

# Knowledge re-integration in real-world laboratories to transform cities and communities: report on workshop designs

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## Abstract

How can we re-integrate knowledge generated in real-world laboratories (RWLs) into societal practice? In the RWL “Dresden – City of the Future 2030+”, the re-integration of knowledge was central to the research design. In this Workshop Report, we focus on facilitation methods for knowledge re-integration into societal practice. This is to guide transdisciplinary research practice and help researchers in designing and facilitating such research processes. We conceptualise knowledge re-integration, based on the current literature. Further, we describe our facilitation methods (two workshop formats) to document and reflect on our experiences. A self-reflective evaluation is conducted with the help of evaluation criteria synthesised from the literature on transdisciplinary research (TDR). Our reflections confirm that the facilitation of exchange with the target group/target context can greatly enhance the transferability of knowledge gained in TDR settings. In our conclusion, we highlight the importance of facilitators and knowledge brokers, as well as co-creation with local stakeholders to reach out to the target group.

## Keywords

transdisciplinary methods, knowledge re-integration, co-production, facilitators, real-world laboratories, transdisciplinary and transformative research

## Date and place

### Handbook workshops

The workshops were scheduled throughout the year 2021 with different transition experiment teams (TE teams) and conducted as video conferences.

### Transfer workshops

The transfer workshop of “Schools as Living Spaces Created Together” (SLS) was held on 18 June 2021, beginning at the town hall of the City of Dresden and continuing with on-site excursions to different schools in Dresden, Germany. The transfer workshop of “District Funds and Councils for Sustainable and Active Neighbourhoods” (DF) was held on 14 October 2021 at the Municipal District Office “Altstadt” of the City of Dresden.

## List of participants

### Handbook workshops

Facilitator (Leibniz Institute of Ecological Urban and Regional Development), TE team, research partners from the Leibniz Institute of Ecological Urban and Regional Development and the TUD Dresden University of Technology, respectively, community manager of the City of Dresden.

### Transfer workshops

Facilitator (stadt:wirken), TE team, research partners from the Leibniz Institute of Ecological Urban and Regional Development, community manager of the City of Dresden, civil society actors, local politicians, public officials, teachers and pedagogues, landscape architects.

## Introduction

In light of unprecedented socio-ecological challenges like climate change and biodiversity loss (IPBES 2019, IPCC 2022), transdisciplinary research (TDR) is a fast-growing research approach that aims at producing “context-specific knowledge and pathways towards a sustainable future” (Norström et al. 2020, p. 2). It encourages a new collaboration culture between science and society to strengthen a pluralistic approach that recognises multiples ways of knowing and doing (Nowotny et al. 2011, Jahn et al. 2012, Polk 2015a). Real world laboratories (RWLs) are a relatively recent form of TDR, which aim to advance transitions towards sustainability (Beecroft et al. 2018, Defila and Di Giulio 2018). Consequently, the findings of TDR have to be re-integrated into scientific and societal practice (Lang et al. 2012, Schöpke et al. 2017, Beecroft et al. 2018, Nagy et al. 2020, Knieling et al. 2021). Reviewing the TDR literature, there are already complex discussions on design principles

and methodological approaches for TDR processes (e.g. Lang et al. (2012), Defila and Di Giulio (2018), Norström et al. (2020), Bolger et al. (2021), Hemström et al. (2021)), but little is known on how to facilitate the re-integration of knowledge generated through TDR into societal practice. To address this knowledge gap, this report focuses on the “How to” of facilitating knowledge re-integration, in particular by documenting and reflecting on our own experiences gained in the TDR project “Dresden – City of the Future 2030+” (DCF). By sharing insights gained for conducting handbook and transfer workshops, we wish to help close the methodological gap between co-produced knowledge and its re-integration into societal practice.

“Dresden – City of the Future 2030+” is a transdisciplinary research project, which combines the process dimension of action research with the normative underpinnings of sustainability science. The City of Dresden (Landeshauptstadt Dresden), the Leibniz Institute of Ecological Urban and Regional Development and the TUD Dresden University of Technology were members of the project consortium. The project was conceived taking a bottom-up and community-focused horizontal approach. It can be divided into three phases: Visioning (2015-2016), Planning (2017-2018) and Experimenting (2019-2022). In the first phase, citizens were invited to envision the future of their city in 2030 and beyond. Based on this vision, project proposals for transition experiments (TEs) were planned in the second phase and then implemented in the third. Dresden became the real-world laboratory for ten TEs. Eight TEs were led by citizens and two by the municipality. The focus of the TEs ranges from edible cities, which seek to create more sustainable urban food systems, car-free districts, sustainable business models, nature education and the co-design of sustainable schoolyards, participatory governance within districts, to the circular economy.

