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# Applying Transition Management for Improving Sustainability of WASH Services in Informal Settlements in Sub-Saharan Africa – An Exploration

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**Abstract:** The unsustainability of the services related to water, sanitation and hygiene in informal settlements in Sub-Saharan Africa services is deeply embedded in current societal and governance structures, cultures and practices; it is context-dependent and involves numerous actors with different interests. The field of sustainability transitions research addresses such persistent and large scale societal challenges, with transition management being one of its widely applied governance approach. By drawing on an analysis of the root causes of unsustainability and unreliability of WASH services in three case studies in Sub-Saharan Africa (Arusha-Tanzania, Dodowa-Ghana, Kampala-Uganda), we explore how a transition management approach can be designed to support a transition towards sustainable Water, Sanitation and Hygiene (WASH) in Sub-Saharan Africa. We distinguish the following contextual dimensions related to the unsustainability of WASH services: a) Multiplicity of WASH practices, structures and arrangements, b) Governance capacities for WASH services and maintenance, c) Landownership for sustainable access to WASH, d) Public participation in decision-making related to WASH, e) socio-economic structures governing access to WASH. These dimensions prompt the identification of conceptual and application challenges for transition management. Based on these challenges, recommendations were formulated for the design of a prescriptive transition management process that is not only functional but also emancipatory of character.

**Keywords:** Sub-Saharan Africa; Transition Management; WASH; informal settlements; sustainability transitions

## 1. Introduction

Ensuring the availability and sustainable management of water and sanitation for all is one of the Sustainable Development Goals adopted by the United Nations in 2015 [1]. Still the majority of the population of Sub-Saharan Africa lacks safe sanitation and clean water and many ecosystems are heavily burdened [2]. This is affected by many factors, such as population growth and urbanization, migration from rural to urban areas, and other related factors such as climate change [3,4]. Cities and peri-urban centers have been unprepared to absorb expanding populations and provide adequate urban services such as housing, water, sanitation, health, and education, as well as adequate planning and regulations, contributing to the creation of informal settlements [5]. Moreover, social and cultural factors like local power structures, cultures and religious and political attachments contribute to the persistency of problems over time [3].

Causes, consequences and causal links of the unsustainability of water, sanitation and hygiene (hereafter: WASH) services are not easily identified and there are no straightforward solutions. Rather, the unsustainability of these services is deeply embedded in current societal and governance structures, cultures and practices, is context-dependent involving numerous actors with different interests. Therefore these problems can be framed as wicked or persistent that cannot be solved by business-as-usual nor by optimization or non-systemic innovations [6,7,8]. Moreover, the unsustainability of WASH services seems to be connected to a crisis of governance: poor resources management, corruption, lack of coordination between institutions, bureaucratic inertia, insufficient capacity and a shortage of new investments and low engagement of citizens in decision making processes [9]. Therefore, achieving more sustainable WASH services requires new ways to look at the complexity of problems and their causalities as well as to find new and innovative governance approaches and partnerships.

The field of sustainability transitions research addresses such persistent and large scale societal challenges [10]. Transitions are considered as complex, long-term and multi-actor societal processes of fundamental change in culture, structure and practices that cannot be commanded or controlled [11]. Against this backdrop new governance concepts have been developed that take into account a fundamental ambivalence of goals, uncertainty of knowledge, and distribution of power in societal change. One of these is transition management [12,13]. Transition management is both a heuristic for analysing governance interventions in the context of sustainability transitions [14,15,16] and a prescriptive approach [17,18], with operational instruments that aim at supporting transformative change and learning processes towards sustainability [14]. Transition management seeks to support the transformative change of socio-political landscapes and socio-technical practices through the organization of a multi-actor processes aiming at co-creating knowledge, learning and experimenting [13,19].

In this paper, we explore the potential of designing transition management as a prescriptive governance tool to address the unsustainability of WASH services in informal settlements in Sub-Saharan African cities. Transition management has been developed in an interplay between policy and science in the European context and has been applied to diverse sustainability issues, policy problems and geographical scales [15]. Water management being one of them [20,21]. These applications of transition management have shown that the approach is able to support governance of and for sustainability transitions [22]. Nevertheless, to date, most of the empirical examples of transition management concern cases in Europe [23] and it has very scarcely been applied to address persistent problems in non-western contexts and there are few existing studies of the application of transition management in non-western countries [21,24,25,26].

With this paper we aim to enrich our contextual understanding of the unsustainability of WASH services and contextualize the design of process methodologies of transition management in non-western contexts. By drawing on the analysis of the root causes of unsustainability and unreliability of WASH services in informal settlements in three Sub-Saharan African cities, we explore how a transition management approach can be designed to support a transition towards sustainable WASH in informal settlements in Sub-Saharan African cities.

