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Article

Rooted Water Collectives in a Modernist and Neoliberal Imaginary: Threats and Perspectives for Rural Water Commons

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Abstract: Water schemes that rely on user (co-) ownership and collective action have been described in the irrigation sector for a long time. Still, interest in such forms of (co-) investment in the domestic/multiple use sector is more recent. To address the persisting issue of rural water service, (what has been coined) self-supply is proclaimed to be a (supposedly) low-cost, sustainable manner to attain the Sustainable Development Goals (SDGs). User (co-) investments are to be promoted and realized through the creation of an enabling policy environment and development of, and training on, low-cost technologies through government and NGO support and private sector-steered access to such technologies. In this article, we apply the Rooted Water Collectives (RWC) framework to describe two such schemes, one in South Africa and one in Switzerland. The data collection followed an action research methodology, with the main author being involved in interventions in all three schemes. We show here that these collectives create positions of purpose within societies and that what motivates people is to help themselves and contribute to the greater good of the community. This article shows that interventions to foster and sustain such collective actions that follow a neoliberal/modernist imaginary negatively affect their viability since these collectives, through their other-than-capitalist interactions, form part of and depend on an alternative imaginary. We conclude that interventions aiming to strengthen forms of collective action can only succeed if they recognize contextuality, unequal power relationships, and grass-rooted forms of interdependence and collaboration, and actively build on and work toward such alternative, more convivial imaginaries.

Keywords: rooted water collectives; commons; modernist/neoliberal imaginary; new public management; self-supply; South Africa; Switzerland



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1. Introduction

Since time immemorial, humans have engaged in collective action to secure their water access. As such, (co-) ownership and management of water infrastructure is the reality of many around the world these days. Although such user-driven schemes have been described [1,2] and promoted [3] in the irrigation sector for a long time, interest in forms of (co-) investment and user ownership in the domestic/multiple water use sector is more recent [4,5]. These schemes are suggested to be more sustainable due to (co-) ownership [5–8] and the use of simpler and more affordable technology [5,8] while being more accessible, adaptable, and cheaper due to user investments [5,6,9,10]. The supposedly low-cost, resilient manner that so-called self supply systems offer to attain the Sustainable Development Goals (SDGs) has led to its promotion by international organizations and development agencies [11–15]. In several sub-Saharan countries, self-supply has been the object of newly piloted policies [6,16,17] or draft policy adjustment projects ([18], [19] cited in [12]). To successfully develop district-specific supply strategies that build on such user initiatives, it is important to “recognize the part that self-supply is already playing in

bringing water to millions of households, and to understand the forces that drive it" [5] (p. 250). The self-supply discourse is thereby dominated by it being able to solve the rural water access problem through a combination of an enabling policy environment, NGO support, development of and training on low-cost technologies and creating access to technologies through the development of the private sector [5,9,16,20]. As many concepts before, self-supply becomes a manifestation of the belief that an issue like water access can be addressed isolated from other, structural aspects of unequal capitalist society. As such, it represents an example of atomism and fits well in the imaginary of neoliberal development toward a modern utopia [21,22]. Within this imaginary, the definition of value is based on markets, and solutions are considered sustainable if they can reproduce themselves within them. Many actors in the development sector are still looking for governance or management models that can serve as panaceas and solve all issues related to water access independent of the context. In this paper, we point at the limitations of such conceptions, which is in line with the growing body of literature that questions the usefulness of decontextualized concepts such as irrigation management transfer [23], permit systems [24], pre-paid water meters [25] and mainstreamed participation [26] as solutions for rural water access. While we reject the idea of self-supply as a panacea, we emphasize the potential benefits of focusing on forms of collective action. To capitalize on these benefits, it is, however, essential to recognize the contextuality, unequal power relationships, and grass-rooted forms of interdependence and collaboration, and actively build on and work toward alternative, more convivial imaginaries.

We base our analysis on research findings in three case studies of local water commons. The first case study describes user-initiated and constructed schemes situated in Tshakuma, a rural-peri-urban village in Vhembe district in Limpopo province, South Africa. Users own, manage, and maintain these water schemes independently from public institutions. The second case study is situated in Ga-Moela, a small rural village in Sekhukhune district in Limpopo province, South Africa. It describes the co-management and co-maintenance by users and municipal officials of two reticulations that were constructed by users as part of an external intervention by an NGO. The third case study is situated in a rural municipality in the Kanton of Luzern, Switzerland and describes a water scheme that is owned and managed independently by a user collective. This collective is currently planning a refurbishment of the infrastructure which due to the high relevance of the scheme for agricultural production is subsidized by public institutions.

In this article, after explaining our conceptual framework in Section 2 and our methodology in Section 3, we outline the contextual factors and referential environments of the cases in South Africa and Switzerland in Section 4. While there are similarities in terms of "consultification" of support services and the preference of officials to realise large and modern schemes, the contexts are entirely different. The intention of this paper is not to draw lessons from one context to implement them in the other—as is commonplace practice in the transfer of de-politicized and de-contextualized 'best practices' in mainstream and neoliberal 'good governance' approaches. Rather our analysis is driven by the curiosity to understand why 'rooted water collectives' (RWC, [27]), despite the differences in context, are struggling with similar issues and challenges. In Section 5, we describe three such user owned water schemes. We outline how their rootedness—i.e., their embeddedness in context- and history-specific social, cultural, and ecological relations—informs their responses to its political, technological, and economic challenges, i.e., what makes these collective schemes function? We show that these collectives create positions of purpose within societies and that what motivates people is to help themselves and contribute to the greater good of the community. In Section 6, we outline, for the case study in Switzerland, how such user-owned schemes tend to be uprooted by modernist/neoliberal governmental approaches—a state of becoming unrooted, vulnerable, and unsteady—to withstand the pressures of that same neoliberal society. In Section 7, we draw conclusions. Analysing these three schemes allows us to identify common threats to the celebrated user-owned water schemes which are promoted by modernist approaches and answer the proposed

research question: how are rooted water collectives affected by a modernist/neo-liberal imaginary? This analysis will further allow us to argue for different, non-neoliberal imaginaries and hydro-social configurations.

