GLOCABULARY

GLOCULL
URBAN LIVING LABS

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BELMONT FORUM

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FOOD · WATER · ENERGY · NEXUS

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Offermans, A., P. Bernert, A. Gcanga, D. Wahl, G. Marques Di Giulio, T. Mitrofanenko, N. Forrest, R. Cörvers, J. de Kraker, D. van Duuren, H. von Wehrden, D. Lang, J. van Breda, B. Ness, T. Malheiros, , K. Ressar, N. Trummer, L. Withycombe Keeler, A. Muhar, F. Moreira, M. Bernstein, A. Wiek, M. Dalla Fontana (2019). Glocabulary. GLOCULL report

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Contents

GLOCULL
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Introduction to GLOCULL

Challenges in food, water and energy systems are locally and globally connected. For local actors, including cities, it is difficult to anticipate whether solutions to one issue in the FWE-nexus are sustainable across food, water and energy systems, both at the local and the global scale. The GLOCULL project therefore aims to develop an Urban Living Lab approach for innovations in the FWE nexus that are locally and globally sustainable. To support future implementation of this approach, guidelines and a participatory assessment tool kit will be developed through co-creation in seven Urban Living Labs (see figure below), based on an integrated assessment of local-global interactions in the FWE nexus and transdisciplinary action-research in the local Living Labs.

Introduction to this report

This report presents our '*GLOCABULARY*'. The *Glocabulary* consists of a selection of concepts that (may) play a crucial role in the GLOCULL project and provides a working definition of each concept. The latter implies that these definitions are formulated within the GLOCULL project's context, and they should be instrumental in better understanding, analysing, designing and comparing the living labs that lie at the core of the project.

An initial selection of concepts was made by Offermans, Gcanga and de Kraker based on the granted project proposal. During our second project meeting (Stellenbosch, South Africa; November 2018) this selection was discussed with representatives from all academic partners. The result of this discussion was a list with 13 concepts. These concepts were subsequently discussed during the project meeting in a world-café format. Working definitions resulting from this session were added to an internal project website where project members could collaboratively work and elaborate on these definitions. During the third project meeting (Tempe, USA, April-May 2019) the definitions were printed on paper, allowing project members to make final changes to the definitions. The results can be found in this report.

Action Research

Definition

Action research provides a direct account of the situation/ topic under investigation. Action research is inherently collaborative and self-reflective with the aim to generate knowledge and facilitate social change through participation. Action researchers attempt to equalize power relations between themselves and research participants and are explicitly political, not value neutral (Neuman 2003). Action research is research in which the researcher becomes part of the researched community and develops knowledge from experience through the use of empathy and resonance. Knowing is grounded in experience and connects emotional insights with explicit reflections. Dialogues with research participants and the cogeneration of knowledge serve as vehicles for change (Pesqueira 2014).

A typical action research design is characterized by continuous interactions between researcher and practitioners in which research questions and approaches are defined in co-construction. Research is a joint endeavor and includes cycles of action and reflection (Offermans and Glasbergen, 2017).

Action research may not start with a pre-set research question or problem, as these gradually take shape through experience and in interaction with the research subjects. This is sometimes referred to as "embedded research".

Action research in Living Labs

Involvement of researchers in Living Labs as active and equal participants to think about, and co-design, sustainable experiments can be considered action research. This has close relations to transdisciplinary research and co-creation of knowledge and solutions.

