hard" and "soft" infrastructure.

WP7 understands the core idea of urban/urbanity as the provision of services for the whole of an agglomeration's civilisation. The modality of these services depends directly on local conditions (endogenous and exogenous), such as culture and external challenges. The services are delivered by the means of various infrastructure systems. The whole (**more than the sum**) of these infrastructure systems is the urban system, and urban services are the outcome of this system.

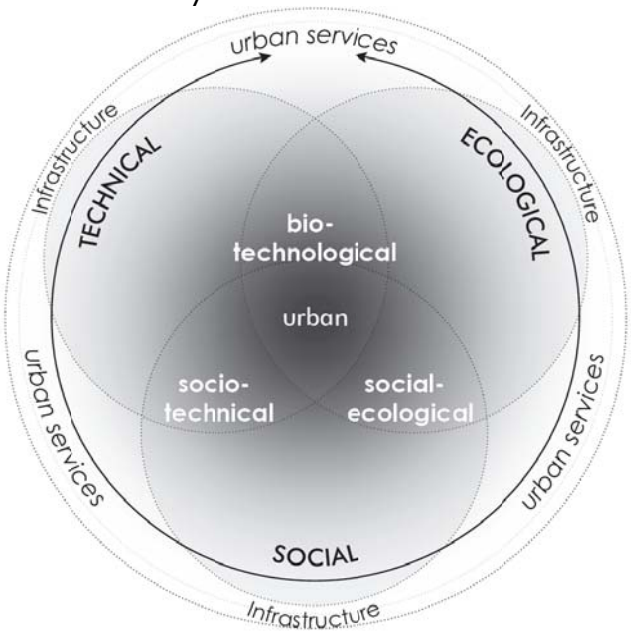


Figure 4: Typology of urban sub-systems
according to similarities of their "resilient behaviour"

Resilience

As already noted the use of the term "resilience" has been wide and diverse. For scientific as well as societal discourse on resilience this is not only true for the number of disciplines (Brand und Jax 2007), but also for epistemological connotations. In other words: Saying

"resilience" some mean *i)* a certain way of human behaviour (e.g. living in a state of self-sufficiency or pursue urban planning according to principles such as diversity or redundancy), or *ii)* a way to view and consider the world (in terms of system boundaries, thresholds etc.), or *iii)* an idealised future state, an utopia of safeguard against a range of current and potential threats (subsumed in metaphors like the "resilient city", the "climate proof city" or the "smart city"), or finally they mean *iv)* the property of a system to react to stress (internal) in the form of a more or less visible process. Obviously these modes of using resilience differ considerably, especially in terms of their more descriptive (what is there) or more normative (how should things be) perspective. And put in practice, this leads to completely different questions and activities.

If this "modal heterogeneity" is now "overlaid" with the formerly mentioned number of different disciplines (and their respective body of knowledge including focus on and conceptualisation of specific systems) it is obvious that there is a huge potential for failing communication – and a huge challenge to come to a shared definition that is working for everyone concerned with "urbanity" (such as in TURAS).

One solution to this dilemma would be to still define "urban resilience" on its own account – by deciding on the extent of its descriptive-normative nature and according to some definition of the "urban" system. But even if one would succeed, such a generic definition could only co-exist with the more specific definitions already in use and would be of little (planning-)practical meaning.

RESILIENCE		=	System property (neutral)			ability (positive)		
	Type:	*[speak]*	***general***	***physics***	***ecology***	***psychology***	***engineer.***	***...***
SCOPE		***„ of "***	system	material	ecosystem	creatures	network	
MECHANISM		***„ to "***	resile	absorb, release	persist	sustain, recover, improve	maintain, provide	
MODULUS		***„ up to"***	constant change of status	plastic deformation	destinction of population	adjustment disorder	insufficient level of service	
CONDITION	internal	***„in face of "***	disturbance	stress	change of stable states	stress	faults	
	external	***[caused by]***		pressure		adverse circumstances	misconfi-guration, attack	

Figure 5: De-composing the Resilience process

Furthermore, "the urban system" consists of several sub-systems of different nature (e.g. ecological, economic, social, technical). As just said, for each of these a specific conceptualisation of resilience is in use, apt to the respective system, and these conceptualisations are apt and justified on their own account but not necessarily compatible with each other (see discussions about engineering resilience vs. ecological resilience) (Holling 2009). As an integrative discipline as well as an applied science, urban planning has to acknowledge and make this diversity of perspectives and needs explicit and operational (see Figure 5: De-composing the Resilience process) rather than disguise possible challenges and trade-offs by a generic yet not well understood (let alone operationalised) definition of "urban resilience" (Davoudi et al. 2012).

In WP7's understanding shared by current scientific discourse (Chelleri et al. 2015) this process is not a matter of top-down theoretical definition or holistic modelling of "the city", but of bottom-up activities (such as in WP2-6) gathering knowledge about the behaviour of various urban sub- (or infra-)systems and especially about their interplay.

For WP7 this led to the following conclusions: On the one hand, an operationalisation of resilience on the overall "urban" level by establishing overarching paradigms for all sub-systems seems **not only difficult but counter-productive** as it hides the always existing conflict of goals and trade-offs between urban sub-systems and also the highly diverse usage of the term by stakeholders of planning practice, which leads to misunderstandings. On the other hand, to assess the systemic trade-offs in a top-down manner looking for one shared metric in order to assess the resulting "urban" resilience leads either to over-simplification that renders the results useless, or to an unmanageable level of complexity.
Knowledge on concrete trade-offs, in order to facilitate learning on systemic mechanism within urban systems, seems the most promising way to go. But the necessary body of knowledge for such an "urban" resilience definition is only to come about. Therefore TURAS aimed to contribute to this undertaking by assessing a) the conceptualisations applied in WP2-6 and b) their interdependencies.

The working definition applied in the meanwhile was using resilience (different to most current definitions in urban planning research) in its narrow definition as the property of a system. It referred to its reactivity to stress (buffer process: absorb-release) based on external forces (pressures). According to the type of the system (see Figure 4: Typology of urban sub-systems) the processes within this system change and therefore potentially also the quality of the related "urban services" (see above) provided by each system.
Resilire (lat. spring back) is an „intransitive" verb, meaning it is self-referencing. There is no object, the system itself allows for this internal process to emerge. WP7 used resilience in its original neutral descriptive sense (material science, early ecology), in order to identify conflicts of interests, that can be identified, described and negotiated – using the means of sustainability always has been positively charged concept.
Urban resilience in this narrow definition was seen as referring to the „urban" system as a whole, including all subsystems. It was acknowledged as a **theoretical construct** but seen as an in-operationable concept in the context of SSP (similar to the „comprehensive planning" efforts in the late 1960ies).

Recognising different conceptualisations this narrow definition is referred to as mode I - systemic property (**system resilience**). Mode I is descriptive-analytical, whereas mode II - analytical framework (**resilience thinking**), mode III – paradigm of action (**resilience approach**) and mode IV - political concept (**resilience metaphor**) share an increasing normative dimension. The modes of resilience are not seen as absolute instances but relative concepts on a descriptive-normative scale. (see Figure 6: Modes of resilience)

RESILIENCE

	SYSTEMIC DIMENSION		ecological	psycholog.	technical	social	econom.	organis.	...
	MODES								
	political concept:	Resilience Metaphor		x	x	x			
	paradigm of action:	Resilience Approach	x		x	x		x	
	analytical framework:	Resilience Thinking	x	x		x	x	x	
	system property:	Resilience	x					x	

Figure 6: Modes of resilience

Sustainability

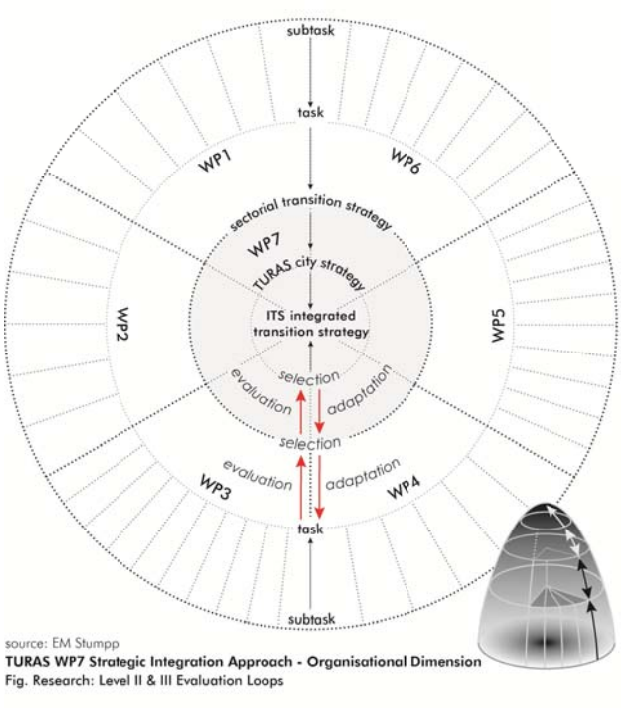
While the conceptualisation of resilience for the project context proved difficult, WP7 felt comfortable to take on an existing conceptualisation for sustainability, resp. sustainable development, developed by the Hermann-von-Helmholtz-Gemeinschaft of German Research Centres (HGF) (Jörissen et al. 1999). This conceptualisation did not only strive for stronger (operational) integration of the three classical dimensions. Furthermore, it included a fourth "institutional" dimension, which mirrored WP7's (systemic) understanding of planning being a crucial component of the issues at hear, rather than being an external facilitator.

The "Integrative Approach to Sustainable Development" was based on the well-known Brundtland-Definition. It operationalised sustainability in the ecological, social, economic and additionally institutional dimension by "projecting" three overarching goals on them rather than sticking to their limited perspectives: 1) ensuring human existence, 2) preserving the potential of society for productivity and 3) retaining possibilities for development and action. The results are operationalisations in the shape of "rules", both of the general goals as well as of the individual dimensions (transmitting their proprietary logic).

Generally WP7 framed sustainability on this conceptual level as an axiom (indisputable principle) of strategic planning, and sustainable development as part of its "task description".

Integration

In the planning context of WP7 integration is an umbrella term, a very wide concept which entails all kind of activities of putting various components and categories of planning and of on-going research activities in relation to each other.