2. Analytical and Conceptual Framework

2.1. Rooted Water Collectives

Rooted water collectives (RWC), as described by Vos et al. [27], is an analytical concept to identify and examine the dimensions of collective action around communal management of water systems, of social movements defending and advocating for communal management of water systems, and the possible interaction among these two. It differentiates itself from other conceptual frameworks, such as the institutional development framework (IAD) and the social-ecological systems framework (SES) (e.g., [28,29]), by highlighting the power and political dimensions of these collectives. The ontology of RWC departs from the justice and empowering effects of collective action. It includes scrutiny of internal politics and hierarchical relationships, intersectionality, as well as embeddedness in broader political strategies and power structures. The RWC framework rejects the application of rational choice theory and methodological individualism to investigate or comprehend such patterns and relationships. As Vos et al. explain, the framework also allows for the description of “the plurality of ontological understandings, epistemological perspectives, worldviews, and values, including the disputes among discourses and multiple languages of valuation” [27] (p. 4).

The framework developed by Vos et al. [27] builds on a detailed analysis of five contextual factors within which these collectives operate. These are “(1) the strength and involvement of the state bureaucracy . . . , (2) the strength of civil society and room for manoeuvre . . . , (3) the functioning of agricultural markets and the economic environment of the water sector . . . , (4) the academic and epistemological environment . . . , and (5) the techno- physical and agro-ecological environment” [27] (p. 4) (We are not describing the factor “strength of civil society and room for manoeuvre” since we focus in this article on rural collectives that own and manage local water schemes and do not operate on other levels of governance.). The collectives that emerge and reproduce themselves within these contextual environments are then described according to the following three dimensions: (1) their rootedness, (2) their internal structure and capacities and (3) their effectiveness of activities. *Rootedness* refers to the extent that these collectives function on the basis of solidarity, belonging, motivation, identity and awareness and build on vernacular water knowledge. The *internal structure and capacities* describe the different forms of capacities and the strength of democratic decision making and gender equality in the collective. The *effectiveness of activities* then refers to the cross-scalar alliance building, advocacy impact innovativeness and their effect on socio-environmental improvements (see Figure 1).

The aim of this article is not to compare the three case studies on the practical details of the contextual factors affecting their functioning, but to identify common underlying dynamics and obstacles affecting the emergence and reproduction of water collectives and the outcomes achieved by them in terms of water supply. The framework of rooted water collectives was chosen, since its detailed scrutiny of contextualization in combination with its constructivist ontological lens allows to describe the situatedness of these collectives while recognizing common dynamics and obstacles.

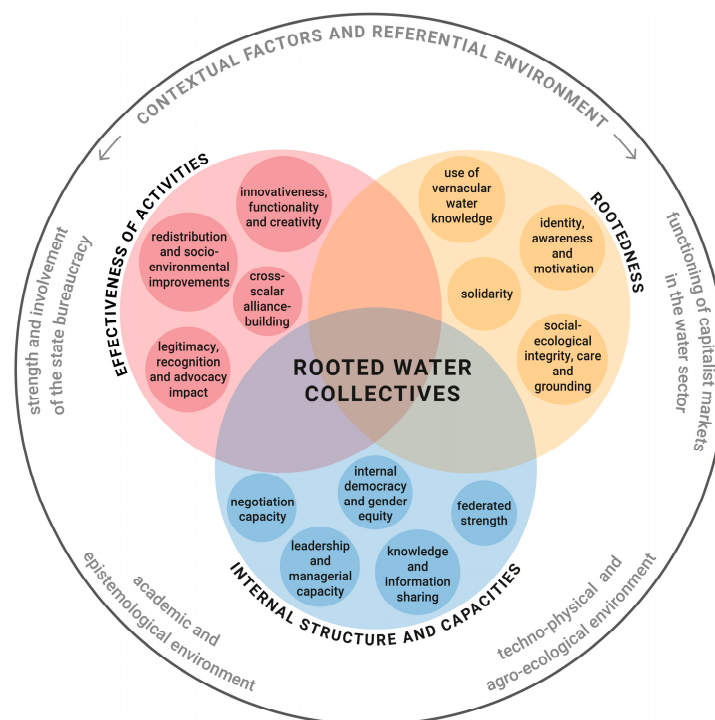


Figure 1. The three dimensions and four contextual factors and referential environments (source: adapted by author from Vos et al. 2020 [27] (p. 5)).