Food-Water-Energy Nexus

Definition

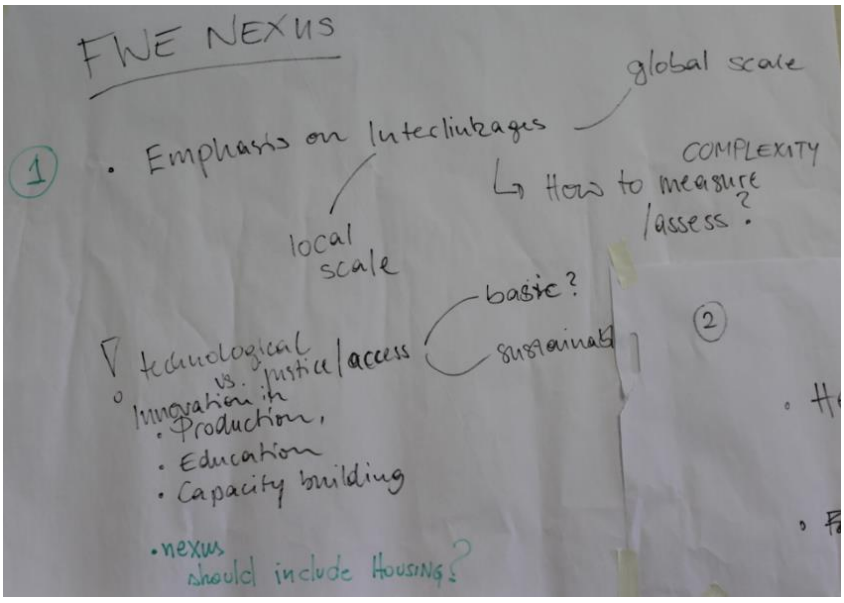
The food-water-energy nexus carries the notion that a secure access to food, water, and energy provides a basis for human well-being. At the same time, the nexus highlights the fact that food, water, and energy systems are strongly interlinked (e.g. agriculture is a large consumer and polluter of freshwater resources) (cf. UN-Water, nd). These interlinkages may lead to both synergies and trade-offs.

Relation to living labs

For the GLOCULL project and its Living Labs the nexus' function is three-fold:

1. The GLOCULL Living Labs cover a broad spectrum of sustainability challenges. At first sight, some of these Living Labs may strongly focus on either food, water or energy issues. However, as all Living Labs are situated in real-world systems and address real-world problems, their topical focus is not *limited* to one specific domain. The FWE nexus provides topical guidance for the integration of the Living Labs and the cross-case evaluation of outputs and outcomes.
2. The focus on the FWE Nexus furthermore highlights the strong acknowledgement of complex interlinkages and <u>interactions of these systems both locally and globally</u>, and as such provides a further perspective for reflection of the Living Labs that is still widely lacking in sustainability research (cf. Lang et al. 2017).

3. Estimations foresee global increases in demand for food (35%), water (40%) and energy (50%) by 2030 (NIC, 2012). These trends call for innovations that connect food, water and energy systems in a sustainable way. To develop these innovations, more knowledge on the few-nexus is needed to evaluate the impacts of innovations on local FWE systems and to <u>evaluate local to global interactions in fwe-systems</u> (both synergies and trade-offs).



Locally and Globally sustainable innovations in the FWE-nexus

With regards to locally sustainable innovations in the fwe-nexus

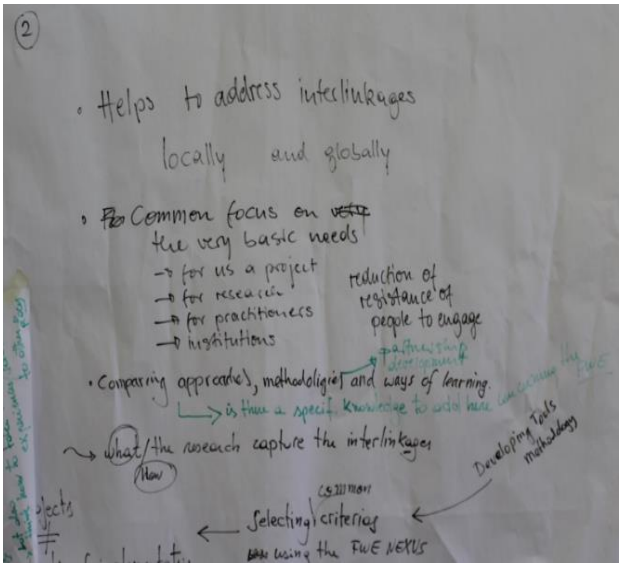
Locally sustainable innovations regard the impacts of innovations on food- water and energy cycles within the geographical scale of the ULL. The size of the geographical scale may differ for different Living Labs. To speak of a *sustainable* innovation in the fwe-nexus, effects on water, food and energy should be positive. Improvements in one cycle (e.g. water) should not take place at the costs of any other cycle (e.g. food and/or energy). Interactions between and among the cycles need to be considered, as well as feedback loops and externalities.

With regards to globally sustainable innovations in the fwe-nexus

Challenges in FWE systems are not only locally, but also globally connected. Locally sustainable innovations to one issue in the FWE-nexus are therefore not necessarily sustainable at the global scale. A locally sustainable innovation can also be considered globally sustainable if:

1. The local impacts of the innovation do not have negative effects on water-food and/or energy systems beyond the geographical scale of the Living Lab and;
2. If positive global effects of the innovation do not have negative feedbacks to the local level;
3. If upscaling does not have negative effects on food-water and/or energy cycles elsewhere or beyond the geographical scale of the living labs.