After having outlined our methodology in section 2, we introduce transition management in more detail (section 3). From there we outline a number of contextual dimensions in informal settlements in three Sub-Saharan Cities, namely Arusha (Tanzania), Dodowa (Ghana) and Kampala (Uganda). These contextual dimensions pose conceptual and application challenges for transition management (section 4). In the following, we recommend adaptations to the prescriptive transition management process methodologies (section 5) before we conclude the paper (section 6).

## 2. Materials and Methods

### 2.1. Case studies

To establish an informed understanding of WASH services in informal settlements in Sub-Saharan Africa (SSA), this paper zooms in on three cities: Arusha (Tanzania), Dodowa (Greater Accra Region, Ghana) and Kampala (Uganda). These cities are the three case studies of the T-GroUP project<sup>1</sup>, an interdisciplinary and transdisciplinary research project aiming at: a) better understanding what are the relationships (over time and within a defined area) between above-ground and below-ground systems and b) exploring how applicable is Transition Management to slum areas in Sub-Saharan Africa and how it can be tailored and adapted to these contexts. The partnering research institutes are based in the Netherlands, Sweden, Tanzania, Ghana and Uganda.

Choosing these diverse case studies, which are diverse, specifically in terms of WASH governance, allowed us to cater for the fact that SSA is a heterogeneous region. Taking diversity as an entry point, we aimed to identify more meaningful contextual dimensions when adapting and applying transition management in SSA.

Dodowa is a small district town in a peri-urban area of Ghana which has 12,070 inhabitants (2010) and the overall district 50,224 (2010) [27]. More than half of the residents of the city rely on piped water, others use multiple groundwater abstraction points or buy sachet water. Water is highly contaminated especially by E.coli [28,29]. Kampala is a capital city of Uganda with 1,507,000 inhabitants [30]. Over 60% of Kampala's population lives in informal settlements [31]. Access to safe drinkable water is one of the challenges in Kampala City slums [32]. Access to safe drinkable water is better in central divisions. In other divisions, especially in informal settlements, access to clean water range between 45% and 70%. Overall, 25% of households in Kampala do not have access to safe water sources [32]. The remainder supplies water from polluted sources such as protected and unprotected water springs. Arusha is a fast-growing city of approximately 400,000 inhabitants in Northeast Tanzania located within the Pangani River basin. The majority of the population depend on multiple sources of water (protected and unprotected springs, kiosks, piped water, sachets etc.) [33].

Low quality and poor access to water, sanitation and hygiene (WASH) have profound consequences for health and life expectancy [34,35]. Diarrhoea as a prime example [36,37,38,39], but also increased maternal mortality [40,41], transmission of a range of tropical diseases [42,43,44,45] and respiratory infections [46].

### 2.2. Research approach

Our understanding of the WASH services in the three case studies is based on a triangulation of knowledge from different sources and research activities carried out as part of the T-GroUP project. Firstly, we conducted a systematic literature review of WASH in Sub-Saharan Africa with special emphasis on Arusha (Tanzania), Dodowa (Ghana) and Kampala (Uganda). We searched articles on SCOPUS using different combinations of the following key words: [WASH] or (water) or (sanitation) and Accra and Ghana and Kampala and Uganda and Arusha and Tanzania. The resulting articles

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were supplemented by relevant secondary literature. Secondly, we relied on empirical material that was collected in the broader context of the T-GroUP project between 2015 and 2017, namely 57 interview summaries, four master theses and eight fieldwork reports. A third data source were workshop reports and field notes from two inter- and transdisciplinary project workshops (in 2016 and 2017) featuring all research partners and focusing on translating the transition management approach to the three urban areas in question. Fourthly we conducted a literature review related to sustainability transitions and transition management.

The analysis of this data allowed us to identify five main context dimensions and describe them in more detail. Based on these context dimensions, and a thorough review of transition management literature, we discuss the conceptual and application challenges and how these could be addressed. For the formulation of meaningful recommendations, we have done some targeted literature searches with regard to specific methods and topics.

### 3. Transition Management

The challenges that Sub-Saharan Africa faces regarding water, hygiene and sanitation can be considered as wicked or persistent problems [6,7,8]. These kind of problems are deeply embedded in current societal structures, cultures and practices, are context-dependent, involving numerous actors with different interests and do not have straightforward solutions – as any direction is normative, and therefore disputed. To solve these kind of problems, nothing less than a transition is considered necessary, a radical change in current structures, cultures and practices [47,48]. Transitions are long-term, multi-actor societal change processes, which cannot be commanded or controlled. Following Giddens structuration ideas, transition management supposes that the activities of societal actors influence direction and pace of societal dynamics [49]. It is based on ideas of reflexive governance which aims at addressing the root causes and at taking account of the uncertainty of knowledge, the complexity of the implementation context as well as of ambivalence, incertitude, and distributed power in societal change [50,51]. Transition management aspires to influence societal dynamics by stimulating multi-actor experimenting, searching and learning processes towards sustainable futures [13,47].