A research assistant was employed as a facilitator during the phase of experimenting to support process design, team building and facilitation. She designed, implemented and moderated formats to support knowledge integration. Scholarly discussions on facilitators in TDR processes emphasise their multiple and hybrid roles (Croft et al. 2014). To describe these new roles, which emerge in TDR settings to bridge science and society, various terms are used such as knowledge brokers or process facilitators (Wittmayer and Schöpke 2014), integration experts (Hoffmann et al. 2022), Project or Programme Administrators and Managers (Defila and Di Giulio 2015) or facilitators (Fraude et al. 2021). Building on the literature on TDR, Science of Team Science and Science and Technology Studies, Hoffmann et al. (2022) summarise these various roles as bridge builders, boundary crossers, translators, catalysts, facilitators, contributors, mediators, advisors and evaluators. These facilitators support knowledge co-production in TDR processes by bringing stakeholders together, translating between different perspectives, leveraging potential synergies between complementary perspectives, designing and facilitating integrative processes, identifying power imbalances and mediating conflicts, creating learning spaces or evaluating integrative processes.

## Knowledge re-integration in TDR processes

As TDR seeks to contribute to societal problem solving, its rationale is to move beyond academia and integrate the voices and perspectives of practitioners (Polk 2015a). Knowledge integration, therefore, builds on the combination and synthesis of different types of knowledge and expertise - both scientific and practice-based - to capture the complexity of societal challenges and generate solution-orientated and socially robust knowledge (Bergmann 2010, Lang et al. 2012, Polk 2015a, Polk 2015b). Knowledge integration is an open-ended and interactive process that might occur during all phases of TDR (Defila and Di Giulio 2015, Pohl et al. 2021).

Following the phases of co-design (phase A) and knowledge co-production (phase B), the phase of knowledge transfer (phase C) builds on the co-produced knowledge generated through the TDR process (see Fig. 1). This knowledge is collaboratively re-integrated into both scientific and societal practice. Hereby, the boundaries between the co-production (phase B) and the re-integration of knowledge (phase C) are fluid as the phases build on each other in an iterative and recursive process (Lang et al. 2012, Norström et al. 2020). Knowledge re-integration entails a process of reviewing and revising insights gained from the empirical findings, which enhances the usability and transferability of co-produced knowledge (Lang et al. 2012, Hoffmann et al. 2019, Nagy et al. 2020). Written products such as guidelines or documentation materials and their presentation to the public (e.g. through workshops or social events) can increase this transferability (Bergmann et al. 2021). Here two pathways for knowledge re-integration into societal practice have been identified: the findings of TDR projects can either be embedded in their *context of origin* or upscaled/replicated in *another context* entirely (van den Bosch and Rotmans 2008, Schöpke et al. 2017, Beecroft et al. 2018, Nagy et al. 2020, Bergmann et al. 2021). We focus on facilitation methods for this process of knowledge re-integration.

## Reflection criteria for facilitation methods in TDR

We synthesised previous methodological criteria from the TDR literature, as well as design principles for RWLs to reflect on the facilitation methods in DCF and their usability for TDR projects (Defila and Di Giulio 2015, Defila and Di Giulio 2018, Eckart et al. 2018, Bergmann et al. 2021, Fraude et al. 2021). We created a set of six criteria complemented by guiding questions for supporting the reflection process (Defila and Di Giulio 1999, Knickel et al. 2019).

*Efficiency and effectiveness:* Is the process goal-orientated and are clearly defined and meaningful goals articulated? Do these goals define which questions should be explored and what kind of knowledge should be generated? Do the facilitation methods and formats fit these goals? Do the methods help reaching the goals in an effective way? Do the facilitation methods enable mutual learning processes? Do they initiate action and steps for implementation?

*Active participation on equal terms:* Can all attendees equally participate in the formats and methods? Are different voices heard and diverse forms of expertise acknowledged and well-integrated by the methods? Do the methods foster trust and understanding between the participants and require that everyone play an active part? Do the formats foster a culture of collaboration between the participants? Do the methods help to create transparency, while acknowledging the hierarchies and interdependencies between the participants?