Upscaling refers both to the application of the living lab to a larger geographical scale (i.e. from a neighborhood to an entire village) and to a transfer of -similar scale- innovations to other (urban) areas.



Relation to GLOCULL

The goal of the GLOCULL project is to develop a methodology for globally and locally sustainable FWE-innovations in Urban Living Labs. The FWE-nexus is where the focus of the sustainable innovation lies. Outcomes of the innovations should however be beneficial across a broader set of sustainability criteria. An integrated assessment of the local-global interactions in the FWE nexus will determine the extent to which innovations are positive/sustainable across the domains of food, water and energy and beyond. In the GLOCULL project, innovations can be interpreted as co-designed solutions to sustainability challenges.

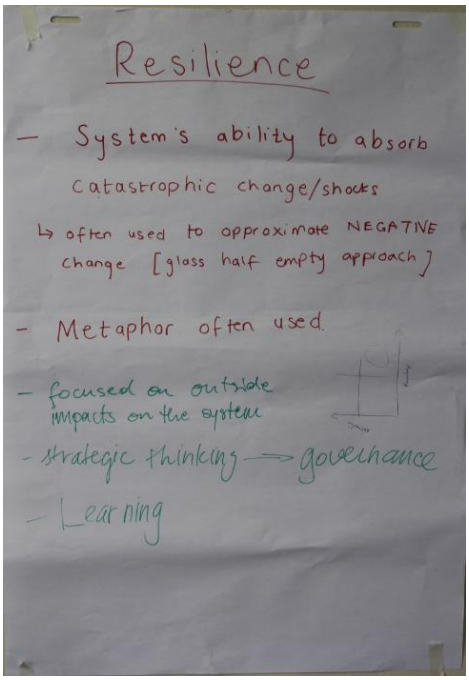
Resilience

Definition

"Resilience is the capacity of a system, be it an individual, a forest, a city or an economy, to deal with change and continue to develop. It is about how humans and nature can use shocks and disturbances like a financial crisis or climate change to spur renewal, innovative thinking" (Stockholm Resilience Center, n.d.) and more sustainable solutions.

Relevance for GLOCULL

Within the GLOCULL project, we focus on the system of an urban area. The urban area is a complex collection of interdependent socio-technical systems that are influenced by, and influence, food-water-energy flows. These sub-systems, but also the way in which they interact, may be influenced by changes, including shocks and disturbances. The challenge for the living lab actors lies (in this regard) with increasing the capacity of the urban area to deal with these influences and (continue) to develop in a more sustainable way. Further, resilience has connections with learning and experimentation that typically occur in Living Labs. A system (e.g. an urban area) can be resilient to new challenges/ changes if it actively experiments with new responses, and learns how to address new challenges and changing conditions.



Background

While the concept is in itself not necessarily focuses on negative shocks or failures to adapt to changes, much of the application of the concept investigates failures in resilience of systems. While the concept is hence often applied as a metaphor, the empirical application of such system failures or shocks is hard to quantify. Resilience is often focusing on specific systems within more or less clear boundaries, and is often focusing on outside impacts on these systems. This can potentially serve as a basis to adapt strategic planning i.e. through governance to cope with these shocks or even to learn to prevent them by adapting the capacity of the system to absorb shocks or changes. The concept is not only about robustness, but also on early detection of shocks and disturbances, fast recovery from these shocks and disturbances and exploitations of new opportunities.

Transformation pathways

Definition

Transformation pathways are strategies that aim to effect a trajectory of change from the present to a transformed future state.

Background

Pursuing sustainable development and the Sustainable Development Goals (SDGs) supposes that a transformation towards sustainability is possible; however, for putting this claim into practice, pathways of change will be necessary. Change will be required in multiple domains (e.g. economic, technological, social, cultural, institutional), at all levels of scale (global, world regions, national, local), and needs to be supported by many different actors (from government, business and civil society). Societal change will be necessary in a way that the needs of the present generations can be fulfilled without compromising the ability of future generations to meet their own needs, and at the same time respecting the environment and planetary boundaries.