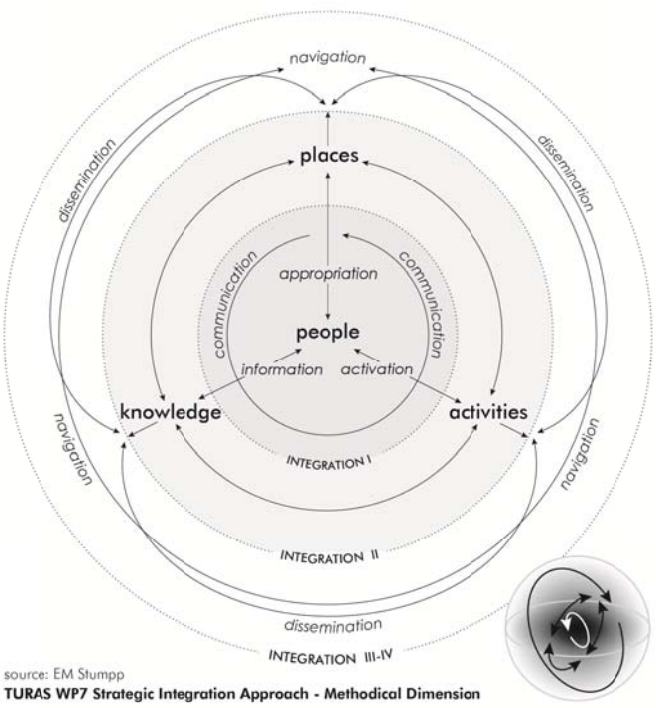


Figure 7: Modes of integration in TURAS
a) organisational integration
b) strategic and operational integration

For the transition related activities pursued in WP7 three modes of integration have been identified: **organisational** - interaction in form of communication and collaboration of relevant stakeholders, **strategic** - negotiation and alignment (synergies and conflicts) of policies, programmes, initiatives, strategies (strategic alliances) and **operational** - implementation based on coordination, translation and execution of delivery mechanisms (instruments, tools, processes) in all relevant agencies. (Figure 7: Modes of integration in TURAS).

Beyond this point, integration needs to be specified in the context of each of the other basic concepts in WP7. For example, in a "strategic programme" for a transformative process of a complex system **different types of knowledge** are likewise important: One way to categorise this could be A) scientific expert knowledge, tacit local laymen knowledge and local expert (but also often tacit) knowledge (of local practitioners) (cf. Ferguson et al. 2013, p. 44). In the context of "transition management" there is often used another categorisation of knowledge, namely "system knowledge, target knowledge, and transformation knowledge".
Using this example it becomes evident that "integration" in any case should be concretely described by the components to be integrated, the means (integrating mechanism) and the objective of the integration process, in order to come to understandable conceptualisations:

For A) this would be "Integration of [different types of knowledge] to get to a comprehensive shared understanding of the local situation and inherent interdependencies and dynamics by developing a strategic narrative" (see below: 4. Developing Integrated local Transition Strategies). For B) it would read slightly different: for example, "Integration of [different types of knowledge] to set in motion a societal transition process by transferring knowledge into concrete activities". In the first time the focus is on people, in the second

example it is on the process – even if both times we talk about integration of knowledge in the context of sustainability transitions. And accordingly the practical mechanisms to implement this integration are also different.

For the framework to be developed all three mechanisms were identified to be relevant in order to operate in the field of "sustainability transitions".

2.3 Developing an integrated framework for urban strategies for transition

The ITS framework was continually developed as the conceptual framework for WP7 – not only for its final purpose of guiding non-TURAS cities through the process of developing their own ITS, but also for informing and assessing the activities within WP7.
Its development was informed by two interrelated complementing activities based on desk top research (literature review) data collection and assessment: 1) an epistemological framework on the "modes of resilience" (see above) and 2) an operational framework for packaging output of WP1-6 into modules/entities following a format suitable for "integration" in the context of T7.2.

Initially, relevant approaches from the field of sustainability transitions, resilience assessment and strategic spatial planning (SSP) were identified and compared (Figure 8: Integration of approaches). Here especially the **Transition Management** approach proved to be useful for TURAS.

Approach to Transition

The conceptualisation of transition in WP7 refers, in line with current scientific debate, to big societal transitions necessary for long term sustainability. It is a multilevel, multi-phase concept. (To) transition is, again, an intransitive verb. Transition is also an immanent/internal process. That increases its connectivity to the resilience concept.

The connecting points in terms of the framework are the so called "governance spheres", which (Loorbach 2010) sees as **transition management steps** in a repetitive cycle: 1) strategic – problem structuring, envisioning, and establishment of the transition arena; (2) tactical – developing coalitions, images, and transition agendas; (3) operational – mobilizing actors and executing projects and experiments; (4) reflexive – evaluating, monitoring, and learning.
They are related to **transition management principles**, namely (a) to make use of the dynamics of the system that create feasible and non-feasible means for governance; (b) to employ long-term thinking as a framework for shaping short term policy; (c) to keep objectives flexible and adjustable at the system's level; (d) to creating space for niches creation; (e) to focus on frontrunners; and (f) to deal with radical change in incremental steps.

Transition Management Tools or formats are (a) the *Transition Arena* (Advocacy Coalition for Sustainability with Citizens, Politicians, Researchers, Corporate Actors, Practitioners; applied in various domains such as Energy (NL), Agriculture (NL, BE), Water (NL, AU), Healthcare (NL), Mobility (NL), Waste (NL)) – participative and social learning, envisioning and agenda forming with an explicit focus on sustainability; and (b) *Transition Experiments* – pilots for governance innovations for sustainability.

Elements	Transdisiplinary (sustainability) research	Transition Management	Strategic Planning	...	Resilience Assessment	TURAS
target	*To attend complex societal problems by combining knowledge of various scientific disciplines with societal expertise*	*To enable transitions towards sustainability by overcoming persisting problems*	*To provide orientation & give a long term dimension to urban-regional development by new & intensive interlinks*		*To assess and resolve specific ressource questions by taking into account social & ecological influences & continuous change*	*To transition towards urban sustainability and resilience by collaboration and innovation*
scope	society	Sectorial context (e.g. transport)	multi-sectorial: economic, ecologic, social (, technical)		Social-ecological systems	(Multi-)sectorial, Urban system
scale	Multi-scale (local, urban, regional, national	local (community), urban (cluster of municipalities)	Multi-scale (local, urban, regional, national		local, system boundary (multiple scales)	local (community), urban-regional
principles	Inter- & trans-disciplinary integration, coordination of knowledge	social learning, accommodating complexity & uncertainty, steering & dynamics	goal-orientation, discursive methodology, multi-stage procedures		Complex adaptive systems theory, change & uncertainty, adaptive cycle, panarchy ...	Twinning approach for collaboration (researchers-local enterprises-urban communities)
format	Inter-disciplinary research teams, practice partners, iterative processes	Series of participatory workshops	Formal and informal planning instruments		Discussion groups/workshops with system's stakeholders	Classic research (sectorial work packages), demonstration sites
Methods/ tools, actors, process, etc.	Knowledge objects, common terminology, theor. framing ...	transition arena, experiments (urban labs) ...	Pilot projects, implementation concepts, monitoring ...	...	Resilience Assessment method: system context, scenario ...	new visions spatial scenarios feasibility strategies guidance tools ...

Figure 8: Integration of approaches

Identifying the main elements

Common elements were selected and re-structured, leading to four main modules (see Figure 9: Basic elements of ITS framework). This was followed by a "reality check" through the local authority and public institutional partners during a workshop (Figure 10: Identifying Transition Challenges Stakeholder Workshop) and re-fined for a first version. The four main or overarching categories initially chosen proved to be quite robust. Hence, the name chosen for "orientation" during the work process was kept on, and the framework was called "4 Corner (4c)-framework" (Figure 11: WP7 Integrated Transition Strategies "4c Framework" Version1 2014).
It is based upon principles of strategic spatial planning (e.g. visions, participation, pilot projects)(Vallée 2012), of transition management (e.g. long-term thinking, learning, innovation, keep options open)(Kemp und Rotmans 2009,Loorbach 2010) and of resilience research (e.g. systems thinking, local knowledge, adaptive capacity, cross-scale impacts). The four main modules were defined as **System** or "creating systemic knowledge", **Vision** or "developing shared visions", **Strategy** or "developing adaptive strategies" and **Project** or "implementing pilot projects".