*Space for conflict mediation:* Do the methods create a protective atmosphere that is sensitive to the exposure of individuals when they share reflections and emotions? Is space provided for conflict mediation throughout the format?

*Transparency and traceability:* Is it clear to each participant why the methods were chosen? Are the processes and the results of the format visible and traceable for everybody (during and after the format)?

*Research ethics:* Are the methods adequate or appropriate for the participants? To what extent do the methods influence the relationships or the roles of the participants? Is this extent reasonable? Are steps foreseen to show sensitivity towards the exposure of participants? Do the methods conform to the laws of data processing?

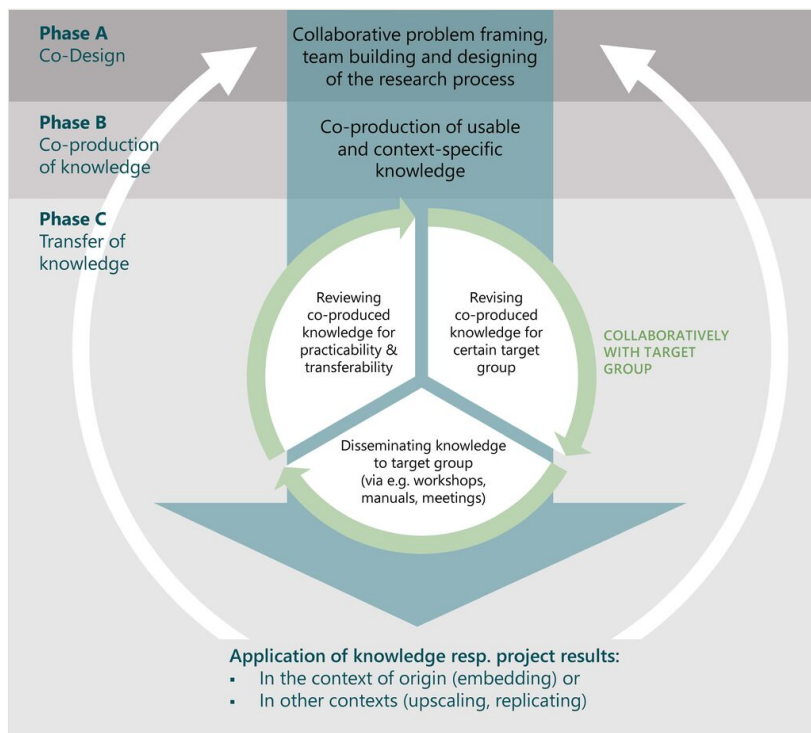


Figure 1. [doi](#)

Zooming into phase C: the process of knowledge re-integration into societal practice in a TDR process.

*Reflection and adaptability:* Is space given throughout the format to reflect on facilitation methods? Is it possible to adapt the methods and formats during or after implementation?

## Self-reflective evaluation

This Workshop Report is rooted in an *ex post* self-reflective evaluation. While the authors did not systematically collect empirical evidence and, thus, do not claim general validity, we believe that this reflection of our own research practice could prove useful to others. The evaluation criteria (see above) structured our self-reflective evaluation. We realised the self-reflective evaluation consecutively in two steps:

1. we compared the formats developed during DCF (real-type) with the six criteria (ideal-type) using the presented questions;
2. we inferred lessons learned and suggestions for improvement.

## Aims of the workshops

### Handbook workshops

To support knowledge re-integration into societal practice, the TEs were encouraged to prepare handbooks in collaboration with the research partners.\*<sup>1</sup> In doing so, a wide understanding of handbooks was adopted, inviting the TEs to consider diverse formats such as living documents, tutorials or handbooks to best tailor these practical guidelines to their respective audience. Creating such handbooks was a voluntary process and seven TEs chose to participate in these handbook workshops. The handbooks provide guidelines for creating and implementing TEs and share reflections and lessons learned.

### Transfer workshops

The idea of organising transfer workshops to encourage dialogue with the target groups and receive feedback on the handbooks was introduced by the TE teams “Schools as Living Spaces Created Together” (SLS) and “District Funds and Councils for Sustainable and Active Neighbourhoods” (DF). The transfer workshops were organised by the TE teams while the research partners adopted a supporting role.