Relation to GLOCULL

At the local level, there is potential for change by experimentation in urban living labs. The assumption is that a multitude of 'small' urban living lab experiments contribute to societal change, and therefore to a transformation of society. In Urban Living labs, learning about potential solutions to a sustainability challenge could be directed to possible pathways

Experimentation

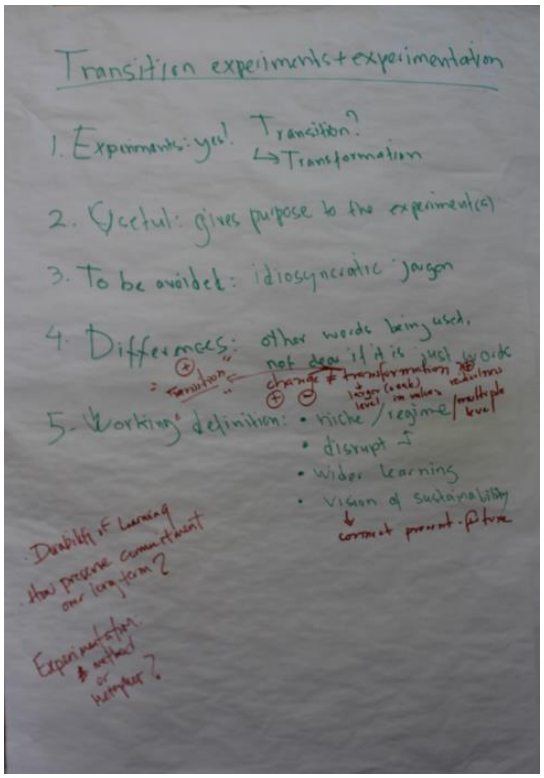
Definition

In the context of ULLs, experiments are understood as projects implemented with the goal not only to achieve a predetermined outcome, but also to learn.

Within experimentation, the development of new understandings and relations is at least equally important as finding a solution to a problem. In contrast to demonstrating or implementing an innovation, experimenting usually involves an open-ended exploration of novel responses to a given problem. Due to this open-ended nature, room for failure (i.e. not finding a working solution to the problem) is essential to enable experimentation in ULLs. Risks associated with potential failure are limited by keeping the scale of experiments small (i.e. relative to the scale of the problem). The disadvantage of the small-scale experiments is that also is lowers chances for upscaling. Reflection – discussing and evaluating results – connects experimenting to learning. In ULLs, co-creation is achieved by actively involving multiple actors in the experimentation and learning.

Transition experiments

Transition experiments are a particular type of experiments, conducted in ULLs or similar protected spaces, with the aim to learn about a particular innovation in order to contribute to a transition. A transition in the context of sustainable development is a structural societal change, resulting from interacting and each other reinforcing developments in economics, culture, technology, institutions and the environment (Rotmans, 2003). "*Each transition is made up of processes of co-evolution involving changes in needs, wants and the institutions that coordinate choices*" (Kemp, Loorbach and Rotmans, 2007, pp1). Changes are mostly incremental and time consuming. Transition experiments are characterized by a strong focus on learning, not only about the technical and economic aspects of an innovation, but also about the social, cultural and institutional implications; early involvement of a broad selection of stakeholders; and attention for (creating) opportunities for upscaling. Transition experiments often involve monitoring and evaluation, including the multi-dimensional measurement of a baseline state.



Governance for sustainable development

Definition

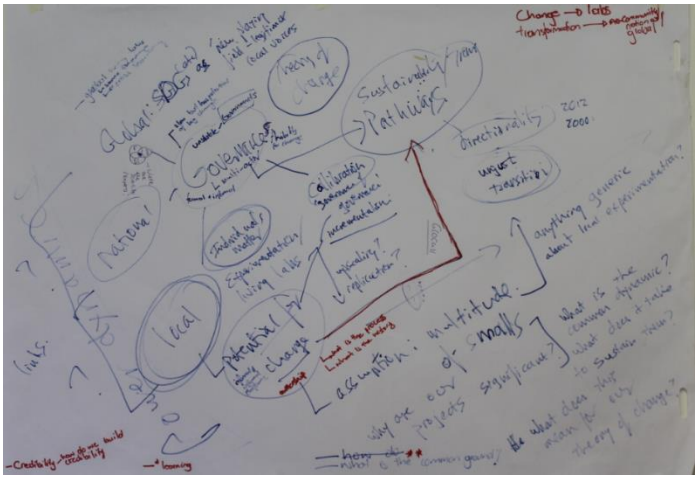
Governance for sustainable development defines the act of people from many sectors/ societal domains working together (or in opposition) as part of a shared responsibility for a set of sustainable outcomes in society. Within the concept of governance, these acts are not seen in isolation from the formal and informal rules, relationships and arrangements that enable these actions to take place.