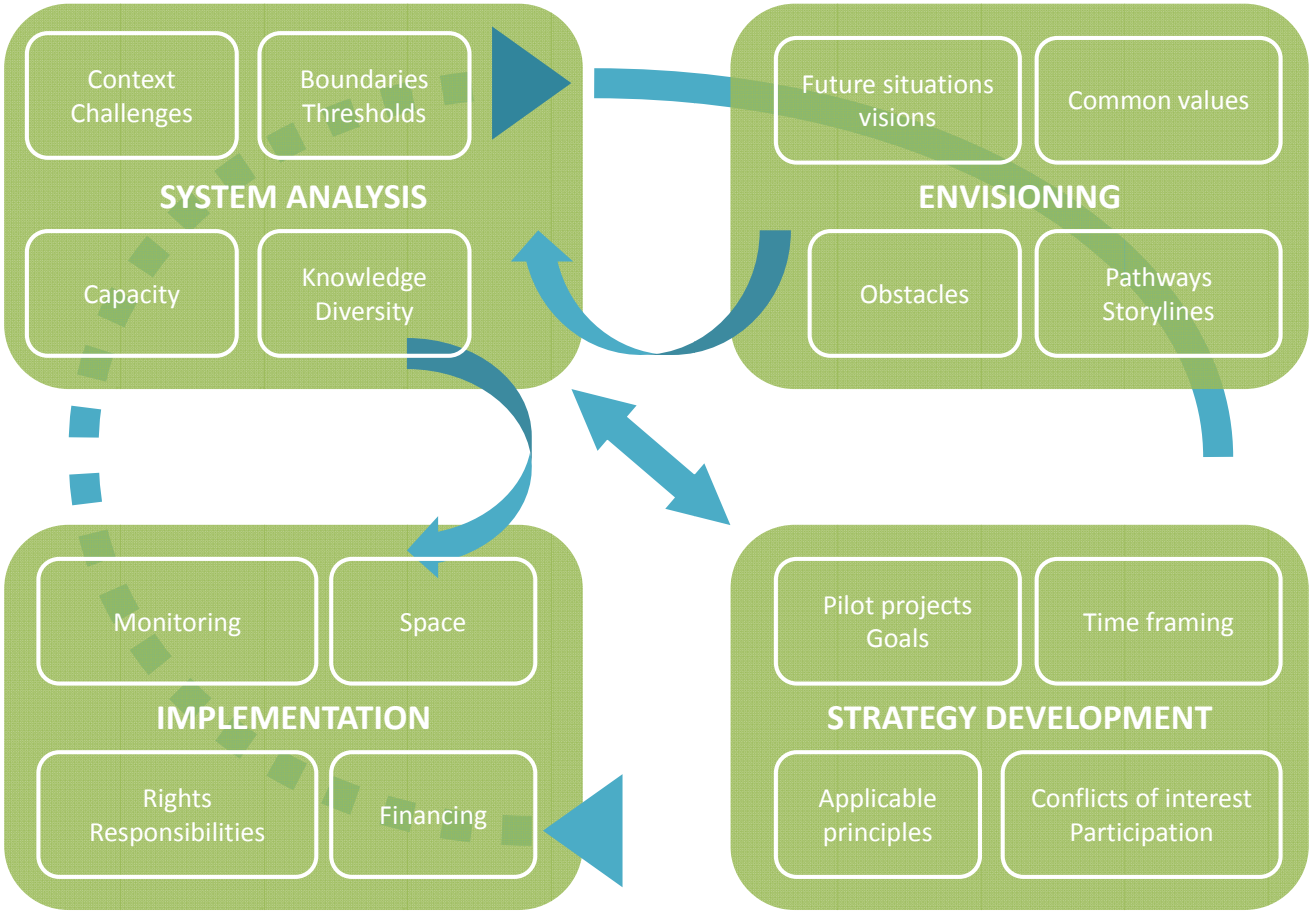


Figure 9: Basic elements of ITS framework 2012

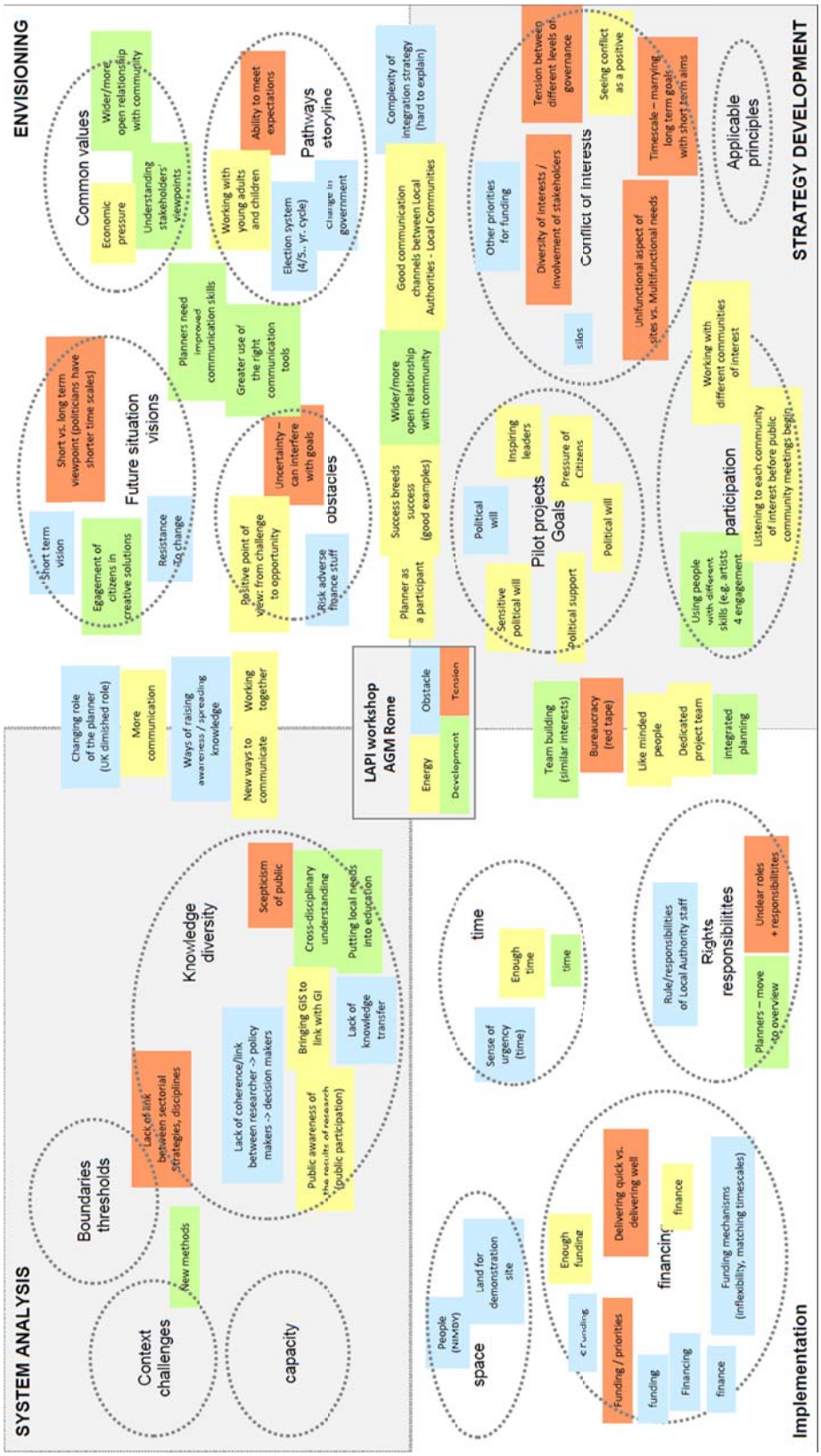


Figure 10: Identifying Transition Challenges Stakeholder Workshop 2013

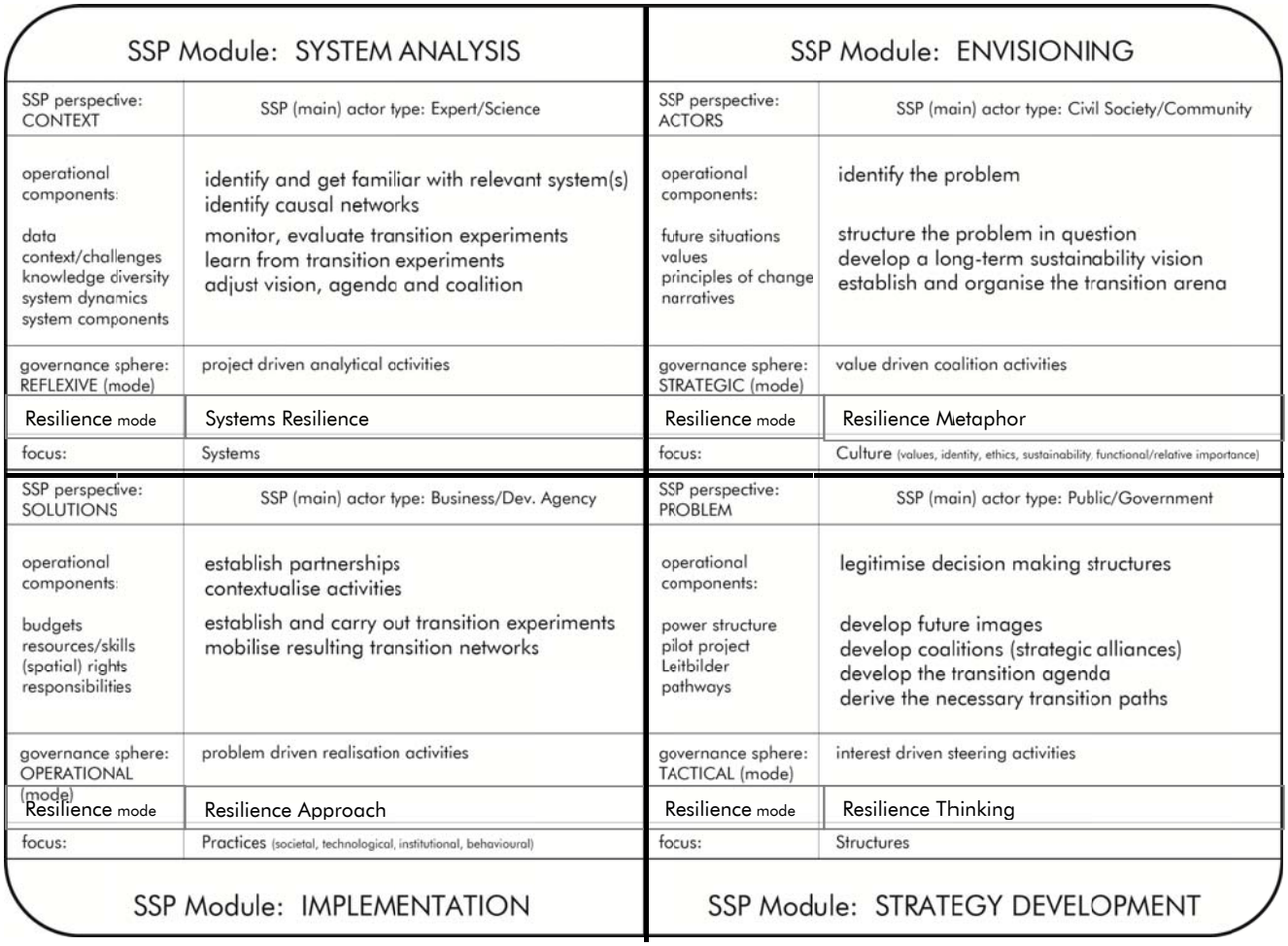


Figure 11: WP7 Integrated Transition Strategies "4c Framework" Version1 2014

3. Reframing Research for Transfer & Integration

As set out in the preceding chapter, the ITS or "4c"-framework integrates the descriptive-analytical concept of resilience with the normative concept of sustainability and has been developed to inform a planning approach that encourages "transition towards more sustainable futures". Within the scope of TURAS, transition activities were situated at an urban-regional level. Transition was to be facilitated by the corresponding strategic planning level making **systematic use of the research** output of WP 1-6.

After the intensive research phase of the first three years, TURAS output presented a highly diverse array of project documentations, academic papers, guidelines, presentations and other documents. In order generate maximum user-friendliness and transferability across locations, WP7 sought to produce consistent packages (or strategies) of WP 1-6 output before launching integration activities. Thus in a first step, available content was (re-) organised and structured to come to an **operable homogenised batch** of TURAS outcomes – which then could be used for classification, illustration, storage or, in the context of WP7, for "integration" into bigger entities.