2.2. Modernist and Neoliberal Paradigms

Modernism and neoliberalism are two paradigmatic constructions that, through their promotion in policies, define our time's societies to a large extent. While the term modernism initially described the radical reshaping of societies after enlightenment and the industrial and French revolutions [30,31], increasingly it came to stand for the core values of Development with a capital D [32,33]. Scott [34] characterizes modernism as “a supreme self-confidence about continued linear progress, the development of scientific and technical knowledge, the expansion of production, the rational design of social order and the growing satisfaction of human needs”. The idea of development toward this modern utopia, which emerged in the 19th century “to ameliorate the perceived chaos caused by progress” [35] (p. 30), was and still is guided by a positivist epistemology and consequently neglects alternative and subaltern forms of knowledge. Only what can be measured within the realms of positivist science can be true and assigned a value.

In their discussion of hydro-territorial development, Boelens et al. [36] outline some critical tenets of modernist paradigms. They entail the fundamental belief in, and societal-technological project of, humans' agency to pass from one development stage to the next improved one along a linear trajectory. For this, both traditional societies and nature are seen as disordered, in need of being conquered, colonized and subjected to modern humanity's will and benefit. Its discourse and societal project “inherently entail an epistemological and ontological divide between society and nature . . . [Its project of] rational design of social, political, and cultural order, commensurate with the laws of natural science, entails standardizing the subjects of development and eliminating attributes that are considered “situated”, “deviant”, and “contextual” . . .” [36] (p. 8). Core modernist notions are as follows:

“ . . . (1). ‘De-rooting’ the past and ahistorical views that stress ‘making a break and discontinuity (in order to achieve development); (2). The deep-grounded notion of the plannability of socio-natural futures; (3). The need and possibility of reducing diverse cultural meanings, values, language, and knowledges to a single rubric to arrive at one common metric (‘commensuration’); (4). The objectification of social values and relationships and the calculability of societal choices and preferences to derive socially

engineered optimal outcomes; (5). The deployment of instrumentalist rationalities that enable a universalist water governance culture; and (6). The commodification of nature and society to justify large-scale hydro-territorial development. ..." (see [36] (pp. 7–8); see also [37–41]).

This monopolisation over the creation of truth by positivist science paved the way for the dominance of mathematical principles in economics from neo-classical economics onward. The use of formulas and graphs and the integration of terms from natural sciences like equilibrium and laws (imitating natural laws) created the idea that economics was no longer a contestable social science, but a supposed exact science free from ideology [42].

The term 'neoliberalism' emerged in the 1930s and describes the conviction that markets should be expanded and introduced where they do not exist [43]. Harvey [44] (p. 2) defined neoliberalism as "a theory of political, economic practices that proposes that human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets, and free trade". While this view was initially just a counter position to Keynesian economics that dominated the post-war period [45,46], it arrived in the mainstream through the adoption of its central principles by conservative parties in many countries in the 1970s. The electoral success, particularly of Margaret Thatcher in the United Kingdom in 1979 and Ronald Reagan in the United States in 1980 [43], then solidified what later was coined "the neoliberal turn" [44]. This turn was characterised by a wave of welfare state withdrawal, privatisation, market deregulations [45], and public sector reforms. Under the term new public management, neoliberal policies encouraged public institutions to orient their structure and operation in line with private companies [47] and to introduce competitive markets where this was possible [48].

We consider modernisation and neoliberalism to be intertwined in our current epoch; in capitalist societies, modernisation is a precondition and foundation for neoliberalism. The reduction in public capacities and the privatisation in return creates entry points for modernist actors. We therefore choose to apply both these concepts in this article to describe underlying dynamics affecting water supply in both SA and Switzerland.

2.3. Commons, Self-Supply, Water Commoning

The meaning of the term commons has changed over time. Originally Hardin in 1968 [49] introduced it in "the tragedy of the commons" arguing that so called rational humans would not be able to collectively manage common pool resources due to their self-interested nature. Ostrom, then in 1990 [50], made use of the term to describe irrigator communities and show their ability to collectively manage a resource, without leading to ruin. Her approach has been described as a third way of governance besides public and private governance [51,52]. In this article, we apply a more recent interpretation, where commons are no longer seen as just an alternative form of economy, but as an alternative form of organizing [51,53,54]. This recent interpretation deviates (just as the framework of RWC) from rational choice theory and methodological individualism to recognise that humans collaborate in "other-than-capitalist" manners [55] and are subjects of omnipresent power relations [56].

Though the notion of 'self-supply' in water governance has obvious associations with collective ownership and management, it cannot be equated to such notions as commons and commoning. As outlined above, the focus on user ownership in the drinking water, sanitation, and hygiene (WASH) sector and its conceptualization as self-supply is a relatively new development, starting at the beginning of this century. Most comprehensively, self-supply has been defined "as the construction of, or incremental improvement to water supplies and sanitation by households and small groups, largely using their own means" [5] (p. 28). Conceptually ideologically it is commonly embedded in public-private policy paradigms and assumptions, and strongly based on outsourcing, marketization and sometimes the privatization of public services, to support and align local collectives.

Water commoning processes are born of heterogeneous hydrosocial relations [41,57–59], which provide a contrast to the de-localized water rules and universal forms of organizing promoted by bureaucratic and market logics that fail to incorporate vernacular-cultural values and complexities. Boelens [60] (p. 133) defines water user commons as “a group of internally differentiated water users bound by mutual dependence to develop, use and manage their water sources, by a sense of collective (culture-space bound) hydraulic identity, and who are determined to realize their interdependence and materialize their collective and individual water rights by engaging in collective action strategies”. Their water commoning experiences are messy and power-charged processes, and “include distributive and decision-making conflicts, such as over water access or fishing grounds, and over legitimate territorial rules and authority” [61] (p. 1132). Water commoning processes are a struggle in shaping collectivity from difference and divergence, and are ordered around a resource that, if to be managed by vulnerable groups, by nature requires shared action [62–65].