In an overview chapter about transition management in the urban context, [14] distinguish between four elements of transition management. First, there is a set of principles for transition governance. These principles are: a) content and process are inseparable, b) long-term thinking is a framework for shaping short-term policy, c) objectives should be flexible and adjustable at the systems level, d) timing is crucial, using disequilibria as well as equilibria, e) creating space for agents to build up alternative regimes, f) steering from outside a societal system is not effective, g) focus on (social) learning, h) participation from and interaction between stakeholder is necessary (cf. 13 Loorbach, 2010). These principles are the conceptual backbone of transition management and are based on complex system thinking, sociological insights and governance theories. When discussing the conceptual challenges (section 4.6) resulting from the contextual dimensions that account for the unsustainability of WASH in informal settlements in SSA cities (section 4), we refer back to these principles.

Second, these principles have been translated in a transition management framework (or cycle) [13] which distinguishes between operational, tactical, strategic and reflexive governance activities. Strategic activities are related to the “culture” of a societal (sub-) system (i.e. debates on norms and values, identity, ethics, sustainability). Among these activities, very crucial for transition management are processes of vision development, strategic discussions and long-term goal formulation [13]. Tactical activities are steering activities that are interest driven and relate to the dominant structures (regime) of a societal system, therefore including rules and regulations, organizations and networks, institutions, infrastructures, and routines. Operational activities are those actions and experiments with a short-term horizon and often carried out in the context of innovation projects and programs, but understood in an inclusive manner, as including all societal, technological, institutional, and behavioural practices that introduce or operationalize new structures, culture, routines, or actors. Reflexive activities relate to monitoring, assessments and

evaluation of ongoing policies, and ongoing societal change, either located within existing institutions established to monitor and evaluate, either when socially embedded (i.e. the media and Internet, science and research). Such reflexive activities are necessary to prevent lock-in and to enable exploration of new ideas and trajectories. It is essential to emphasise that from a transition management perspective, however, the reflexivity needs to be an integrated part of governance processes [13]. When formulating the challenges that relate to the application of transition management (Table 1 in section 4), we use different levels of governance activities as orientation.

Third, these activities have been separately operationalised into different transition instruments. A prominent strategic instrument is the 'transition arena'. A transition arena is considered an experimental space and participatory learning process in which 'frontrunners' from different societal spheres meet to structure and (re)frame the societal problem and develop a shared vision of sustainable futures [52]. On an operational level, transition experiments are 'instruments' that aim at learning how a specific societal challenge can be addressed [53].

Fourth, building on insights from deliberative policy approaches, action research and transdisciplinary writings, the different governance activities and associated instruments have been integrated in process methodologies. These can guide the implementation of transition management processes by policy makers or intermediaries [19,54] but also action-oriented research supporting sustainability transitions [55,56]. Expanding the idea of a transition arena, these cover roughly the following steps [19,54]: 1) setting the stage, 2) explore local dynamics (systems and actor analysis), 3) framing the transition challenge (problem structuring), 4) envisioning a shared future, 5) reconnecting long-term and short-term (exploring pathways & building an agenda), 6) engaging and anchoring, 7) getting into action (experimenting and implementing), and 8) reflecting, monitoring and evaluating. When formulating recommendations for the design of transition management (section 5), we focus on the transition arena as a strategic instrument and the different process phases outlined here.

Over the years different versions and applications of the transition management framework have been used to address sustainability challenges in diverse European cities [22,57,58,59,60,61,62,63,64,65], with a similar aim to create space for alternative ideas, practices and social relationships [59]. In this regard, transition management does not replace and exists next to other governance activities. According to [19] transition management has the potential to provide: 1) a sense of direction: since it allows for framings and ideas to be confronted as well as the complexity of challenges and the uncertainty of knowledge to be acknowledged, alternative narratives about the underlying problems, the future directions and possible strategies towards these can be developed; 2) an impulse for local change: since they inspire new initiatives and enrich existing ones, alternative practices addressing or mitigating the immanent challenges can be developed; 3) collective empowerment: since actors from different backgrounds explore the past and the future together and explore alternative roles and role constellations, actors are enabled to address challenges and seize opportunities.

However, especially in its early years, transition management has been controversially discussed for its apparent neglect of power relations and the political nature of transition governance [66,67,68,69,70,71,72,73,74,75]. More recently, it has been criticised for not addressing issues of inclusivity, facilitation techniques for social learning and regime persistency [22]. Especially, transition management in the Global South falls short when it comes to addressing the challenges and politics of a just transition and understanding the socio-political regime [76,77,78]. Additionally, several authors point to the implementation challenges of transition management stressing that it is not "a silver bullet solution for actually realizing ambitious sustainability objectives" [63] or an 'ideal type' that is barely attained in practice. Implementation challenges that have been highlighted by [14] are: finding a fit with ongoing dynamics and developments, specifically with policy making; holding on to the need for fundamental change; as well as providing space and time for learning and reflexivity while attending to the political character of these processes and, last but not least, contextualising the approach (e.g. societal challenge, place, time, meaning of sustainability). It is these



discussions on the politics of transition management and the implementation challenges that point the way in our exploration of a TM design out of its Western context.