The content coming from WP 1-6 was not only heterogeneous, but had been developed for a specific location (one of the TURAS urban regions) and had only partially been transferred to another geographical context (another TURAS urban region or another demonstration site within the same urban region). In order to allow for successful transfer to locations outside and beyond TURAS, WP7 aimed to produce an **applicable and generic type of content**.

3.1 The Activity Unit Methodology

Therefore WP7 developed and applied a methodology that would allow for a translation of localised "**research on**" via "**research for**" specific locations to applicable "**products for**" generic locations. The methodology started with the identification of separable units of research activities (called "Activity Units" or ACUs) by the academic partners. Using a template that WP7 had developed for this purpose, researchers then provided information according to pre-defined categories informed by the 4c framework. These included:

- description of the societal problem to be tackled
- description of applicable resulting measures
- type of urban system mainly affected
- understanding/concept of resilience
- addressed (main) actor (group)
- needed financial capacities
- needed personnel capacities (including participatory efforts)
- needed spatial capacities
- needed ecological resources
- other possible restrictions/restricting conditions
- description of process
- description of expected (measurable) output
- timeframe
- expected impact on system's resilience (as defined above)

- expected impact on urban sustainability (ecological, economic, social)
- cross impacts with other TURAS activity units (synergetic/restricting)

In an iterative process over several months in close collaboration with the respective WP-leaders, WP7 made continuous suggestions of how to restructure TURAS activities according to topics and focus. Concurrently, by adjusting the template – the "container" for WP 1-6 output and its internal structural logic – TURAS partners successively and collaboratively "re-framed" each "Activity Unit"(ACU).

Beyond WP7, these ACUs served as a **multi-purpose interim product** for the whole of TURAS. In the short-term, they enabled experimental knowledge transfer between different TURAS locations. In the medium-term, this in turn led to the improvement of the ACUs themselves as well as of the accompanying transitional framework and therefore of the final "TURAS output". It also enabled accessible presentation of what has been done in TURAS.
Finally, in the mid- to long-term, the assessment of combining ACUs can create systemic knowledge. By looking at possible combinations of comprehensively packaged TURAS output, positive and negative trade-offs between planned measures and tools can be identified and assessed.

3.2 The TURAS Catalogue

The resulting catalogue of ACUs, as suggested by WP7, aimed at **providing an overview** of implementable TURAS output. During the course of WP7 integration activities, its format changed from text editing software templates to a web-based interactive format with front and back-office facilities. In collaboration with WP8, this catalogue was continuously further developed.

Initially, the presentation of the **most important information** of each Activity Unit lay at the core of development activities. Information related to the underlying challenging urban situation addressed by the activity, local interdependencies and the visions it corresponded to, local task force and needed resources, tutorials/guidelines/step-by-step-plans, as well as details for the main contact person. In the long run, WP7 aims to supplement this basic information with additional content such as expected resilience trade-offs and long term sustainability impacts.

Further development of the catalogue concentrated on providing **suitable interfaces** for various TURAS target groups (Figure 12: TURAS Catalogue – Interface Example) and included the development of a sorting and filtering mechanism.
Drawing on the "Dash Board" idea developed in WP3 (TURAS Collaboration Dashboard) for example, "classical" action fields of an urban-regional administration were used to create a simple interface for the "municipality" target group:

- Flood + Water Management
- Green Infrastructure and Biodiversity
- Energy + Waste + Transport
- Place-based Economy
- Urban Regeneration

- Housing + Urban development
- Climate Change Adaptation
- Participation + Civic engagement
- Collaboration + Governance

Figure 12: TURAS Catalogue – Interface Example

The possibilities in this regard are numerous and allow for the potential development of rather specific categorisations. Drawing on Loorbachs (2010) spheres of societal transition, ACUs could be related to the „tactical" (strategic helpers), to the "operational" (pilot type) sphere, to the "strategic" sphere (visionary tools) or to the "reflective" sphere (monitoring and data generation) (Loorbach 2010).

TURAS output that was not packaged in the format of ACUs, either because it was too specific or scientific (such as academic papers), or because it was highly localised output not suitable as a transferable "activity" (such as local pilot examples), can be linked to each one of the ACUs. Further to the catalogue, WP7 aims for a "knowledge section" in form of a library database and an "experience/action" section in form of a (good) practice data base.

4. Developing Integrated local Transition Strategies

Parallel to the translation of specific research outcomes into generalized, transferrable and cross-locational content, a second strand of WP7 activities sought to facilitate the generation of localized strategies that would integrate, apply and test TURAS output. To this aim, the Integrated Transition Strategy (ITS) framework described in chapter 2.3 was used as a tool to guide (TURAS) cities through a process of developing their own localized transition strategy, referred to as City Integrated Transition Strategy (City ITS).
In combination with the catalogue, the ITS framework facilitated the development of a strategic document describing challenges for the respective urban regions, a vision for the future, as well as the corresponding Activity Units and reasons for their selection (local strengths, weakness, opportunities, and threats).
In an advanced version, WP7 aims for the City ITS document to further include guidelines for implementation (e.g. information on important stakeholders, priorities, challenges and possible balancing activities). The final version will be accompanied by an assessment of potential impact on local sustainability and resilience.

The drafting of the document, as well as all other City ITS development related activities, were facilitated by the partners from local authorities and public institutions (called LAPI) and referred to as "ITS process".
Within TURAS, local groups consisting of academic, public, NGO or business and local community partners had been working together already on more or less regular terms for the last three years. These groups (termed transition incubators by WP7) were now asked to view their activities through the lens of the ITS framework developed by WP7.

As a first warm-up, working groups applied the ITS framework to local Activity Units which had already taken place. Groups were asked to scrutinise: the context of the activities, the way the problems they addressed were structured (problem description) and the corresponding arena for transition (leveraging networks/actors). They also assessed the Activity Unit's guiding normative visions, a possible transition agenda including joint objectives, images (purpose/goal), barriers and pathways (process), resulting measures/by-products (output) and learning mechanisms (monitoring and evaluation).

In the language of transition management theory, TURAS commences using the recursive transition framework at the level of the "niche" (Loorbach 2007; Loorbach 2010). The multilevel perspective of transition management explicitly intends the levels as "functional scale levels – degrees of structuration – and not as spatial or geographical scale levels" (Grin et al. 2010). However, given the assigned time horizons (0-5 years) and prevailing working practices on a project level in a relatively protected space separate from but connected to formal government, the local or neighbourhood level of most Activity Units seems to correspond well to this concept.

4.1 From conceptual framework to local narratives – a co-production approach

For a comparable ITS structure relatively early in the process, each local working group was then asked to answer specific questions, which had been developed by WP7 on the basis of the 4c-framework (as the guiding structure). For them at first a location neutral wording had been chosen, which was then refined into location specific questions. Requested information ranged from of local urban challenges (with questions such as "What are the main challenges your location is facing currently -and possibly in the future? ") to visions for the future (i.e. "What do you wish for and for whom?") to governance aspects (i.e. "What are the existing regulatory and administrative arrangements that steer or influence development in your municipality?") and generally available resources for implementing activities (i.e. "What are suitable site(s), physical or virtual, for the Activity Unit and can you access them?").

To come to a shared understanding of the respective starting points for strategy development, a description of the current local situation ("Point of Departure") was jointly drafted by WP7 and local LAPI partners. After this "Point of Departure" the iterative process was initialised with semi-structured interviews by WP7, starting mostly with the generic question format (e.g. "What challenges is your urban-region facing?"). These interviews (done by phone or skype) were then trans-scripted and WP7 collated the information and transferred it into a matrix for each local working group.
In order to come to a narrative format, the matrix subsequently became a working document, sent to and fro between WP7 and the LAPI partners. LAPI partners made additions and corrections and gave input by providing local knowledge on basic conditions, important issues and interdependencies, as well as actors and networks. WP7's role was providing input in terms of structure and focus, while the questions became more and more specific and tailored to the local situation (e.g. "What local environmental conditions -such as presence of pollution or nature conservation areas- influence the current patterns of investment and thus, urban growth?"). They were then being answered by the LAPI partners in a further round of written exchange.

Often, the document provided the basis for discussion in the local transition incubators and further additions or corrections were made by other LAPI working partners in the course of strategy development. Building on the contents of the working document (evolving from matrix to narrative), and using the catalogue overview in its newest available version, each LAPI working group then prepared its Draft City ITS (early summer 2015) – a strategic document in a narrative format describing, making use of and setting the context for the "products" developed in TURAS.

4.2 Learning by Doing – General reflections and assessment

Across locations, the interaction with local administrative processes, institutional setups and existing planning cultures had a direct impact on the scope of ITS development and proved more or less challenging according to the local situation.
A main initial challenge for many municipalities was the setting up of collaborations that could facilitate the combination of integrated strategy development at an administrative level with bottom-up approaches that include place-based community involvement. Overall, the following issues could be identified:

Alignment of LAPI working groups within existing administrative structures and governance arrangements

In some cases, size or rigidity of the local institutional setups posed unsurmountable difficulties to establishing integrated cross-departmental internal collaborations, often resulting in a less holistic view of urban challenges and subsequent strategy development. In other locations, the development of new cooperation was a welcome catalyst for new working relationships and collaborative structures beyond TURAS. Most often, LAPI working groups built on or made use of already established working relationships within TURAS or other ongoing activities.

Alignment of Integrated Transition Strategy development with existing activities

In almost all cases, preceding activities often already provided outputs such as strategic documents that directly informed ITS formulation. This proved most fruitful in locations where collaborations across governmental departments and reaching out to communities affected by strategic decisions were an already established part of administrative cultures. Other LAPIs were building on existing outputs that were informed by sectorial planning or had been produced without community involvement. In some cases, outputs had mainly been produced at a regional level, which made the alignment with the local and place-based approach promoted by TURAS difficult.
For some municipalities, ITS Development provided a welcome framework for already existing activities that could be exploited both for structuring internal decision making processes and agenda-building outside the administrative structure. Others found that alignment was hampered by different time-scales, lack of suitable personnel to manage the strategy development process, and different thematic focus of the ongoing day-to-day activities.

Compiling and establishing systemic knowledge

Unsurprisingly, the identification of local urban challenges was often directly influenced by the thematic focus of preceding TURAS activities and the composition of the local LAPI group. While in some cases, existing outputs such as strategic documents provided the basis for system descriptions, other LAPI groups were faced with a more complex agreement procedure. In some cases, the task of finding common ground and defining the scope of problems to be tackled revealed as-yet unnoticed differences in approaches and prioritizations. Nonetheless, this process was also reflected upon as hugely beneficial in clarifying the basis for action.