2.4. Actor-Oriented Approach and Imaginaries

An actor-oriented approach evades the structure agency conundrum by recognising, that structures are co-created and recursively reproduced by actors [66], who exert agency based on their resources, convictions, and motivations [67]. So, while circumstances are “directly found, given and transmitted from the past” [68] (p. 595) simply focusing on structural aspects is unsatisfactory [66]. An actor-oriented approach allows to combine structuralist and agency approaches and analyses how driven by their own aspirations and epistemologies actors reproduce imaginaries and exert agency within them.

These imaginaries, then, are “societally and institutionally established visions about what is and what ought to be” [69] (p. 28). These visions not only describe a desirable future, but also the social order and forms of social life that should be lived. Several imaginaries can coexist within a society, “gaining traction through blatant exercise of power or sustained acts of coalition building” [70] (p. 4) as they are propagated by a wide range of social actors, ranging from public institutions, political parties, and social movements, to corporations, media, think tanks and other professional societies. Imaginaries become performative, effective, and truthful not only based on their content, but also on how they are “promoted, contested and/or accepted by concerned actors through different forms of power” [69]. For water control endeavours, Hommes et al. [71] (p. 7) add that imaginaries are among the foundational elements of hydrosocial territorialization, “because they encompass the framework in which life, subjects, objects and their relations are understood and lived; and because they contain normative ideas about ‘the right disposition of things’ and how these should be achieved. When fixed in space and time through hydraulic infrastructure’s designs and connected knowledges, institutions, and norms; the resultant set of new materialities brings changes to existing socio-territorial relations”. This process is not just ‘social’ or ‘cultural’ but deeply material and political too. It relates to the creation of subjects and their ordering and self-understanding in socio-natural and techno-political environments (cf. [41,72,73]).

3. Methodology

The description of the three case study RWCs and their contextual factors and referential environments is based on fieldwork conducted for three earlier studies [74–76] and an additional field visit to South Africa in 2023. The main author was engaged with two RWCs in South Africa in the context of a research project of the Water Resource Commission of South Africa, to which he contributed as a scientific consultant for the International Water Management Institute (IWMI) from April 2017 to June 2018. The fieldwork for the Swiss case study RWC was conducted first as a trainee at the responsible provincial department (February 2021 to June 2022) and then as an employee at a local engineering consultancy firm planning rural water infrastructure (July 2022 to present). The insights generated through these professional engagements were enriched with the literature and archive study, and semi-structured interviews with 28 department and 12 scheme offi-

cials, nine engineering consultants, 12 politicians, three academics and 64 water users. The two co-authors have long-term academic and action research experience in the fields of water commoning struggles in Europe, Africa and Latin America, contributing with conceptual-analytical tools, insights and collective/public debate sessions for this study.

In trying to uncover the mechanism that makes collective actions around water successful, we deploy core notions from (micro) political ecology and use an actor-oriented approach [66]. “Philosophically grounded in a social constructivist view of change” [66] (p. 2), this approach relies on the idea that similar structural circumstances can lead to different outcomes. We use this approach in this article since we are convinced that collective action is not simply the result of structures and policies but depends on informal arrangements among actors interacting with and within this structure.

4. Context of the Three Case Study Areas

Two of the three described rooted water collectives are located in South Africa, and one is located in Switzerland. The two South African cases are located within the same province, and the contextual factors and referential environment, therefore are to a large extent similar. Thus, they are described in a common section. Differences occur primarily in the techno-physical and agro-ecological environment and will be highlighted.

4.1. Limpopo Province, South Africa

4.1.1. Strength and Involvement of State Bureaucracy

While the historical context in any case is important when describing the strength and involvement of state bureaucracy, in the case of South Africa, with its violent apartheid past and the sudden transition to democracy, this becomes pivotal. When the first democratically elected government of South Africa came to power in 1994, they faced enormous racial inequalities in access to water services. While in the “white” South Africa, water services were in the hands of the municipalities [77] and reached almost full coverage, only an estimated 43% of black South Africans had access to piped water [78]. While the national government was committed to extending services to the underserved former homelands, there were, at that point, no local governments in place that could lead these efforts. The approach chosen for the extension of water access, especially in rural areas, was to build on community-based organizations (CBOs). For implementation, the government collaborated with NGOs such as the Mvula Trust and was supported in these efforts by international donor agencies. With the development of the legal framework, building on the constitution of 1996, the role of these community-based organizations in water service delivery changed. Especially the Water Service Act (WSA) of 1997 and the Municipal Systems Act (MSA) of 2000 had a transformational effect on the role foreseen for communities in water service provision. Community-based initiatives from then on would have to be recognized as water service providers by local government. This was only possible if no government institution could provide these services, and they would have to follow a process of public tendering designed for private service deliverers. This meant that after the establishment of today’s municipalities and the first election in December 2000, the majority of CBO-supported forms of water supply became technically illegal [75]. While local governments in rural and poorer districts took a more pragmatic approach and recognized community efforts [17], these schemes are operating in a legal grey zone (For a more detailed account of this history, see [75]).