#### **4. Contextual challenges for transition management in Sub-Saharan Africa**

In the following section, we zoom in on five root causes (i.e. context dimensions) for the unsustainability of WASH in informal settings in Sub-Saharan African cities. These context dimensions pose conceptual and application challenges for the design of an action-oriented transition research approach. The dimensions are not exclusive to nor by any means exhaustively accounting for the unsustainability of WASH in the Sub-Saharan context. Rather, we consider them as exemplars also pointing to the main differences between the European and the Sub-Saharan context and thereby revealing challenges to a euro-centric governance approach. After having outlined the context dimensions in more detail, we discuss the conceptual and application challenges they pose for transition management.

##### *4.1. Multiplicity of WASH practices, structures and arrangements*

The first contextual dimension refers to the informality and multiplicity that characterize the practices, (infra) structures and arrangements of WASH in non-western cities [79,80,81,82].

Specifically in informal settlements, the access to water and sanitation is a question of a mosaic of formal and informal practices, rather than (only) relying on the services supplied by the state or private companies as is the case in the majority of European countries [83]. The household's socio-economic circumstances influence how end-users diversify and how water from different sources is supplied and used [28]. For example in Kampala, community residents collect water from protected and/or unprotected springs, standpipes, self-supply mechanisms such as dug wells and manually drilled wells and boreholes. In all three cases, residents fetch or purchase water from different water sources [28,29,84]. In Arusha, for example, water is supplied via kiosks (booths for the sale of tap water) and springs [33]. Moreover, the sanitation system in cities in SSA is also based on different, multiple structures including improved facilities (such as flush toilets, ventilated improved pit latrines, pit and composting toilets) and unimproved facilities (such as bucket latrines, hanging toilets or hanging latrines) [85]. Moreover, it is estimated that 215 million people in sub-Saharan Africa continue to engage in open defecation [86].

On top of relying on a multitude of practises, many urban poor engage in highly informal arrangements. Although these informal arrangements are not by definition worse in terms of hygiene and quality than formal ones, they are a symptom of the underlying inequality of basic service delivery. Having to rely on them means relying on often inefficient, low-quality alternatives for meeting basic needs. Still, people may prefer informal arrangements that are known to them over formal procedures that are too costly or unfamiliar [87,88,89,90].

These multitude of (informal) practices, structures and arrangements of water supply and use, as well as sanitation are linked to conflicting interests, social inequalities and multiple power dynamics contributing to the complexity of WASH services (see also section 4.5). While this contextual dimension confirms the need to formulate flexible and adjustable objectives when applying transition management, it challenges the underlying assumption of transition management that there is one dominant way that a system is structured, thought of and practiced; i.e. that the regime is a coherent entity. Moreover, it poses an application challenge in setting up and selecting transition experiments that are able to deal with multiplicity and a high degree of informality.

##### *4.2. Governance capacities for WASH services and maintenance*

The second contextual dimension that contributes to the unsustainability of WASH in informal settlements in Sub-Saharan African cities is the lack of governance capacities to provide and secure WASH services and maintenance [9].

Firstly, the responsibility for public services falls under mixed and fragmented organisational and governance structures resulting in unclear roles and responsibilities and lack of accountability

mechanisms [28,84]. For example, decentralisation policies in Dodowa and Kampala have led to an ineffective transfer of responsibility for the provision of key services to sub-national authorities, resulting in overlapping mandates and contributing to replication of efforts and the waste of resources. In addition, local district assemblies responsible for the maintenance and management of the facilities do not have the capacity to manage WASH facilities effectively [28].

Secondly, the low level of collaboration and trust between actors affects service delivery and hampers local engagement – for example the role of community caretakers or community based organizations – in water management [28]. The relationship between different governmental actors, between local councils and central governments or between district assemblies and the ruling party, is often defined by party political tensions. In the relation between governmental and societal actors, the lack of trust is brought about by lack of sharing information, lack of inclusion of local actors in or transparency of decision-making processes. Often manifesting itself in corruptive behaviour. As described, for example, by an interviewee in Kafunda community in Kampala, the Kampala Capital City Authority (KCCA) did not include community members in decision making about a planning intervention related to drainage systems in the informal settlement. Interviewees shared how water committees and Community Based Organisations (CBOs) failed due to corruptive behaviours and lack of transparency.

These governance issues confirm the need to include analyses of actors and governance structures, emphasising a closer look at levels of cooperation and trust. Roles and responsibilities of actors and institutions are not always obvious, and a shared understanding needs to be established based on multiple knowledges. This contextual dimension also raises numerous application questions related to the identification, selection and capacity building of actors.