Developing Joint visions

Defining a clear and scenario-based vision emerged as the least straightforward step in the process. Often, previously and often relatively broadly defined visions or strategic goals gained precedence over more nuanced formulations informed by the specific urban challenges identified in the course of systemic analysis. In general, visions made up a relatively small part of the ITS and tended to remain broad and sketchy rather than explicit in terms of desired local spatial, social or economic developments. This might be attributed to visioning processes being generally associated with political decision-making bodies rather than the formally administrative structures TURAS partnered with. The most detailed and descriptive visions tended to be adopted from preceding visioning processes outside TURAS where involvement of communities or other local stakeholders had taken place.

Developing Integrated Strategies

Similarly to the preceding steps, most LAPI working groups were basing their strategy formulations on already existing strategic agendas or frameworks within the municipality. At the same time, LAPI groups often referred to specific measures or activities that either had already taken place or were planned as part of an already existing agenda.
In the least successful cases, strategy development within the ITS process thus merely provided a subsequent conceptual link between broader goals that had been formulated in the political arena and planned activities by local administrations. In the best of cases, strategy development not only extended the scope of planned activities, but allowed for clarification and reassessment of previous agenda-setting. For many LAPI groups, it often also seemed the most obvious step for further stakeholder involvement as partnerships were sought and practical implementations were considered.

4.3 Matching available research products and local situations

Whereas the above mentioned issues were important but potentially could be tackled through refinement of the process described above under 4.1, a second major challenge (almost to be seen in parallel) to this process became apparent: How to come to a robust mechanism for making the connection between local situations (and in terms of WP7 task T7.3, of any European city) and the available TURAS products.
As described in the last paragraph about working with the TURAS cities, linking strategies and implementation activities emerged as an iterative process where available measures suggested possible transition pathways and influenced strategy formulation. Members of LAPI groups not only often noted that access to a detailed catalogue of transferrable activities would facilitate strategy development, they also expressed that generating motivation for collaboration across departments and further stakeholder involvement hinged on the availability of concise descriptions of possible activities. Inspiration was a key term in these conversations.

When comparing the integrated transition strategies and the choice of potentially transferable ACU's across locations, the following findings emerged:

As to be expected, the specific transition focus of the LAPI group was reflected in the choice of activities. Single-issue problem descriptions tended to produce the choice of a limited number of issue-related activities, whereas more holistic problem formulations led to a larger breadth of possible strategic responses and thus to a wider selection of ACU's. Tools facilitating collaboration and communication were picked by LAPI groups that had already

integrated participative elements in their strategy development or where participation was an established part of administrative culture.

In contrast, but only seemingly paradoxical, broader and more general defined visions tended to correlate with a small number of ACU's being regarded as applicable, whereas more concise formulations of transition goals and descriptions of desired future spatial, social and economic arrangements facilitated the integration of a larger number of TURAS activities into local strategies. This could be seen to underline the importance of in-depth vision development as opening up more complex and diverse pathways for transition.

The process of identifying suitable TURAS products also pointed to specific issues of transferability: once basic information about the content of Activity Units was available, matching and choosing local problem descriptions and agendas with potentially suitable activities often appeared relatively straightforward for all partners involved. What emerged as most problematic for the actual assessment of transferability were the vast differences between locations regarding governance arrangements, stakeholder constellations and locally available capacities and resources.
In consequence, many LAPI groups tended to describe information on specific local experiences and individual transition narratives as equally or more relevant than generic descriptions of activities. An in-depth understanding of the specificities of local transition stories was seen to not only provide identification and inspiration. It was also deemed necessary in order to identify local hurdles and impediments to transition- as well as possible pathways for overcoming them.

Integration activities by WP7 were thus faced with two different but complementary objectives: developing a generic transition strategy that would allow cities outside and beyond TURAS to choose transferable Activity Units and set a local transition process in motion, and capturing individual local transition experiences and process knowledge generated in TURAS locations.

Developing generic connections for matching urban challenges and Activity Units

Amongst other objectives, the creation of individual City ITS's was also employed in order to identify connections and establish generic links between the "problems" of and available "products" (ACUs) for any given city. The knowledge thus created (inductively) was to be used for an envisaged on-line version of a simplified ITS process (interface + catalogue) that could point other local authorities outside of TURAS towards ACU's that were relevant for their local situation.

The focus on the problem-product relation was based on the assumption that planners are usually operating with "planning problems" and therefore are familiar with this concept: Problems are part of a common language shared among planners. Problems have the potential to relate to personal "tacit" knowledge and to enable decision-makers to make selections "intuitively". At the same time, planning problems are more concrete and "locally identifiable" than visions, which are very often rather abstract and general (e.g. *"Green engine of Development - Metropolitan bioregion of knowledge"*).

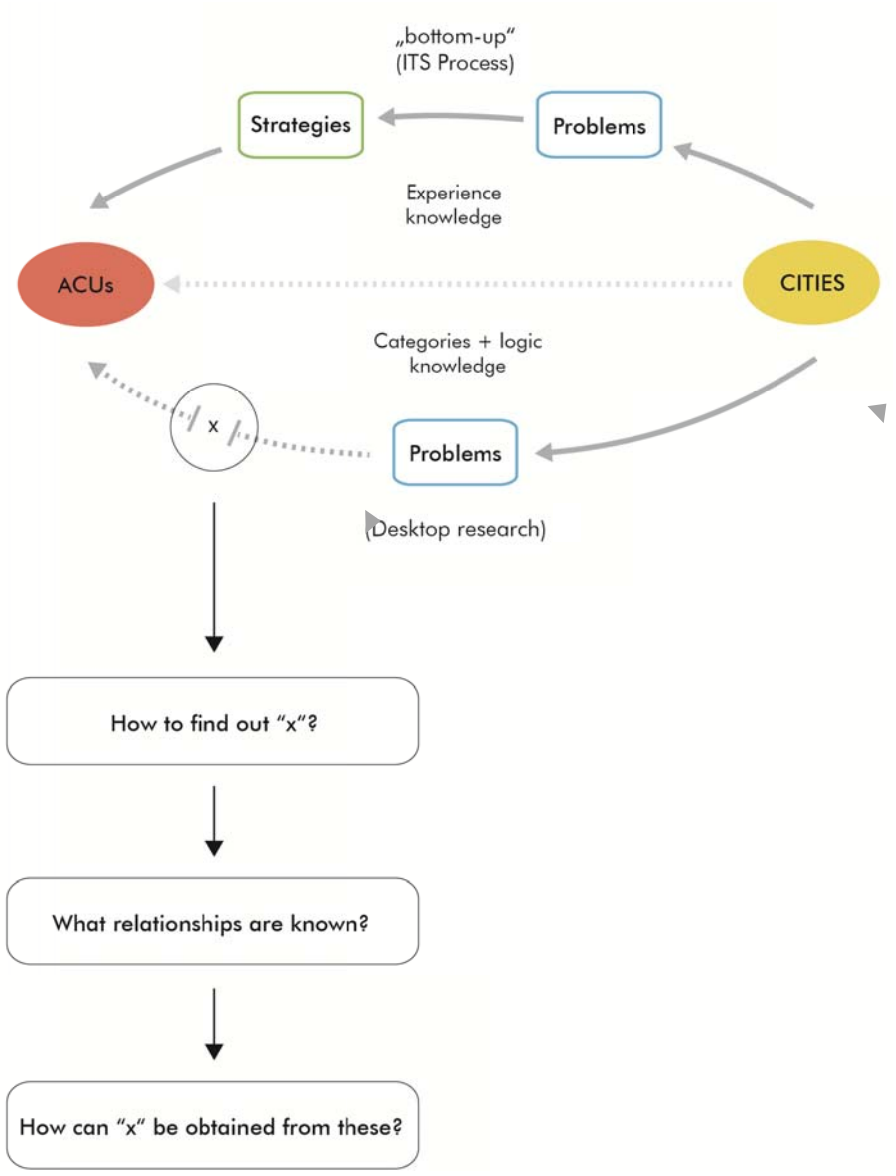


Figure 13: Relating local "problems" with relevant "products" – inductive vs. deductive

In order to support the local institutional partners in the development of their integrated strategies and choice of activities, WP7 aimed at creating comparative "test sets" of ACUs, which could be employed to consult on each local ITS development. Missing the necessary place specific knowledge, the "test sets" had to be created using a systemic "deductive" approach. However, the relationship between Problems and ACUs was difficult to establish directly (see Figure 13: Relating local "problems" with relevant "products" – inductive): The determined local causal chains of problems can be seen as "complex problems" or even "systems of complex problems" (see Figure 14: Systemic rendering of local problems). The more detailed these causal chains are, the more possible starting points for effecting the overall problem exist. On the one hand, in planning practice this is a potential to identify alternative (more or less) suitable solutions. On the other hand, the decision which starting point of action (or what ACU) is best for improving a complex situation is highly dependent on the specific local context (e.g. what resources are available, what is on the political agenda, etc.). As a result, a "1:1" relationship could not easily be established.