4.1.2. Functioning of Capitalist Markets in the Water Sector

From the beginning, the post-apartheid extension of service delivery relied heavily on non-governmental actors. While these were initially NGOs, with the establishment of local governments, this shifted to consultants who plan and contractors who construct new infrastructure. At the time of fieldwork for an earlier study in 2018 in the district of Sekhukhune, all the steps of planning and construction of investments into water infrastructure were outsourced [76]. This outsourcing can be seen as the result of what has

been described as the failure of the national government to develop technical capacity at local levels to ensure the planning, construction and operation of basic water and sanitation services [79,80]. Yet, the lack of local capacity is also a result of the pressure of government officials to outsource to create rent-seeking opportunities [76] and the global trend of outsourcing as a means to make public agencies 'more efficient' (see [81]), as promoted by the new public management gospel. The planning and construction of rural water delivery infrastructure is today firmly integrated in the capitalist markets, whereby the dominant belief is that private sector involvement is good and efficient.

4.1.3. Academic and Epistemological Environment

The above-described push to regulate user initiatives came at a time when governmental agencies started to no longer see community-based organisations as temporary solutions [82] but as valuable partners in rural settings [83–87]. The national planning commission called in 2011 again for the involvement of users in decisions about infrastructure, while acknowledging that "implementation has been slow" [88]. This indicates that not all public officials supported the stifling new regulations for CBO's. Opinions about the new legal framework were ambivalent and highly diverse. We found concerns of union leaders about outsourcing to non-governmental actors (Interviews with two former high-ranking officials of the Department for Water Affairs and Forestry, that were involved in the negotiations of the new policies: 20 May 2018/19 May 2018.) a conviction of many officials that community organisations were a thing of the past (Discussion with a high-ranking official of the Municipal infrastructure Grant (MIG) 26 March 2018.); and the "absence of political will to allow community organisations to exist parallel to the newly formed local governments (Interviews with two former high-ranking officials of the DWAF 20 May 2018/28 September 2018, an experienced water sector consultant 26 March 2018 and discussion with a high-ranking official of the Municipal infrastructure Grant (MIG) 21 March 2018.)" [75].

The conceptualisation of self-supply as a promising and sustainable approach to service expansion was introduced in South Africa by an NGO in 2010 [89]. While the rise of the new concept led to an international frenzy of reports and scientific publications, this concept was only recently taken up in the national scientific discourse [75,90–93]. Contesting this conventional and expert driven interpretation of self-supply, local activists and academics made use of the concept of self-supply to describe one of their strategies to claim the right to water access (in addition to litigation, engagement with the government, media advocacy and protest) [94–96].

4.1.4. Techno-Physical and Agro-Ecological Environment

Here the two settings differ. Tshakhuma is a rural-peri-urban village inhabited by over 4000 households and is located along a humid mountain ridge in the Vhembe district in Limpopo province. Owing to the relatively high annual rainfall averaging at 854 mm between 2009–2018 [97], several perennial streams allow water abstraction upstream of the village. Its proximity to the district capital and many plantations in the region provide employment opportunities. This results in a relatively high living standard for a rural South African setting. A wealth assessment survey conducted among 250 households by IWMI in 2017 found that 70% of the inhabitants live in houses made of cement bricks with roofing either made of tiles or corrugated iron. Moreover, 25% of the households participating in the survey owned a car [98].

Ga-Moela on the other hand is a small rural community situated on top of a mountain ridge, which is only accessible over an unpaved road. The village comprises around 100 households, which are dispersed over a large area. Apart from the primary school, there are no formal employment opportunities in and around the community. Households generally either rely on cash transfers from migrant workers or government grants (The dominant national grants are pension payments and child support.). In the wealth assessment survey of IMWI conducted in the village in 2017 among 65 households, 48%

indicated that at least one household member had migrated to study or work and 83% of all households were receiving some form of government grants. The limited water availability makes farming difficult, and yet a small number of community members manage to produce vegetables and market them locally.

4.2. *Kanton Luzern, Switzerland*

4.2.1. Strength and Involvement of State Bureaucracy

Households outside the built-up zone of the Kanton of Luzern are responsible for establishing and maintaining their water access [99]. This traditionally affects farming households and has led to various collectively organised water schemes especially in the mountainous regions of the Kanton. These collectives are usually organized as cooperatives and own and operate water infrastructure collectively. Water demand is driven by animal husbandry and domestic uses, while irrigation is very unusual.

Due to the dependence of agricultural production on a reliable water supply and the high investment cost per household, the state already started in 1884 to subsidize initiatives to improve the water supply to farmers covering up to 40% of the project cost [100]. During the 20th century, the state built up public support services that assisted with the planning of new investments, and in 1957, the maximum level of subsidies from the federal and the cantonal government was raised to 60% of the construction cost [101]. Most of the schemes operational today were constructed during the following three decades. This expansion co-occurred with a rapid intensification in animal husbandry [102]. To meet the demand, the number of employed public servants providing technical support was increased from seven to fourteen between 1957 [103] and 1973 [104]. This trend was turned around with the introduction of neoliberal management ideas in public service delivery starting in the 1980s. During the 1990s, the Kanton of Luzern became a pioneer in Switzerland to introduce the principles of “new public management,” which led to a reduction in the public technical support staff from 14 to just three employees by 2008. While public subsidies remained at the level of 1957, infrastructure investments were no longer planned in-house, but outsourced to private service deliverers [74].