Background

Usually a distinction is made between actors from the state, market and civil society, but also other actor and stakeholder categories are possibly involved in governance (e.g. governors, policymakers, practitioners, entrepreneurs, scientists, media representatives, social groups, and citizens). 'Working together for a set of sustainable outcomes' usually refers to what is shared and beneficial for all or most members of a given community, which requires a precise specification of the factors or values that are beneficial and shared. An alternative conceptualization is that 'sustainable outcomes' refer to what is achieved through collective participation in the formation of a shared will. In other words, what is realized by collective action and active participation in the realm of politics and public service.

The term governance is related to *governing*, which can be described as 'steering of society', or the way in which society is governed. The term governing refers to oriented societal change. In the past decades, in many countries and issue fields, a shift took place from governing by government to governing by governance. *Governing by government* refers to the classical view of the government as the central steering actor in society, based on a hierarchical relation between government and society. The idea of the manageable society is central in this steering philosophy, whereby the government is managing for the public interest, and organized in sectoral units and agencies.

Governing by governance refers to a steering philosophy where more diverse (I.e. not only hierarchical) relations exist between the government and other actors in society. The idea is that a plurality of values, beliefs, needs and interests need to be merged into collective action (for sustainable development). It is a joint responsibility for the public interest. New forms of governance are interactive policy making in cities (for example in Living Labs), co-management of natural resources, and partnerships for sustainability standards.



Sustainability Science

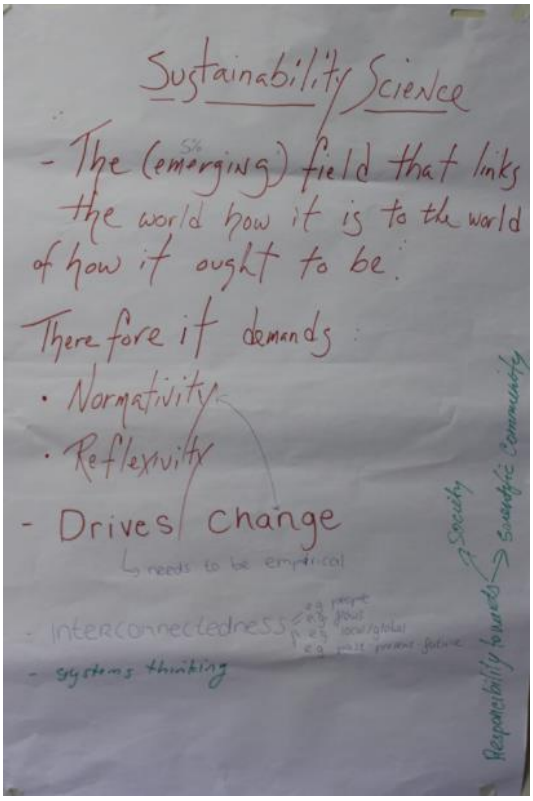
Definition

Sustainability science is the academic field that aims to bridge the gap between the world how it is, and the world how it ought to be.

The perceived mismatch between the world how it is and how it ought to be is inherently normative. Sustainability science recognizes this normativity and at least differentiates between better and worse sustainability solutions. Sustainability science is reflexive in evaluating the normativity of solutions as well as the transformational capacity of solutions and paradigm shifts. Hence, sustainability science drives -and aims to better understand- (processes of) social/ sustainability changes while also investigating these, highlighting a responsibility towards both society and science.

Background

The world currently faces an increasing number of sustainability challenges. These sustainability challenges demand a shift in our social paradigms. The shift relates to stepping away from enabling shallow changes in the management of systems towards transformative changes enabling societal change and a change of values. In order to drive this change, and shifting paradigm, sustainability science is often rooted in system understanding such as from natural science, but is also demanding an understanding of normative aspects of society, e.g. from social sciences.