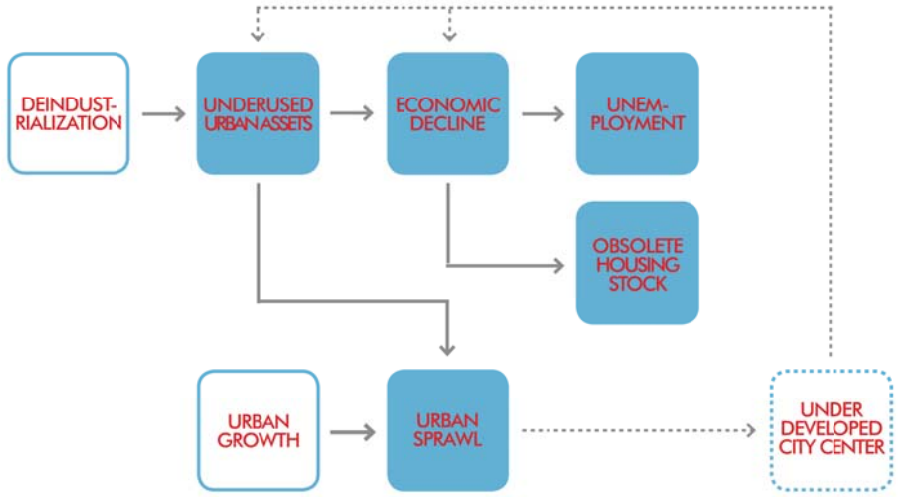
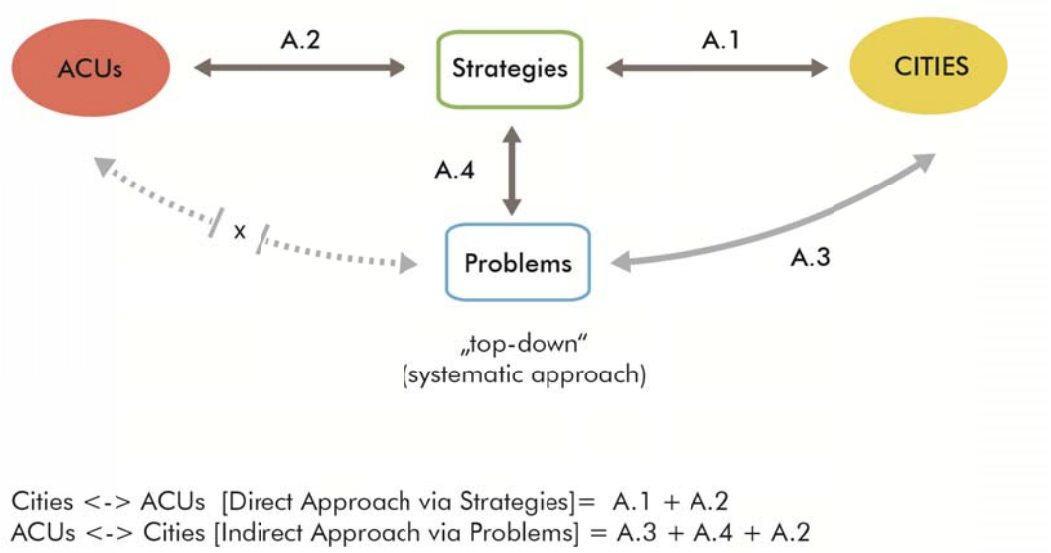


Figure 14: Systemic rendering of local problems



Cities <-> ACUs [Direct Approach via Strategies]= A.1 + A.2
ACUs <-> Cities [Indirect Approach via Problems] = A.3 + A.4 + A.2

Figure 15: Relating relevant "products" with local "problems" – interpolation

To work around this problem, first ideas in regard of an "interpolative" approach were developed, using other relationships to conclude on the missing link (see Figure 15: Relating relevant "products" with local "problems" – interpolation):

1) Establish the ACUs-Cities relationship via the strategies: The strategies identified in TURAS have already defined their "starting point" to tackle an issue as well as the focus of the complex problem.
2) Use this knowledge (and data) to establish the "missing link" Problems-ACUs through the "interpolation" of other established relationships. In this direction, by establishing the following connections: a) Local situation (city)- Problems; b) Problems – Strategies; c) Strategies-ACUs, it is possible to obtain a selection of ACUs based on locally identified problems ("x").

With this two-step approach the "inductive" (bottom-up) intuitive approach of assembling the narratives could be complemented by a "deductive" (top-down) systematic approach.

Quick shot – a quantitative preliminary assessment

As a starting point data from the local ITS processes (in the format of posters) was used to create diverse relational matrices showing the relationships between cities, strategies, visions and problems. In this context also the "classical" categorisations introduced in the context of the TURAS catalogue (see 3.2 The TURAS Catalogue) were used for gaining a preliminary overview about the usage of ACUs, in the context of above mentioned categories as well as in regard to the Draft City ITSes (Figure 17: ITS components Relationship Matrix I).

In terms of topical categories the highest number of ACUs is available for "participation and civic engagement" issues, while a smaller but still relevant amount focuses on "collaboration and governance", "economic issues", "climate change adaptation", "green infrastructure and biodiversity", "flood and water management" and "housing and urban development". A relatively small amount of ACUs deals with the topics "urban regeneration" and "energy, waste and transport" (even if this category is already a combinatory one).

But also in the context of local ITS processes, the "quick shot" quantitative assessment provided some interesting insights, first of all the rather balanced distribution of selections of each ACU, as done by the local teams for their ITS (Figure 16: Distribution of ACUs in relation to selection): No ACU was selected by more than three cities, and only three of them were not selected at all. (see Figure 18: "attractiveness" of different ACUs).

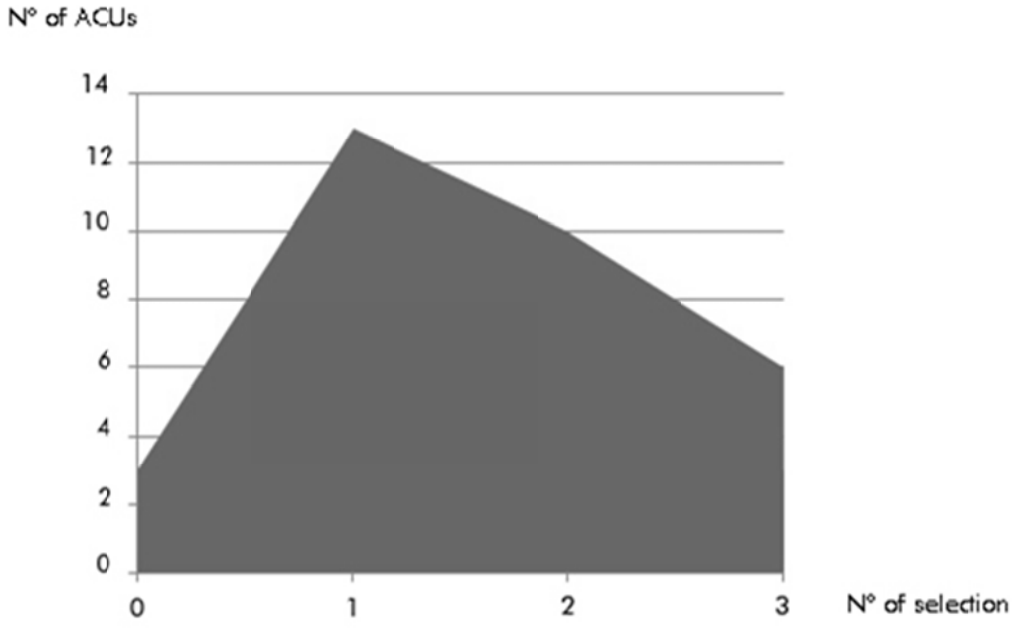


Figure 16: Distribution of ACUs in relation to selection

		London	Ljubljana	Sofia	Brussels	Rome	Malaga	Stuttgart	Rotterdam	Nottingham	Results	Flood + Water Management	Green Infrastructure + Biodiversity	Energy + Waste + Transport	Place based Economy	Urban Regeneration	Housing + Urban development	Climate Change Adaptation	Participation + Civic engagement	Collaboration + Governance	Results
	Results	14	6	2	1	14	2	4	5	3		9	12	6	14	5	9	12	17	13	
1	CIC Community Interest Group	x				x				x	3										3
2	Collaboration Dashboard	x				x					2										3
3	Community Engagement Road Map					x					1										2
4	Community Gains	x									1										2
5	Community Geo-Timeline	x				x				x	3										3
6	Community Power	x	x								2										3
7	Community Space Finder	x	x								2										2
8	Connect the Dots	x				x	x				3										5
9	Curatorial Planning	x				x					2										3
10	EcoMimicry					x					1										3
11	Environment Employment Alliance																				3
12	Flood Damage Assessment		x					x	x		3										3
13	Flood Risk Management		x					x	x		3										3
14	Go Green	x							x		2										3
15	Green Living Room							x			1										4
16	Green Values	x									1										5
17	iAgri			x		x					2										3
18	Innovative Housing									x	1										2
19	Living Walls	x						x			2										3
20	Multi-benefit Flood Retention																				4
21	PSS Toolkit						x				1										2
22	Public Opinion on Transport	x									1										3
23	Ready 4 Climate Change								x		1										2
24	Resldential					x					1										3
25	Re-using the City		x		x	x					3										2
26	Sprawl Monitor																				5
27	Sub-urban Ecosystem Payments					x					1										3
28	Sub-urban Fiscal Zoning					x					1										4
29	Sub-urban Infrastructure Payments			x		x					2										4
30	UGI Monitoring Toolkit	x				x					2										3
31	Urban Climate Comfort Zones	x									1										2
32	Urban Heat Atlas		x						x		2										1
33	Urban Waste Management																				1
Nº	ACUS	CITIES										CLUSTERING CATEGORIES									

Figure 17: ITS components Relationship Matrix I

In numbers this means, almost 40% of the ACUs were selected only once, 30% were selected twice and only 20% was selected three times. No ACU was selected more than three times. This means that probably most of the ACUs remained in their geographical context and were not transferred to other urban regions. At the same time, just 10% of the ACU's were not selected at all.