#### *4.3. Landownership for sustainable access to WASH*

The third contextual dimension relates the unsustainability of WASH services to questions of landownership and planning regulations. Land ownership and/or access to land is generally important in relation to accessing water sources [91]. Land ownership and distribution of land resources is unequal and skewed [92]. Moreover, inhabitants often have no security of tenure for the land or dwellings they inhabit and they may occupy or rent informally [93]. This has greatly influenced the socio-economic and political positions of different groups of people deeply connected with past inequalities. Tenure arrangements have been subject to major transformations, most notably attempts to replace indigenous, community-based property regimes with either centralized state-owned forms of tenure or individualized freehold private property [94,95]. Informal settlements in SSA have been left out of planning for formal basic service provision and housing [96].

Landownership is problematic in both Dodowa and Kampala. In the latter, for example, tenants pay more for water than landowners [97]. Landownership is also related to the sustainability of facilities. In Kampala, many water and sanitation projects failed due to land conflicts emerging among community members. Against a compensation, land owners usually donate their land for setting up WASH facilities. However, some years later, they take over the facility and ask residents to pay for its usage and claim the right to deny access to the facility. Thus landownership negatively impacts the management and access to water and sanitation services.

Transition management is based on the conceptual assumption that it is possible to create space to incubate and nurture innovations. However, a context of existential insecurity, as when faced eviction or legal uncertainty, as when landownership is not clearly regulated and enforced, poses severe limitations to this principle. The temporary nature transition management process seems to be a barrier rather than an opportunity then. In applying transition management ownership structures should be addressed on the strategic level of envisioning and the operational level of experimenting.

#### *4.4. Public participation in decision-making related to WASH*

The fourth contextual dimension relates to the participation of the public in decision making processes in general and also in relation to WASH services. Public participation is also referred to as

“public involvement,” “community involvement,” or “stakeholder involvement” [98] and refers to the goal of achieving better and more acceptable decisions by involving those affected.

On the one hand, most local government systems in SSA do not offer opportunities for citizens to participate in decision making [99,100]. Especially the poor and marginalized groups lack a ‘voice’ related to service delivery [100]. Low participation in decision making is also closely related to low access to education services that contribute to processes of social exclusion [101]. Even when governments make the shift towards more participatory decision making, as is the case in Ghana, they focus especially on elite populations [102]. In both Dodowa and Kampala, participation of local residents in decision-making processes happens very rarely in practice. In addition, when officials take part in participatory processes, that are for example initiated by research institutes, they have to ask for permission and can only speak on behalf of their institution.

On the other hand, citizens do not feel responsible for public problems, such as the provision of water and tend to leave the issues to be taken up by the state or municipal authorities, private sector or NGOs. In our case studies, local researchers experienced the strong expectations from local residents towards the building of water infrastructures (when drilling for water samples), possibly pointing to legacies of a colonial history that inhibited the sense of local ownership and activism. On top of this, the awareness regarding sustainable water use, as well as set up and maintenance of sanitation services is low, aggravating the contamination of water sources and the environment.

This contextual dimension challenges the conceptual assumption of transition management of a well-functioning democratic space that allows for bringing together a set of different actors that have the capacity to take up the role as change-maker [76]. Related application challenges are to design a process that provides room for multiple and different forms of participation and find tools to empower and to support capacity building of participants.

#### *4.5. Socio-economic structures governing access to WASH*

The fifth contextual dimension that poses a challenge for the design of transition management for addressing unsustainable WASH services is the persistent and high level of poverty and social inequalities [103,104]. Inhabitants living in informal settlements have low access to basic services such as education, health care, housing, water and sanitation and city infrastructures like accessible roads within these settlements [96,105].

Unequal access to WASH is problematic in all three case studies of our research. The water price, for example, varies between community members and is based on social status. This often results in those with lowest social status (i.e. the poor) having to pay most to secure access to safe water. As a result, they find themselves forced to use alternative water sources. For example, in Kampala, tenants explained that caretakers raised the price for piped water causing them to use unprotected water sources (i.e. water springs) instead. Additionally social status, power and low trust influence the opportunity for people to engage in active groups or local organisations (e.g. CBOs) [84].

Education has been identified as a key factor in economic and social development, and the equitable access to education of good quality has become a key objective of development policy [106]. Countries with high levels of educational inequality consistently show lower levels of innovation and a tendency to transmit poverty across generations [107]. Inequality in access to education has been identified especially in Kampala, where access to education is still dependent on ones sex, location, and asset index [108]. Many interviewees explained their impossibility to pay the governmental school fees related to school enrolment.

Also women are disproportionately disadvantaged, being limited in their right to property or participation in decision-making processes [109, cf sections 4.3 and 4.4]. For example, in the Zongo community, a Muslim community in Dodowa, women were initially not allowed to participate in meetings without their husbands’ consent. These examples point to the importance of the strong social and communal ties that on the one hand allow for survival with limited economic means, but on the other hand reinforce certain norms and values.