## Key outcomes and discussions: Knowledge re-integration into societal practice

We describe facilitation formats for knowledge re-integration into societal practice for the TEs of DCF.\*<sup>2</sup>

## The handbook workshops

### Design

A practical guideline for the societal context should be co-created by the researchers and the TE team (the citizens), whereby it was up to the TE teams to choose the appropriate format. A so-called handbook workshop was designed by the facilitator to support this process. Participants of the workshop were the TE team, its research partners and the community manager of DCF. The facilitator organised, moderated and documented the workshops, which were conducted with seven out of ten TEs. The workshops were all conducted online due to the COVID-19 pandemic. The handbook workshop drew on the various methods of product development, “backwards thinking” and brainstorming (Loibl 2001, Mitchell et al. 2015). Applying the method of “backwards thinking”, the facilitator opened the discussion with different questions related to the aims, the target group and the content of the handbook. This was followed by the method of silent brainstorming with subsequent group discussions. The ideas of the participants were clustered by the facilitator. In a final exchange, next steps were defined (see Fig. 2).

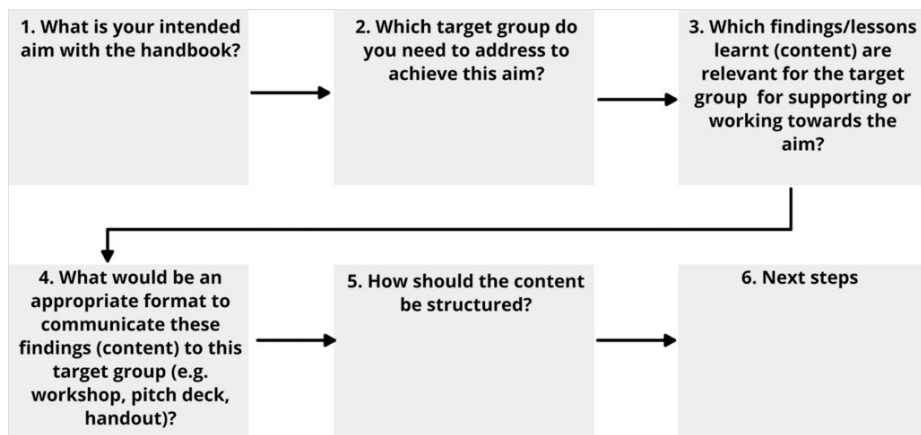


Figure 2. [doi](#)

Template of the online whiteboard for the handbook workshops (translated into English).

The results were findings to be elaborated further. After the workshop, the responsibilities for writing and designing the handbook were divided between the TE team and the research partners.\*<sup>3</sup> Even though the agenda was always the same, each handbook workshop needed individual preparation by the facilitator.

### Lessons learned

**Efficiency and effectiveness:** *Apply the approach of “backwards thinking” to define an aim and target group.* All discussions were given an interesting shift by applying the approach of “backwards thinking”, namely by first identifying and then focusing on the aim. This offered clarity on which impacts were envisioned and helped to identify totally new

target groups which had not previously been considered. For example, the TE “The Food Bin” initially wanted to write a “How to” for setting up initiatives against food waste. However, it became clear that this would not help achieve the aim of changing the legal framework conditions, which serve to hinder such initiatives in Germany. The target group then shifted to politicians. The handbook of “The Food Bin” now includes scientific data on barriers for civil society initiatives against food waste and describes the experiences of the TE team. It outlines which political and legal changes would help overcome these barriers. As the practice partners have better access to and a better understanding of the target group, their perception should be given priority. Moreover, as the message would be diluted if multiple target groups were addressed in parallel, it was vital for the facilitator to encourage the participants to define a specific aim and focus on *one* specific target group for the handbook.

**Active participation on equal terms:** *Integrate the creation of a handbook in the project plan and cooperation agreement, as well as earmark resources for both scientists and practitioners so they can both equally join the co-productive process.* In DCF, the handbook was specified in the research agenda of the research partners, but not in the agenda of the TE teams. This is why several TE teams struggled to find personnel capacities for the joint creation of a handbook. However, if a handbook is to be co-produced for societal contexts, this needs particular commitment from practitioners, who possess contextualised, local knowledge and, therefore, know best how to address the target group. The role of the research partners was to provide research insights and lessons learned or to give feedback on the handbook.