While the role of government officials is reduced to overseeing projects, their control over the allocation of public subsidies secures them significant influence on all project-related decisions (For an example of such a planning process, see [74].).

4.2.2. Functioning of Capitalist Markets in the Water Sector

While the construction of water schemes was always conducted by private companies, the outsourcing of the planning of water schemes was only introduced after the endorsement of neoliberal policies. Today all steps of planning, from compiling feasibility studies to overseeing the construction of new infrastructure, are conducted by private service providers. This has led to a deep integration of the water sector into capitalist markets with private companies tendering for planning and construction tasks. While this privatisation of knowledge has created a dependence on private service deliverers, it is still widely perceived as being efficient since it keeps the number of public employees low. Yet, this view is flawed, since the demand for water related projects remains high and the department experiences spending pressure to make use of the annually recurring public subsidies. Ironically, as Hofstetter et al. [74] explain, this results in engineering consultants with much higher hourly rates than public servants either having less time available to plan or inflicting higher costs (For a detailed account of the effects of the privatisation of the water supply planning process on “efficiency”, see [74]. See also [105,106].).

4.2.3. Academic and Epistemological Environment

Despite the focus of self-supply on “developing” the global South, such schemes in western countries are also described under this term, normalising the idea of users owning water infrastructure. Within the Swiss context, state officials and consultants perceive these user owned schemes as single purpose institutions, which are interchangeable with

any other form of service delivery. Their multi-functionality within social structures, such as the creation of points of social interaction and positions of purpose is not recognised within the dominant discourse. Hofstetter et al. [75] show, how among government officials and engineering consultancies these structures are seen as relics from the past which will have to grow and professionalise in the future anyway to adapt to climate and regulatory change [74].

4.2.4. Techno-Physical and Agro-Ecological Environment

The rural municipality of the studied water collective is situated in the foothills of the Alps and the economic activity within its rural area is dominated by dairy farming. In the Kanton of Luzern, there are currently six collectively owned water schemes serving households outside the built-up zone and all of them are relying on natural springs. While these springs do not respond directly to a lack of rainfall, the yield of many is sensitive to longer dry spells as occurred in 2018 and 2020. Climate change is predicted to increase such summer droughts, while annual rainfall is expected to remain at around 1400 mm [107] with heavy rainfall events becoming more frequent [108].

5. Results: The Three Rooted Water Collectives

Below we present the results of this inquiry. By applying the rooted water collective framework developed by Vos et al. [27] we describe each of the selected collectives in detail. This allows us in the discussion and conclusion to analyse the common underlying mechanisms that enable these collectives to reproduce themselves and keep functioning.

5.1. Tshakuma

The case study scheme is one of 13 collective schemes that emerged in Tshakuma between 2004 and 2016. These schemes were built in response to the dwindling service provided by the public water scheme, originally constructed by the homeland government in 1990 [98], during the decade after the end of apartheid. In addition, the perimeter of the village had grown beyond the reach of the then existing public infrastructure. After having lobbied the local government unsuccessfully to extend the reach of the scheme and rehabilitate the aging infrastructure, two independent groups of community members of the Muhovhoya section started to look for an alternative to the time-consuming trips to a public tap at the top of the section or buying of water from water vendors. At that time there were already examples within other sections of the village of such self-constructed water schemes, abstracting water from springs or small rivers upstream of the village and distributing water through gravity-fed polyethylene pipes to households (see Figure 2). Muhovhoya uses, like most schemes, plastic tanks to store water during night-time.

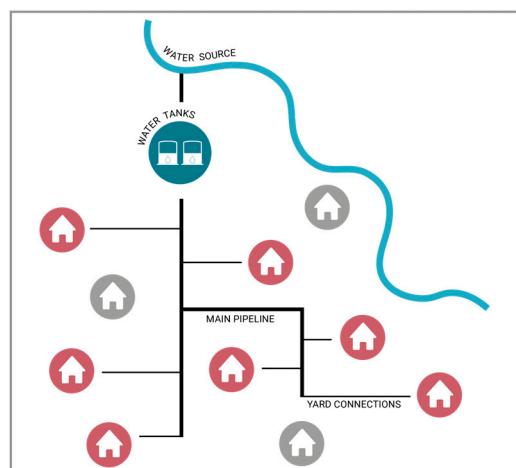


Figure 2. Sketch of the Water scheme in Muhovhoya (source: own elaboration).

5.1.1. Rootedness

During the search for a water source, both initial groups approached the traditional leader, since he is the custodian of the water resources within his jurisdiction. He not only initialised the merger of the two initiatives and organised the first community meeting on the topic, but he also advised them on where on his land to find a good spring that could sustain the section. As outlined, the scheme was started by community members with the intrinsic motivation to improve their own water access through an intervention with a few neighbouring households. Once the first community meeting was held, it became clear, that the interest among the rest of the community was significant and ultimately 113 households committed to join the scheme. The five initial members were tasked to develop the plans and coordinate the construction, a period that one of them described as being very stressful. Suddenly they were not only doing something for themselves, but a large part of their community was relying on their success. They spent many evenings planning the new scheme and its construction since they wanted to do it well for their community. It was decided that each household that joins the scheme would have to pay the same initial contribution, irrespective of their location within the scheme. Each household further had to provide one person to help on the earmarked days of construction. Households who were not able to dedicate a member to construction activities could also hire someone to contribute for them or assist with catering for the constructing members.