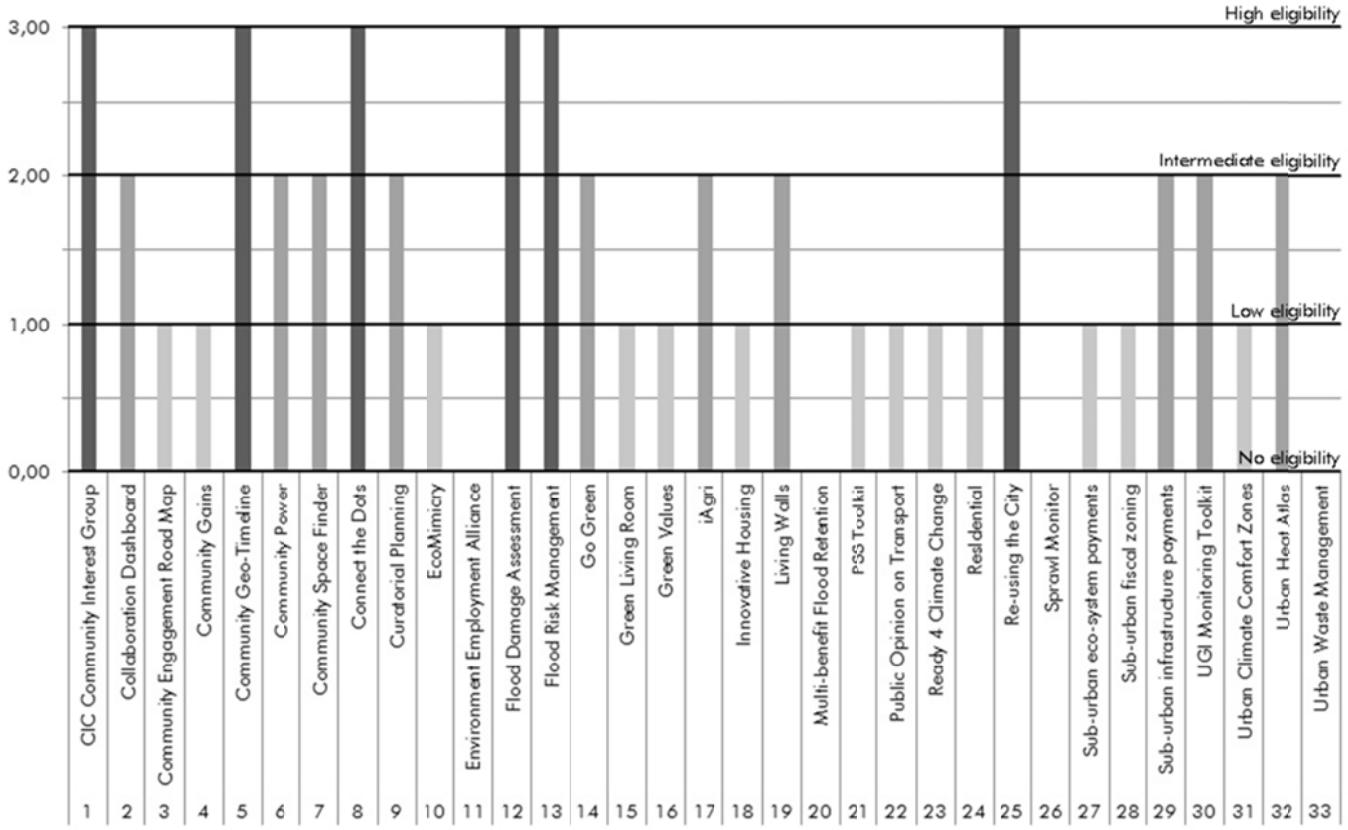


Figure 18: "attractiveness" of different ACUs

The ACUs with a high "attractiveness" were:

- CIC Community Interest Group
- Community Geo-Timeline
- Connect the Dots
- Flood Damage Assessment
- Flood Risk Management
- Re-using the City

These ACUs share a common concern related to the development of economic opportunities. But in each case this economic aspect is combined with other major concerns, e.g. civic engagement, governance, climate change adaptation, flood risk management, urban development and urban regeneration.

The ACUs with relative intermediate "attractiveness" are:

- Community Space Finder
- Curatorial Planning
- Go Green

- Living Walls
- Sub-urban Infrastructure Payments
- UGI Monitoring Toolkit
- Urban Heat Atlas

These ACUs deal with a wide range of concerns, covering all the proposed silos categories while also tackling more general objectives (e.g. *Go Green*). Thus, potentially they are easier to transfer to other regions.

The ACUs with relative low "attractiveness" are:

- Community Engagement Road Map
- Community Gains
- EcoMimicry
- Green Living Room
- Green Values
- Innovative Housing
- PSS Toolkit
- Public Opinion on Transport
- Ready 4 Climate Change
- ResIdential
- Sub-urban Ecosystem Payments
- Sub-Urban Fiscal Zoning
- Urban Climate Comfort Zones

As these ACUs are evenly distributed throughout all the silos categories, their lower level of "attractiveness" could be related to diverse reasons: e.g. the similarity of objectives in relation to other ACUs (e.g. *Green Living Room* and *Go green*), the high level of specificity that some of them present (e.g. *Sub-urban Fiscal Zoning)* and/or the lack of clarity of their main goals (e.g. *Community Engagement Road Map*).

The reason why some ACUs were not selected at all (even if each ACU was developed for a specific geographical context or city) include their later appearance in the ACUs list (e.g. *Environmental Employment Alliance*), their development in relative scientific isolation (e.g. *Sprawl Monitor, Multi-benefit Flood Retention*) or the difficulty of getting data with the consequent lack of concrete solutions and recommendations (e.g. *Urban Waste Management*).

4.4 Transition as "Doing Things Differently"

For the development of the local integrated transition strategies, the ITS framework had been translated into the ITS process, which put the so called "4C framework" into action. In order to counterbalance the rather top-down development of transition strategies and transferable Activity Units with an equal attention to individual transition knowledge and experiences, WP7 organized a workshop on the topic "Governance of Urban Transitions". Local authorities and public institutions partners were invited to tell their "TURAS Stories" and discuss the suggested strategic framework critically.
This was following the original idea of co-production of knowledge, typical for the trans-disciplinary and experimental approach of TURAS (see Figure 19: Suggested questions to be addressed in the workshop).

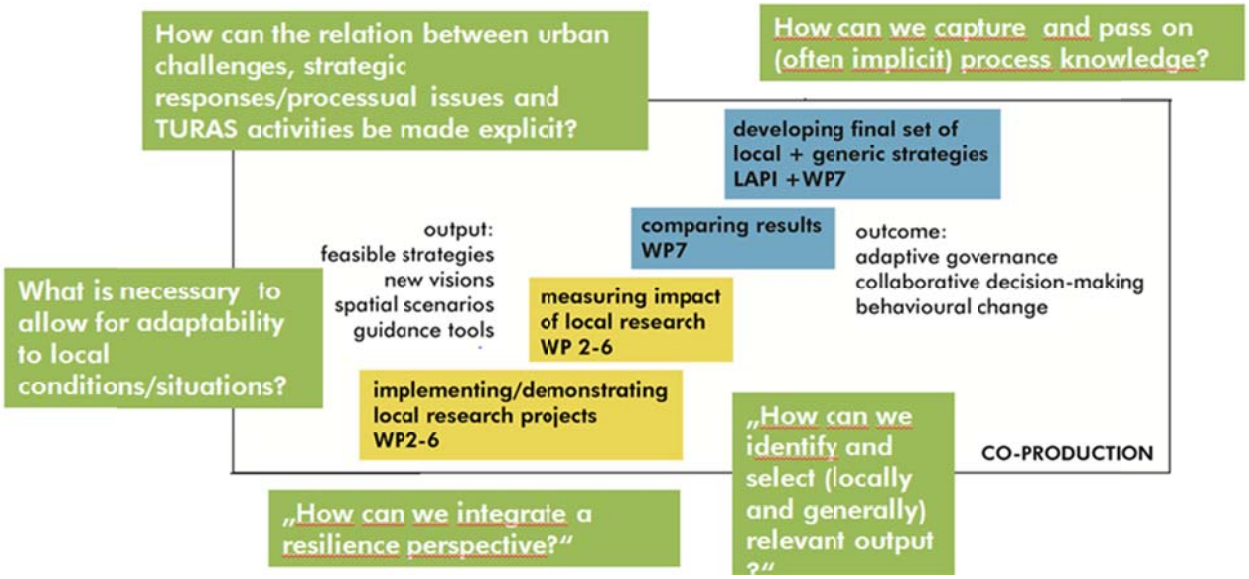


Figure 19: Suggested questions to be addressed in the workshop

The workshop aimed at discovering commonalities between the diverse local strategic narratives to identify shared experiences in regard to institutional and procedural "transitions".
Important questions in this regard were:

Who is the hero of the story?
Who is telling the story? and to whom?
What is the story about? What is the topic?
What was achieved in the story? and how it achieved?
What it is the moral of the story?
What did we learn that we want others to know about?

Local authorities are faced with a range of urban challenges. In this context they can take on the role of "**integrators**" – they are dependent on the current political agenda, but they can also deal with input from communities and most importantly different disciplines and areas of expertise in order to work towards integrated solutions (see Figure 20: Local authorities as integrators).

Political visions not only shape legislation, but also the form of investments and thus ultimately the direction of transition. Thus, the establishment of **shared political visions** and their employment for the negotiation of sustainability goals were identified by the workshop participants as key components of the TURAS agenda.

A discussion of current challenges municipalities are facing (such as scarcity of resources) also brought up questions of administrative re-organisation or the establishment of new institutions of bridging organizations that can take up transition activities. From the perspective of the group, urban-regional administrations are in an ideal position to facilitate transition. The main point of the TURAS transition story was seen to be "**doing things differently**".