**Space for conflict mediation:** *Discuss questions of authorship openly.* The TE team “District Funds and Councils for Sustainable and Active Neighbourhoods” (DF) had a strong sense of ownership, having integrated a handbook into their own project plan as a work package. While the research partners promoted the idea of knowledge co-creation, the TE team voiced scepticism, fearing knowledge extractivism and the loss of ownership of the institutional innovation they were to develop. The research partners, therefore, initiated a meeting to discuss their concerns and asked them to make a proposal of how they would like the authorship of the handbook to be defined. To underline and value their efforts, the authorship of the handbook remained with the TE team and the proposal was appended to the minutes of the meeting to create transparency and reassurance for all partners.

*Decide carefully which conflicts can and cannot be part of the handbook workshop. Define realistic expectations for conflict mediation and also acknowledge otherness.* The understanding of co-creation differed between the TE team “Edible Public Urban Green Space – Tended by Citizens” (EPS) and the research partners. While the TE team wanted to have a more active role in transdisciplinary research and perceived cooperation not to be based on equal terms, the research partners wanted to have more scope of action to integrate their own research interests into the research design. The handbook workshop is for planning a handbook. It can handle some diverging views (which are also normal for real-world laboratories) and still create a working atmosphere, but it is not a space for intensive conflict mediation. If such conflicts are more fundamental in nature, one should



consider external conflict mediation to create an appropriate setting for the workshop itself and for cooperation more generally. For EPS, the question of co-creation on equal terms could not be resolved. It is, therefore, important to acknowledge that resistance is part of cooperation in TDR settings and not all interests can be reconciled. Otherness should also be accepted and critical voices be appreciated. Given this situation, the research partners drafted the handbook, while the TE team provided feedback. This was the *modus operandi* to which both partners could agree, while truth claims continued to diverge.

**Research ethics:** *Use the handbook to acknowledge the work of the TEs and make results visible.* Even though the TE "Week of the Good Life" (WL) could obtain approval for a mobility experiment in March 2021, which was scheduled for May 2021, the experiment could not be implemented due to COVID-19 restrictions. This raised the question of how to interpret this development and showed how the truth claims of science and practice partners diverged. Promoting a logic of experimenting and learning-by-failing, the research partners argued that the TE was successful because a legal example of conducting such a mobility experiment could be created. By contrast, the TE team intended to promote change and implement the WL and, therefore, perceived the cancellation as a failure. Creating the handbook made it possible to still show the work done (e.g. process of approving the mobility experiment) and secure the knowledge gained for future initiatives. This was also important to acknowledge and value the achievements of the TE. The handbook was an important instrument to not only enable knowledge transfer, but also mediate this intricate situation, which was indeed challenging for both practice and research partners.

## The transfer workshops

### Design

Two TE teams of DCF, namely "Schools as Living Spaces Created Together" (SLS) and "District Funds and Councils for Sustainable and Active Neighbourhoods" (DF), wanted to conduct transfer workshops to foster interaction with their target group(s) and receive feedback on their handbook. The transfer workshops were, thus, designed by and based on the ideas of the TEs. The citizens adopted the role of the facilitator while the research partners provided support by providing feedback on the design of the transfer workshops and documenting the workshops. Further participants were people from the target group, for example, politicians, practitioners from the same field and public officials. The format sought to review and disseminate the findings of the TE by creating space for networking and dialogue. The workshops were conducted in person and lasted three to five hours.

The designs of the transfer workshops of SLS and DF were quite different. The latter workshop focused on a working session with pre-defined questions to receive critical feedback on the handbook and to design pathways for embedding long-term structures for district funds and councils in Dresden. The meeting was held in a municipal district office, thereby creating a more official atmosphere. It was facilitated by an external moderator to recognise power imbalances and encourage participation by all stakeholders. It started

with a presentation of DF, followed by small group discussions to explore the motivations and potential strategies for embedding DF and concluded with a brief exchange to share the participants' reflections (see Fig. 3). In contrast, SLS wanted a workshop which fostered formal and informal exchange between interregional participants from politics, public administration and school communities. The aim was to create a lively discussion on methods of co-designing schoolyards in a participatory manner. The workshop took the form of a moderated panel discussion with two mayors in the town hall, on-site excursions to different co-designed schoolyards, an input session on experiences with the co-design of schoolyards in Berlin and a group discussion (see Fig. 4).



Figure 3. [doi](#)

Flashlight at the end of the DF transfer workshop; photo: Torsten Görg.