This process of collective construction has created collective awareness among the users about where their water comes from and how the scheme functions. The initial members tasked with the planning created a strong bond among them and while later other users have taken on responsibilities, they are all still involved in the management of the scheme. For example, the present operator was part of this initial group. He initially offered to voluntarily perform the operation of the scheme, but it was decided by the members of the scheme, that everyone should pay a monthly contribution, to finance a small stipend for him. He says that he does not consider this to be a salary, but more a thank you. He is motivated by the fact that he can do something for his community and feels that while the other members are not saying thank you every day, they are grateful. Whenever larger maintenance tasks or problems must be tackled, it is easy for him to find members willing to help. The finances of the scheme are also still managed by the same woman that initially was acting as a sort of chairperson during the emergence. As a retired schoolteacher, this position within the scheme has allowed her to keep playing an essential role within the community.

All community members willing and able to make the investment in a project with unknown success could join the scheme. Once the construction was finished, it was decided that since the infrastructure could not sustain more members, no more households would be allowed to join. A second scheme then emerged within the same perimeter, but its management is a lot weaker, and the service level provided is much more erratic.

5.1.2. Internal Structure and Capacities

The structure of the collective has never been formalised. The group of five initiators, or “big five” as they refer to themselves, has been functioning as a committee. While they had developed leadership qualities during their professional careers, they only had very limited technical knowledge. The woman acting as a chairperson had to deal with the prejudice, that she as a woman would not be able to develop a functioning plan. She says though that this only made her work harder to ensure that they succeed. From the beginning it was also ensured that all relevant decisions were taken at meetings which all members could join.

At the behest of the now late chief, a forum was installed within which the leaders of the different schemes in the village would regularly meet and exchange their experiences and assist each other with problems. After the passing on of the chief and due to the COVID pandemic, these meetings stopped.

5.1.3. Effectiveness of Activities

As mentioned, this collective is operating in a legal grey zone. The municipality is aware of their existence and tolerates this, but the scheme has not been assigned any legal status. Yet, there is a growing awareness within the South African state of user contributions to water access and the chairperson of the scheme has now already several times been invited to policy dialogues and governmental meetings to present their scheme.

The collective is characterised by a high effectiveness of activities, with funds being well accounted for and responses to breakdowns organised swiftly. Users reported that in case of issues with the supply, the operator would immediately after being notified attend to the problem and in case of larger tasks they would assist him. User satisfaction is also reflected in the high paying morale of its users.

5.2. Ga-Moela

This collective emerged because of an outside intervention. The village was selected in 2017 by the district authorities as one of six schemes for a project to pilot an approach to create multiple-use water schemes (combining productive and WASH uses) (This project was funded by the African Development Bank (AfDB) and implemented by the Water Research Commission (WRC) of South Africa in collaboration with the International Water Management Institute (IWMI) and a local NGO.). The water infrastructure in the village at the beginning of the project consisted of one borehole with a public street tap and a second borehole that was supplying a piped scheme to one section of the village. The households without access to this borehole water were collecting water from shallow wells [76]. The aim of the project was to use a predefined budget to realise an improvement in water access through a process of participatory diagnosis and planning. The in-depth approach extended over six months, consisting of six community meetings and seven planning meetings with an elected committee and focus groups. Additionally, the main author as project representative was staying in the village during 46 days in this period, which offered the opportunity for many informal discussions. After receiving training, the community members then built the scheme under supervision of the local NGO, with only tasks demanding skilled labour being contracted to local artisans. Users that contributed only received a small stipend, but not a salary as compensation for their contributions (For a more detailed description of this process and the project, see [76].).

The infrastructure established by the project consisted of two reticulations supplying street taps in the two previously unserved sections. These reticulations were supplied by the already existing boreholes. Once finalised, this infrastructure was handed over to the municipality. However, since it was developed through an external intervention and constructed by users who sustained a sense of ownership over the scheme, the responsibilities for operation and maintenance of the schemes remained insufficiently defined. The municipality has extended the responsibilities of the two voluntary borehole operators to also pump water to the storage tanks of the new reticulations, but no clarity exists concerning the responsibility for the operation of the valves and the maintenance of the reticulation. In both sections, the users became active. Below we describe the two collectives that emerged in sections A and B (see Figure 3).

5.2.1. Rootedness

The originally installed borehole pump in section A was not sufficiently powerful to pump water to the location of the new storage tanks, so an additional electrical pressure pump had to be installed as part of the project. The original collective A with a committee with representatives from all village subsections was initially established around the task to collect funds to buy prepaid electricity for the pressure pump. With the installation of a new submersible water pump on the borehole by the municipality, which was strong enough to pump water to the storage tanks and for which the municipality paid the electricity, this committee lost its main purpose. Since two key members of the committee left the village for work elsewhere at the same time, the committee became dysfunctional. This became

a problem since the high pressure of the new pump caused an increased frequency of leakages in the pipe. Three and a half years after completion (2019) the users still attended to repair the leakages collectively, yet old inter-sub-sectional conflicts started to flare up. While there is a clear lack of leadership, there are many community members with the capacity to attend to breakdowns and they do so in changing coalitions. The primary motivation mentioned by users to do so is their own dependence on the water provided.