This contextual dimension challenges the conceptual assumption of transition management of social structures always providing enforceable, equal access to basic services and the resulting focus on



'frontrunners'. A practical challenge is a reconsideration of the 'frontrunner' concept in a way that provides space and voice to the most-marginalized community members.

#### 4.6. Conceptual and application challenges

For each of these context dimensions, we already indicated the main challenges for designing and applying transition management aimed at addressing the unsustainability of WASH in Sub-Saharan Africa. We can distinguish between challenges of a conceptual nature that challenge underlying concepts and principles of transition management; and application challenges related to current instruments and methods of transition management. Table 1 provides an overview of both conceptual and application challenges.

**Table 1.** Overview of conceptual and application challenges for designing and applying transition management in SSA.

| Context dimensions  | Conceptual challenges   | Application challenges (relating to the four levels of governance activities)   |
|---|---|---|
| Multiplicity of WASH practices, structures and arrangements | Broaden up the understanding of the regime as a coherent entity by paying attention to both formal and informal practices, structures and arrangement as well as to their multiplicity. | <i>Strategic:</i> Take account of the co-existence of both informal and formal structures and practices as well as their multiplicity (system analysis)<br><i>Operational:</i><br>-Design and select transition experiments that are able to build on the multiplicity of practices, structures and arrangements.<br>-Allow the flexibility of the process and design it based on local needs and opportunities.  |
| Governance capacities for WASH services and maintenance     | Encourage informal interaction regardless of formalized roles and organizational hierarchies.   | <i>Strategic:</i><br>-Take account of multiple knowledge in establishing current roles and responsibilities (system analysis)<br>-Be sensitive to the relation among selected participants and with the overall community.<br>-Enhance trust building among actors from different societal domains as part of the arena process.<br><i>Operational:</i> Strengthen governance capacities to maintain and sustain transition experiments over time.<br><i>Reflexive:</i> Build capacities and enhance collaboration through shared monitoring and evaluation of process and outcomes |
| Landownership for sustainable access to WASH                | Reconsider the contours and duration of a protected space that enables nurturing of innovations in the  | <i>Strategic:</i> Take account of landownership (systems analysis).<br><i>Strategic/tactical:</i> Create shared and desired vision of landownership in future and think of pathways for realisation   |

|   |   |   |
|---|---|---|
|   | face of existential insecurity and legal uncertainty.   | <i>Operational:</i> Design and/or select transition experiments that address legal uncertainty as well as existential insecurity, and thereby enhance equal access to water.  |
| Public participation in decision-making related to WASH | Address the issue of limited democratic spaces.   | <i>Strategic:</i> Design a process that consist of different inclusive forms of participation and therefore offers an opportunity to experience public participation for both community members and officials.<br><i>Strategic/tactical:</i> Devise/use methods to empower and build capacities of actors to engage in participatory processes, to mobilise other community members and to take up the role as change makers.   |
| Socio-economic structures govern access to WASH         | Rethink selective participation as a means to organize transition arena processes and thereby the exclusivity of the process. | <i>Strategic:</i><br>-Design an open and inclusive processes by considering alternative ways to select and engage actors.<br>-Consider approaches that give a voice to the most vulnerable and less powerful actors and create a safe environment (e.g. to limit the barriers to speak freely in envisioning).<br>-Integrate capacity building and skills development in the transition management process.<br><i>Operational:</i> Design experiments that address and alter social inequalities and poverty related to access to basic services.<br><i>Reflexive:</i> Make equal access a prominent indicator for the monitoring and evaluation activities |

## 5. Recommendations for the design of action-oriented transition management process at community level

In this section we translate the application challenges into recommendations for each of the steps of the prescriptive transition management process methodologies that operationalize the transition arena as a strategic instrument [adapted from 14,19,54].

### 1) *Setting the stage and explore local dynamics:*

- **Building trust and capacities of the transition team.** In this preparation phase, an inter- and transdisciplinary transition team is formed that guides the overall transition process. In order to address the conceptual and application challenges it is key that the members of this transition team are trusted by and well connected within the community. To address the ineffective management and governance of WASH facilities and services (section 4.2) and deal with social inequalities (section 4.5), it is vital to build trust and capacity both among transition team members as well as with local stakeholders, early in the process. In this regard, trust building depends also upon the facilitators' attitudes and constant communication with the participants.

- **Conduct a system- and actor analysis that is sensitive to the context.** In order to avoid the reproduction of persistent problems and social inequalities, it is important to take into account the multiplicity and mosaic of both informal and formal practices (section 4.1), the (land) ownership

structures related to service provision (section 4.3), and the different levels and tradition of decision-making and participation of community members and officials (section 4.4). Moreover, mapping governance capacities of community and government actors makes it possible to identify gaps and possible opportunities for new collaborations across societal domains that can be crucial in anchoring and engaging of the TM process in a later stage (section 4.4). Likewise, since the social relations and social inequalities between participants affect the transition management process, a contextualized understanding of actor roles and relations is crucial to inform the actor selection (section 4.5). This means understanding how conflicts of interest and political tensions are interpreted and whether particular interests are prioritised [110]. At community level, this means thinking about who is constituted as 'the community', how the community is socially organised and how power is distributed [111]. Think of the allocation of resources (e.g. accessibility and affordability of water and possibly other services) in relation to language, gender, religion and political affiliation of the community members.