As a result, the outputs of the two workshops differed: DF agreed on further working sessions at a local level to intensify the process of institutionalisation; SLS generated a documentation of the transfer workshop, identifying the unique qualities of the project examples and outlining outcomes from the panel discussion.\*<sup>4</sup> Both transfer workshops strengthened network-building, locally and/or interregionally.

## Lessons learned

**Efficiency & Effectiveness:** *As practitioners have a double role as active participant and facilitator, it can be useful to hire an external moderator (who can also be the scientific facilitator).* At the DF workshop, the external moderator guided the intense and open discussion efficiently, thereby ensuring that the DF project team could take an active part in the transfer workshop.

**Active participation on equal terms:** *Create room for transdisciplinarity.* In SLS, interests concerning the design of schoolyards diverged. Low-maintenance designs, the provision of parking space and a design complementary to the architecture of the building competed with the wish for natural environments with high biodiversity, which need more intensive care. To create space for a diverse discussion elucidating different perspectives, SLS invited politicians, teachers and landscape architects to their transfer workshop. During the whole project, more stakeholders were involved, for example, craftsmen and engaged parents. For a proper transfer workshop, it is best to invite all stakeholders involved to have a more fruitful discussion. This also helps to spread new ideas into further sectors.

*On-site excursions can help promote a better understanding of the project and make its results visible and tangible, especially for projects where physical-material structures are changed (as was the case with SLS); they also make it easier for everybody to join the conversation and express their perceptions.*



Figure 4. [doi](#)

On-site excursion during the SLS transfer workshop; photo: Nicole Herzog.

*The moderator should set discussion rules to ensure that everyone has an opportunity to speak during a discussion.* In DF, a public official tended to dominate the discussion. Of course, there are situations when one person is entitled to a larger share of the speaking time, for instance, when they are in a position of power (e.g. a politician discussing legal frameworks) or when questions relate to their field of expertise. Generally, however, when conducting a working session (such as in DF) where all opinions need to be equally heard, it is important to recognise power imbalances and to prevent individuals from dominating the discussion. In DF, the moderator interrupted the discussion and asked everyone to comply with the discussion rules.

**Space for conflict mediation:** *When inviting people in a position of power, be sensitive towards the role they adopt during the workshop.* For example, SLS invited two local

mayors (responsible for the environment and education, respectively) to a panel discussion held during the transfer workshop. In general, it is important to reflect on why such persons are participating in the workshop and which particular aim(s) they might be pursuing (e.g. election campaign), as well as which potential interdependencies exist between them and the TE team. It is important that the TE team is aware of potential instrumentalisation and co-optation of its citizen engagement, which might lead to disempowerment. To resolve ambiguities, the role of those in a position of power must be clarified beforehand, as well as the nature of the workshop agenda (e.g. panel discussion, working session).

*Create room for trust building and visioning.* In DF, there was much scepticism and uncertainty regarding the potentials and pitfalls of introducing district funds and councils in other urban districts. While DF promise to strengthen democratic structures, local civic associations were sceptical if they could handle the workload of coordination and provide the legal and administrative expertise required for DF. Transfer workshops are always the beginning for further steps to implement the insights gained. As this is normally rather "virgin soil", the transfer workshop should encourage trust building and promote a culture of experimenting and learning-by-failing to explore new approaches. Accordingly, one participant stated: "You have to dare to step into the darkness".\*<sup>5</sup>

*Adopt an evidence-based approach if empirical studies are available.* In the discussion on the potentials and pitfalls, the empirical findings of the accompanying research were invoked to show how DF could strengthen community-building and identity-building within urban districts. This enhanced the legitimacy of the idea to establish DF in other urban districts.

*While researchers adopt multiple roles in TDR (e.g. from reflective scientist to change agent) and seek to co-create sustainable futures, they need to maintain a neutral role and respect democratic processes if distributive conflicts emerge.* Concerning the provision of finances for DF, there was a conflict of interest between the municipal district councils and the urban district councils (DF). The institutionalisation of DF was politically contested amongst different political parties and municipal district councils were critical of sharing their funds with DF. Even if a new funding guideline for DF were to be introduced, there would still be competition over funds from the local budget. Against this backdrop, the city council adopted the decision to increase funding for the municipal district councils in December 2022 and recommended to pass on these funds to DF, yet did not introduce a new funding guideline for DF.\*<sup>6</sup> Apart from providing empirical evidence on the impact of DF in urban districts, the researchers remained neutral observers of this debate before and after the transfer workshop.