Learning

Definition

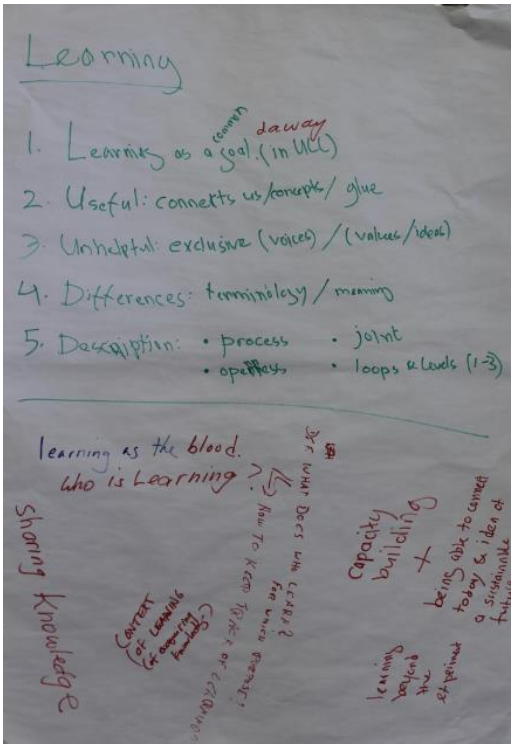
Learning is the process of acquiring new, or modifying existing, knowledge, skills or attitudes. This may lead to behavioral change, but this is not necessarily included in the definition of learning.

Learning in the context of Living Labs

Learning – often in combination with experimenting – is a key activity in Urban Living Labs (ULLs), because a major goal is to learn about new ways of doing and responding to problems (i.e., innovations). In ULLs, learning does not only concern the technical and economic aspects of an innovation, but also the social, cultural and institutional implications.

Ideally, learning is a joint and multi-directional activity of the participants in an ULL, aiming to include the diversity of voices, values, ideas and expertise. Learning in Living Labs is specifically targeted at, and not only occurring as a side effect/ emerging effect.

As learning is specifically targeted at, the learning process in Living Labs needs to be supported/ managed, for example via the development of a joint learning agenda (a short list of learning goals or questions) and repeated collective reflection on the experiences with the experiment, which may lead to the formulation of new learning questions.



Design Based Approach

Definition

A design-based approach to research focuses on developing/ designing potential solutions and testing these under real-life conditions, and -in that way- learn about the problem and understand it better. This approach is often followed in Living Labs.

Background

A design-based approach does NOT start with trying to first completely understand the (sustainability) problem to design solutions based on that understanding.

Design based approaches focus on the combination of constraints, values and goals to inform action. It acknowledges the learning potential from bringing together values and goals from stakeholders, prototype design objects within a set of constraints, and cycles of iteration, learning and improving. Ideally, co-design forms an important element in a design-based approach.

Transdisciplinary research (TDR)

Definition

TDR (sometimes referred to as mode-3 science) is a research approach for *doing science with society*. This means that scientists collaborate with actors across and beyond academic domains. It brings members of society (e.g. practitioners, citizens, policy makers) *into* the research process in order to co-produce relevant knowledge of a (sustainability) problem and/ or of potential solutions towards a problem.

Why working across and beyond the academic domain?

The need for bringing social actors / stakeholders *into* the research process is dictated by the complex nature of sustainability problems. Scientific knowledge will not always suffice for *understanding* the different components of the problem and the different ways in which potential solutions may affect the problem and the behavior/ values/ networks of actors involved. For this, practical/ embodied knowledge is necessary. Further, involvement of actors in the research process is needed to acknowledge the normative nature of sustainability problems, solutions and ideals. This includes value plurality (i.e. the existence of different perspectives/ frames/ worldviews), ambiguity, controversies (e.g. regarding different interests) and uncertainties.

On the process

TDR does not provide a blueprint for doing science with society. The process design of a TDR project will be adapted to (amongst other things) the problem, the way the problem is demarcated, the actors that are involved in the problem and the knowledge that is still missing with regards to understanding the problem or potential solutions (which may include knowledge on value disparities). It may therefore happen that, in some stages of the research, researchers are working within one academic discipline to - only in a later stage- feeding the acquired knowledge back into the wider TDR process. TDR implies a continuous and dynamic interchange between theory and praxis.