- **Beyond representation, invest in potential change-makers.** Identifying, selecting and inviting change makers on personal accounts – one of the conceptual premises of TM – poses multiple application challenges. Firstly, actors working in institutions can only participate in meetings with official permission and are obliged to represent the institutions – meaning that new and innovative ways to engage institutional stakeholders are needed (section 4.2). One example on how to address this challenge would be to engage institutional stakeholders by providing specific learning and capacity building opportunities.

Sustainability is a new issue in informal settlements in SSA, this means that even if stakeholders are undertaking sustainability practices or activating others regarding local problems, they might be aware of neither of sustainability concepts nor of their role as 'change-makers'. Additionally local actors could be unable to access education (section 4.5) and negatively affecting their personal development, social inclusion and active citizenship. This means that criteria for selecting participants need to consider the potential of actors of becoming more aware of their societal role as well as the importance of their actions. Additionally Transition Management process should integrate capacity building and education activities for enhancing active citizenship, empowerment and social inclusivity.

- **Assessing local learning needs and priorities.** To date, transition management is not explicitly identifying the learning needs and priorities of local stakeholders at the outset. However, local stakeholders can be fully engaged in the process if prioritize their most urgent local needs and problems. Additionally, since low governance capacities of local actors contribute to the unsustainability of WASH services (section 4.2), we suggest that doing so would support the design and planning of capacity building activities during the process.

Transition management could adapt and integrate principles and tools more from community development literature [112]. Needs assessment, a systematic process for identifying needs between current and desired conditions (i.e. wishes) [113] could be integrated in the Transition Management process. Another potential adaptation could be to design capacity building and learning processes in a co-creative way together with the engaged stakeholders [114,115,116].

- **Design parallel multi-level processes.** A transition management process that would bring together participants from different societal domains and levels of hierarchy runs into challenges in a context where the trust among societal actors belonging to different domains is very low [see also 26, section 4.2, 4.5]. We propose to design a multi-level process integrating notions of participatory development, community development and capacity building [117,118,119,120,121,122] where the interrelation, trust building and dialogue between actors from different societal domains follows a step by step process. This means organising multiple parallel transition management processes focusing first on enhancing trust building, visioning and collaboration within a specific social domain (e.g. community, institutional level) and then create a platform for the actors from the different processes to interact. An example would be to organise a transition management process with community residents in parallel to another one engaging stakeholders from local institutions and organisations and progressively connect the two processes. The multi-level transition management

process needs to be designed based on a system, actor and learning needs assessment and it is therefore context-specific. It is key to identify the suitable moment to integrate the processes based on the advances in capacity and trust building.

2) *Framing the transition challenge:*

Once the transition team has been formed, the system, actor and learning needs assessment done and the participants invited, the actual participatory process begins. It is key that the participants are committed to attending the arena meetings.

- **Define the goal of the process and its transformative potential together with local stakeholders.** Central to this phase of the process is the reflection upon its overall goal based on an initial assessment of the system, actors and local learning needs. Framing the challenge in a way that relates it to the daily experience and priorities of the broader public is crucial in enhancing a sense of ownership in a later phase.

3) *Envisioning a shared future, exploring pathways and building an agenda:*

- **Trigger creativity by sustainability inspirations and best practices.** In order to address the lack of awareness on unsustainability problems related to WASH services as explained in section 4.4 as well as social inequalities (section 4.5), transition management process facilitators need to create spaces for raising awareness on sustainability practices and behaviours (e.g. through fieldworks, videos, etc.), encourage sense of place and belonging and by sharing the lessons learnt by sustainability initiatives and best practices already implemented in similar contexts. Speakers from relevant initiatives, projects or programmes (e.g. representatives of community organisations or groups, NGOs, institutions or other relevant organisations) could be engaged in the process to share best practices and innovative actions in order to inspire and motivate the engaged participants. This would support the community to identify local opportunities and to be inspired to start new collaborations and actions.

- **Integrate participatory methods.** Although participatory processes of social learning are the conceptual basis of TM and participatory methods are part of the TM toolbox (back-casting, envisioning, etc.), especially when operating at community level, these methods need to be simplified and to consider the existence of multiple languages in the SSA context. Furthermore, additional participatory methods and tools could be integrated to support the (emotional) expression of profound institutionalised inequalities, power dynamics between actors and fears (e.g. fear of losing own land), challenges explained in section 4. Integrating tools such as 'photo voice' [123,124], art tools [125] like forum theatre or community theatre [126,127,128], community-led total sanitation (CLTS) approaches [129,130] or other methods [e.g.131] would support the expression of issues that are difficult to express with words.