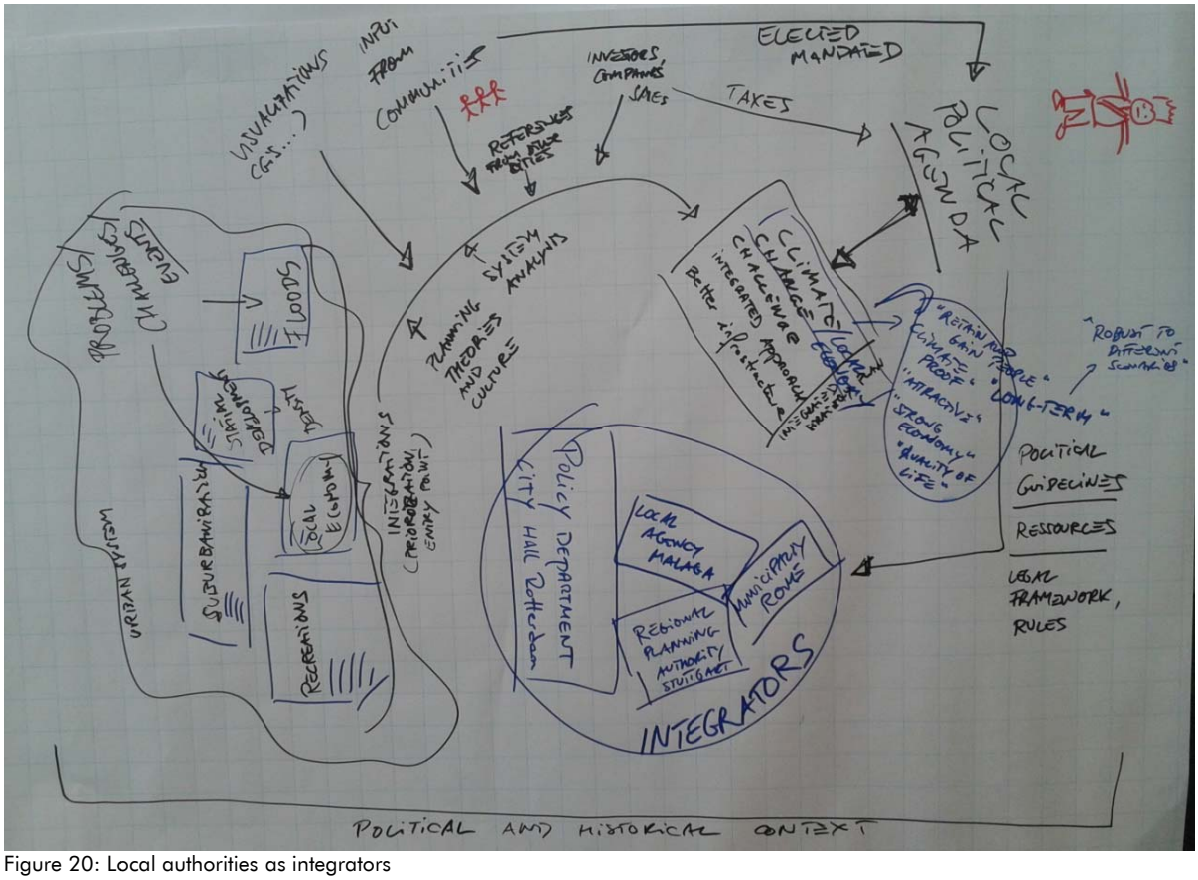


Figure 20: Local authorities as integrators

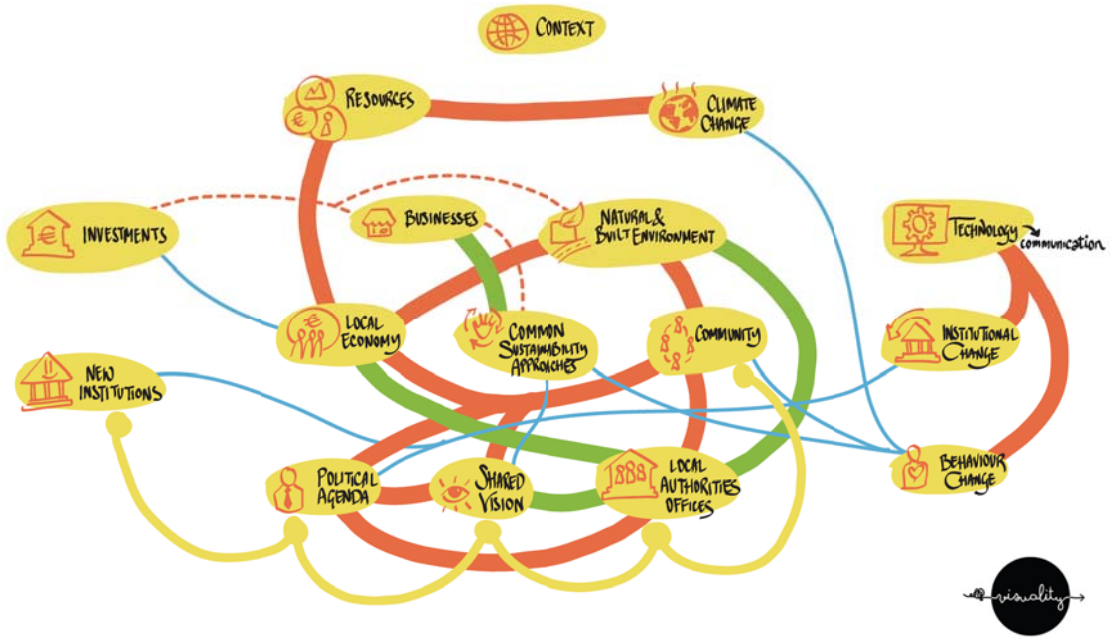


Figure 21: What's the story – shared elements of TURAS cities narratives

Trying to set up a generic picture of the TURAS experience proved to be difficult. Instead, what emerged even more strongly was the need for understanding the TURAS experience through personalized narratives that encompassed the stories of integration, new institutional solutions, and the struggles faced and problems overcome by "doing things differently".

In addition, during group discussions, a set of main themes emerged that we as WP7 identified as potentially constitutive of a larger "TURAS story":

- Resource shortage or Scarcity is a baseline condition of TURAS activities. This relates to actual natural resource shortage (i.e. the issue of ecological sustainability) as well as the scarcity of other resources needed to affect change and initiate transition, such as investments, human resources etc.

- Municipalities are integrators of different disciplines, different governmental levels, stakeholders and views. In their self-conception as public service providers, municipalities are in a unique position to develop robust long-term frameworks that can guide implementation activities- and municipal administrations possess the added benefit of a long-term memory and staying power.

- Bottom-up development of shared (political) visions is the key to the development of effective integrated transition strategies and frameworks. It is within this shared visioning process where TURAS' normative orientation along the dimensions of sustainability (and this explicitly includes the associated normative questions and dilemmas) comes prominently into play.

To this WP7 adds a TURAS-specific approach to resilience which can guide municipalities in the evaluation of integrated transition strategies, transition goals and pathways and the

implementation of associated activities and measures. By adopting a systemic approach, a "resilience lense" can reveal inherent conflicting goals and assess long-term effects of transition approaches.

In the concluding discussion, four components of the 4c framework were identified as "chapters" of the TURAS story: Local and specialist knowledge (system), shared and politically legitimized ideas for an urban future (vision), a collaborative approach (strategy) and getting local stakeholders on board for adventures (pilot projects).

5. Conclusions – towards a final framework

Further tasks for Work Package 7 are thus twofold: On the one hand, learning from local transition experiences has to be facilitated by capturing individual experiences and developing compelling and inspiring narratives.
On the other hand, the chapters of the TURAS story, i.e. the 4c framework, need to be tested further for transferability. In particular, relationships between urban challenges and Activity Units need to be strengthened and related to a generic approach that can be easily understood, interpreted and applied by cities outside and beyond TURAS.
In order to achieve integration, WP7 suggests the formation of cross-locational working groups structured along "generic" problems that have been identified and shared by several TURAS cities.
These interdisciplinary groups of TURAS partners (academia, LAPI, SME beyond original WPs or original geographic focus) then work on the development of integrated topical strategies that combine relevant applicable ACUs within the 4c framework.

Examples for suggested topical strategies combining several ACU's include:
Developing sustainable new neighbourhoods
Re-activating underused urban assets
Strengthening regional food production while supporting local economies
Developing Green Comfort Zones
Managing sub-urban infrastructure development
etc.

These topical strategies (or "Starter Projects") bring together WP 1-6 output (and thus knowledge already made explicit in the format of Activity Units) in the context of shared problems across locations. By encouraging exchange between TURAS locations, this approach not only helps to sharpen and assess the scope of individual Activity Units, it also encourages the integration of personal "tacit" process knowledge from TURAS experience.
The joint development of such generic topical strategies can also help to generate systemic knowledge: By widening the scope of each activity through jointly addressing a larger problem field, resilience trade-offs (between urban sub-systems that are effected by the activities in the context of a Starter Project) can be identified, discussed and evaluated using sustainability values and norms. The resulting assessment through "resilience and sustainability lenses" will not only facilitate further evaluation of WP1-6 activities. It will also potentially allow TURAS cities to review their integrated transition strategies for further possible integration of TURAS output.
Ultimately, combing an easily accessible choice of generic but thematically integrated strategies with individual localized transition narratives presents a new and distinctive approach to transition knowledge management. It will be further developed and elaborated in collaboration with local TURAS partners In the course of upcoming WP7 activities.

Appendix

Selection of related documents

Name of Document (in alphabetical order)	*Links to TURAS PPA*
card clusters_LAPI workshop rome.pdf	http://www.turas-cities.org/biblio/documents/613
Guiding4cQuestions_LAPI Basic Interview_detailed.docx	http://www.turas-cities.org/biblio/documents/614
ITS DRAFT Poster large_Brussels-Graph.pdf	http://www.turas-cities.org/biblio/documents/600
ITS DRAFT Poster large_Ljubljana-Graph.pdf	http://www.turas-cities.org/biblio/documents/604
ITS DRAFT Poster large_London-Graph.pdf	http://www.turas-cities.org/biblio/documents/603
ITS DRAFT Poster large_Rome-Graph.pdf	http://www.turas-cities.org/biblio/documents/602
ITS DRAFT Poster large_Sofia-Graph.pdf	http://www.turas-cities.org/biblio/documents/601
ITS DRAFT Poster small_Malaga-Graph.pdf	http://www.turas-cities.org/biblio/documents/597
ITS DRAFT Poster small_Nottingham-Graph.pdf	http://www.turas-cities.org/biblio/documents/598
ITS DRAFT Poster small_Rotterdam-Graph.pdf	http://www.turas-cities.org/biblio/documents/596
ITS DRAFT Poster small_Stuttgart-Graph.pdf	http://www.turas-cities.org/biblio/documents/599
TURAS ACUs Interim Review_151015.pdf	http://www.turas-cities.org/biblio/documents/615
TURAS ACUs Survey Summer2015_coll Evaluation.xls	http://www.turas-cities.org/biblio/documents/616
TURAS Catalogue interface_StarterProject.pdf	http://www.turas-cities.org/biblio/documents/617
TURAS Catalogue_Inventory_QuickCheck.docx	http://www.turas-cities.org/biblio/documents/556
TURAS Catalogue_Inventory_V1_150601_WPL working document.docx	http://www.turas-cities.org/biblio/documents/618
TURAS Key Terms Survey_Name.xlsm	http://www.turas-cities.org/biblio/documents/226
TURAS KeyTerms Survey_Evaluation.xlsm	http://www.turas-cities.org/biblio/documents/619
TURAS LAPI Workshop documentation_final4circulation.pdf	http://www.turas-cities.org/biblio/documents/593
TURAS transition process_WP7 Local Authorities survey_name.pdf	http://www.turas-cities.org/biblio/documents/620
TURAS WP7 ITS Internal Working	http://www.turas-cities.org/biblio/documents/552

Paper_general.docx	
TURAS WP7 Transition Survey_Evaluation.xlsx	http://www.turas-cities.org/biblio/documents/621
TURAS WP7_factsheet.pdf	http://www.turas-cities.org/biblio/documents/528
TURAS_What WP7 is currently doing_150601.pdf	http://www.turas-cities.org/biblio/documents/554
TurasActivityUnit_example_150601.pdf	http://www.turas-cities.org/biblio/documents/557
TURAS WP7_4CframeworkV1.pdf	http://www.turas-cities.org/biblio/documents/633
TURAS WP7_BasicElements ITS framework.pdf	http://www.turas-cities.org/biblio/documents/623

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