Types of knowledge in TDR

Three types of knowledge may be co-created in TDR processes:

1. Systems knowledge: descriptive knowledge of the systemic nature of the current state/ knowledge aimed at merely *describing* the complexity of a situation as it 'is' (or appears to 'be');
2. Target knowledge: that is knowledge of possible future situations (that may be more desirable/just/ sustainable or more undesirable/ unjust/ unsustainable). Target knowledge is essentially normative;
3. Transformation knowledge: a strategic type of knowledge aimed at discovering the evolutionary potential of the present – co-designing and figuring out what are the plausible next steps *in the direction of* the more desirable situation, and *away from* the undesirable situation.

Co-creation of knowledge and solutions

Definition

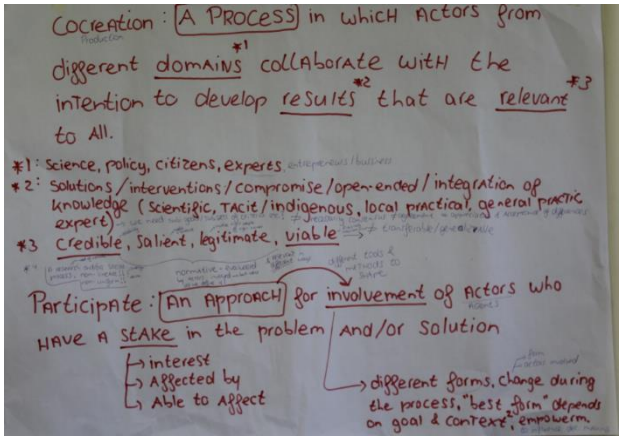
A p*rocess* in which actors from different domains collaborate on shared issues with the intention to develop results/ outcomes that are relevant to all actors involved in the process. The outcomes are of shared relevance and transcend the contributions of any single individual.

'*A Process*' may refer to both a research process, a political process and/or a social process. It is non-linear and non-uniform and the process *outcomes/ results* may not be transferred or generalized. The process *design* however, may be transferred more easily.

'Different domains' Initially referred to actors from the policy and academic domain (i.e. a collaboration between policy makers and scientists.) Later on, and also in GLOCULL, we have a wider interpretation of the different types of domains that may be involved in co-creation processes: policy and administration, science, citizens, experts, and the private sector (entrepreneurs and businesses).

'*Results*' include intangible results, solutions, interventions, arrangements and compromises. These are generally open-ended and require an integration of different types of knowledge (scientific knowledge, local practical knowledge, general practical knowledge, tacit/ indigenous knowledge, expert knowledge). It may be useful to not only think of results as a final end-goal of a collaborative process, but also as sub-goals. Results are NOT the same as a consensus or agreement. People may also agree to disagree, and it is crucial that there is a shared appreciation and acceptance of differences.

Whether the results are considered '*relevant'*, is inherently normative and can only be evaluated by the people who participated in the co-creation process. Actors may conclude that the results are relevant, but they may disagree on the underlying reasons (i.e. results may be relevant in different ways for different actors). We furthermore follow literature by Cash et al. (2003) by stating that relevant results are considered to be *credible* (i.e. reliable), *salient* (i.e. applicable to/ useful for practice) and *legitimate* (produced in the right way, by involving the right people at the right moment).



We argued that the issue of credibility may be the most fiercely debated element in a Western/ Northern context, but not necessarily in a Southern context. In the South, *viability* may be added to the list of credibility, saliency and legitimacy to also pay attention to the financial and political feasibility and the acceptance of results in society.

Participation

Definition

An approach for the involvement of actors who have an interest and/or influence in the problem and/or solution.

'*The approach*' contains many different tools and methods to shape the involvement of actors. An approach may also refer to a process or a process design.

There are different forms and intensities (levels) of '*involvement'* in participatory processes. Higher levels of involvement are not necessarily better than lower levels. The best form and level of participation depend on the research goals, process goals, the knowledge that is considered necessary or relevant to the process, and the context in which the participation takes place. Both the form of involvement, the degree of involvement and the actors who are involved may change during the process. Participation in Living Labs requires a minimum level of empowerment/ agency to enable participants to have an influence on the decision making (processes).

We prefer to speak of '*actors'* (or even 'agents') rather than "stakeholders" as the latter is too much centered around "stakes" and the assumption that everybody should and will have a stake in something. An actor may refer to a person, a group or a non-human entity. The latter are -in participatory processes- represented by humans. '*Actors having an interest or influence*' include actors affected by a problem or (potential) solution, and actors who (may have an influence in either the problem or the (potential) solution.

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