4. *Engaging and building capacities:*

- **Integrate transformative capacity building activities.** Unequal access to education and other social services has been explained as one of the challenges of the SSA context in section 4.5. Enhancing knowledge, skills, and capability based on people's learning needs in a practice oriented way, is crucial in sustaining the outcomes of the transition arena over time. Capacity building activities would support the engagement of more vulnerable members and disadvantaged groups, encourages learning exchange across communities and set up new networks [132,133,134].

- **Support community ambassadors, community mobilisation and engagement by selected actors.** Understanding community dynamics and reflecting on how to transfer the insights as well as broaden empowerment and capacity building to the overall community are particularly important. This could be done by combining a selective transition arena process focusing on creating a new WASH narrative and designing experiments, with a more inclusive and participatory process. Selected actors, ideally the most intrinsically motivated and active community members, could be asked to inform, engage and mobilise the overall community. These actors could be prepared and trained over time to become community mobilisers and they could learn, for example, how to engage stakeholders, how to facilitate and monitor meetings and what tools and methods to use. These activities would be useful to support a process of inclusion and engagement of the overall community

as well as enhancing transparency within the community and fostering unity among the community members towards a common goal.

#### **5. Getting into action:**

- **Set the focus on experimenting.** In setting up the experiments the application challenge is to design the experiments so that they take into consideration all context characteristics described in session 4. Especially, experiments should take into account both formal and informal alternative practices and structures, address landownership and planning issues and enhance equal access to basic services. Already when setting up experiments, it is important to think about ownership and maintenance of experiments overtime through the development of specific capacity building and empowering activities such as on organisational and accountability skills. Additionally it is important to encourage the engaged stakeholders to explore novel and radical ideas to implement through experiments in order to break the tendency to focus on what is already known or already existing 'regime' practices.

- **Experiment with sustainable awareness and behavior.** Some experiments could be directed at raising awareness about sustainability issues in the community. This could be done using art-based sensitisation activities and creative methods inspired by existing international development approaches [117,121,125,129,130,135].

#### **6. Reflexivity, monitoring and evaluation:**

- **Choose your indicators wisely.** Indicators for monitoring and evaluation should be chosen so as to address some of the factors that create the unsustainability of WASH, for example the unequal access of water (section 4.5). Doing so ensures that data and evidence is collected on the issues that matter and put these on policy agendas.

- **Make monitoring and evaluation a shared process.** By not outsourcing monitoring and evaluation to a third party but making it integral part of the activities, it can act as a capacity building activity. It can also enhance collaboration between different actors by working on a shared task aimed at gaining insights into system dynamics and state (section 4.2). These insights are very useful in guiding future actions and or interventions.

## **5. Conclusions**

This paper explores how a transition management approach can be designed to address the unsustainability of WASH services in the context of informal settlements in cities in Sub-Saharan Africa. We focus on a diverse set of cities, namely Arusha, Dodowa and Kampala, to identify five contextual dimensions that account for the unsustainability of WASH services. These dimensions prompt the identification of conceptual and application challenges for transition management, which we then translated into recommendations for the design of a prescriptive transition management process.

This paper started from the realization that the coming of age of transition management was situated in North-Western European liberal representative democracies with well-functioning markets and strong institutions and therefore could never be uncritically applied in other contexts. This paper underlines that context does matter and that transition management processes will play out differently in informal settlements in Sub-Saharan African cities. We have shown that the political, social, cultural, governance and planning context of informal settlements, as well as the way WASH services have been organized and managed in the past, ask for approaches which start from critical assessments of structural and cultural inequalities and combine it with trust- and capacity building based on local needs and priorities. A creative diversification of instruments and methods used in the different process phases of transition management is needed combined with different parallel-running processes.

At the least, our design recommendations for transition management processes in the Sub-Saharan African context emphasize that it is not only about a sense of direction, impulses for action and collective empowerment. Critically, transition management should be about enlarging and strengthening democratic space by building capacity for participation in knowledge and society-



shaping processes. Therefore, transition management needs to be not only functional but also emancipatory in its design.

At the core, this analysis of the unsustainability of WASH in informal settlements in Sub-Saharan African cities challenges not only methods and instruments but core assumptions and principles of transition management. Some of these are in line with the questioning of concepts that has started with the recent uptake of transition thinking in ‘developing’ countries [103,104,136]. This analysis also reveals that neither methods nor principles are neutral or universal but inherently culturally shaped. Think of the imperative of taking part on ‘personal title’ and ‘speaking your mind’. These insights ask for appropriate modesty and cultural sensitivity and ideally a co-construction of process principles in a translocal collaboration. We emphasize translocal here, since neo-colonialization is not reserved to interactions between European governance approaches and African contexts, but crucially can take place also within Europe. Therefore we recommend that transition scholars ‘unfamiliarize’ themselves with the contexts they are working in to arrive at more critical and emancipatory insights and designs.

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