## **Conclusions: Insights for facilitating knowledge re-integration**

Our aim in this Workshop Report is to help close the knowledge gap on how best to facilitate knowledge re-integration in TDR, as well as to improve facilitation methods and formats.

### **Design of teams for knowledge integration**

It was very useful to assign the role of facilitator in TDR projects. Here it was important to eliminate any double roles for the facilitator of DCF (e.g. accompanying research) by narrowing her task to solely that of facilitating the process of knowledge integration. This made it easier to deal with the “in-betweenness” (Moss 2009) of this intermediary role and for the facilitator to remain neutral when moderating the different workshops. It also enhanced the capacities for team building, reflection processes and active participation in DCF. Scientists still debate whether the role of facilitator should be external or internal to one of the institutions involved in the research consortium (see Clark et al. (2016), Schöpke et al. (2017), Bergmann et al. (2021),). Irrespective of where the facilitation role is positioned, suitable training has to be offered to facilitators of TDR processes as well as to researchers to improve their moderation and mediation competences, as well as to implement better transdisciplinary methods and formats.

### **Design of settings for active participation**

Online formats cannot replace in-person meetings in TDR processes. Due to the COVID-19 pandemic, we conducted many online formats for the DCF process. This, however, contradicts the design principle of informal exchange in TDR processes (Theiler et al. 2019). Instead, it is important to create and establish a physical space for TDR processes, providing a neutral space that helps the participants overcome institutional boundaries and fosters a collaborative atmosphere (Hemström et al. 2021). In particular, time should be given during the format to promote informal exchange.

### **Design of handbook workshops**

Given the aim of knowledge re-integration into society, it was essential to integrate the local knowledge of TE teams to define the objective, target group and content of the handbooks. Personnel resources for the co-creation of handbooks should be provided for both researchers and practitioners. Moreover, it proved to be effective to first define the objective and *one* specific target group for the handbook (backwards thinking). Then the content of the handbook can be tailored to the needs of the target group. If there are diverging interests or truth claims, it is important to assess if they can be addressed within the workshop or require another setting or even external mediation.

### **Design of transfer workshops**

An interesting finding for the “How To” of knowledge re-integration was the shifting roles of practitioners, researchers as well as the facilitator throughout the different formats. It was important that the practitioners should assume the role of facilitator for a better design and implementation of the transfer workshop, as they knew best how to reach and interact with the target group. Therefore, we conclude that a change in roles – especially of practitioners – should be fostered to ensure knowledge re-integration. An evidence-based approach to present empirical findings and on-site excursions to illustrate good practices can be effective to address concerns and uncertainties arising from innovation processes.

On a more critical note, facilitation methods and documentation materials like workshops and handbooks are only particular and limited design elements, which seek to enhance the transferability of co-produced knowledge. The re-integration of knowledge remains a complex process, involving manifold dynamics such as network- and trust-building, power struggles or resistance to change.

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## Conflicts of interest

The authors have declared that no competing interests exist.

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## Endnotes

- \*1 For the entire DCF process, an online toolkit called “Urban Transition Kit” was created ([www.zukunftsstadt-dresden.de/werkstadtkoffer](http://www.zukunftsstadt-dresden.de/werkstadtkoffer); German only).
- \*2 For more information on the design of knowledge re-integration in DCF, please visit: [https://www.zukunftsstadt-dresden.de/wp-content/uploads/2022/06/ZSDD\\_WSK\\_Handreichung-How-to-Wissenstransfer.pdf](https://www.zukunftsstadt-dresden.de/wp-content/uploads/2022/06/ZSDD_WSK_Handreichung-How-to-Wissenstransfer.pdf) (German only). Please also check the agenda and further descriptions of the handbook and transfer workshop.
- \*3 For the final handbooks, please visit: <https://www.zukunftsstadt-dresden.de/werkstadtkoffer/werkstadtkoffer-buergerinnen/> (“Leitfäden”, German only).
- \*4 Please see the documentation of the transfer workshop of SLS: <https://schulhoftransformer.de/wp-content/uploads/2021/09/Schullebensraum-Dokumentation-Abschlussveranstaltung-Zukunftsstadt-Dresden.pdf> (German only).
- \*5 Protocol transfer workshop DF.
- \*6 Email “1 Euro für deinen Stadtteilfonds“ Panja Lange Pro Pieschen e.V. 6 January 2023.