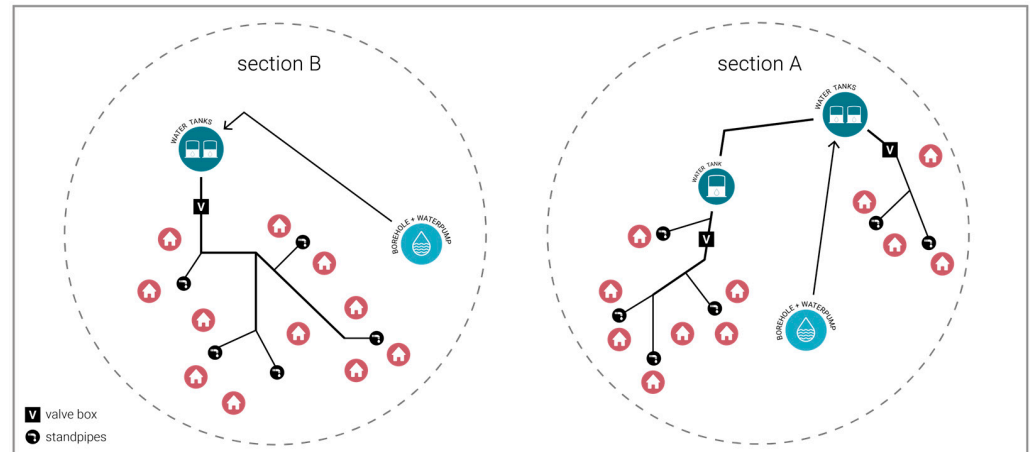


Figure 3. Section B and Section A (source: own elaboration).

In section B, the collective action around the scheme has never been clearly organised and is much more focused on one specific female community member. The collective action emanates from her. If there are leaks in the pipe, which is also a regular occurrence in this section, the users confirm that she organises the response. Since she is one of the few small farmers producing for local markets, she is depending on the water and is most of the time present in the village. She says that when she is in need, it is easy for her to find community members to help attending to leakages in the pipes.

Leakages in the pipe leading from the pump to the storage occur in both sections regularly. The organisation of the response to such breakdowns and the operation of these schemes is the result of a collaboration between these rural collectives and municipal volunteers. Due to budget constraints hiring unpaid volunteers has become the common solution to operate public boreholes in rural areas in the district. In 2023, there were 20 volunteers in the villages around Ga-Moela with some already volunteering for as many as 14 years. These volunteers stay in contact with the municipality and report breakdowns. The volunteer of scheme A expressed frustration with the municipality. She stopped reporting faults, since the municipality did not respond to earlier reports. The manager of the local depot of the district authority confirmed that her staff level is insufficient to cope with all maintenance demands, but that community members could report breakdowns and collect materials from their depot. However, last year this material arrived late which meant that for several months they could only sporadically assist communities. The fact that volunteers are not selected by the community but by the ward councillor weakens their accountability relationship to the community. This upward accountability (and downward neglect) is rendered even more problematic since volunteers are left with the hope that they might eventually get hired by the municipality. Both volunteer operators have expressed frustration about the fact that they are still not receiving a salary. While the volunteer in section A only refrains from quitting, since she still hopes to receive an employment contract, the volunteer in section B sees added value in her task. She has been volunteering for seven years and says that this enabled her to contribute to her community and that people turned to her when they had issues with their supply.

While the rootedness of these collectives results in great solidarity among users when breakdowns need to be attended, it also means that these collectives reproduce local power imbalances. This is manifested in the adaptation of the “participatory” plan during the

construction process. The placing of the tap points next to the chiefs house upstream of the valve for the rest of the sub-section is an example of preferential treatment. This allows him to abstract water also when the taps of others run dry. Another example is the shortening of the lines to tail-end households, due to budget constraints.

The traditional wells are protected by wooden branches from intruding livestock and are taken care of by the elderly community members. It is believed these wells are home to mythical creatures and the tales around them form the rules of their use. Villagers consider it to be unthinkable to abstract water during the night, which allows collective control, and children do not play close to the wells. Only elderly villagers, who no longer are planning to have children are allowed to clean and maintain these wells, which ensures that only people who have been depending on these water sources all their life interfere with them. However, since the modern scheme relies on borehole water it is exempt from this vernacular water knowledge and its conscriptions.

5.2.2. Internal Structure and Capacities

As mentioned above, the structures of these collectives are not formalised. They rely heavily on the initiative of one person (collective B) or functions in changing collaborations among users due to a lack of leadership (collective A). While collective B is fortunate to have this leading figure who is a small-scale commercial farmer and therefore bound to the village, collective A had to deal with a loss of three leading figures who left for employment elsewhere. This has weakened the structure significantly. Technical capacities on the other hand are widely available among the users, with many of them able to repair the pipes since they helped constructing the scheme. Until now, the issues they faced have not reached an extent that would require them to negotiate with outside partners for assistance.

5.2.3. Effectiveness of Activities

The tasks of these collectives are unclear, as they share their sphere of action with volunteers accountable to public institutions. One might say that since there are no legally recognized structures in place these collectives do not even exist formally. At the same time, both these schemes would not be operating anymore if there was no continuous collective action and vernacular rule enforcement in response to recurring breakdowns. So, while these collectives might be relatively weak and continuously changing (section A) or heavily dependent on a single person (section B), they are effective in maintaining water access.

5.3. Entlebuch

The initiative for this scheme came from a group of local citizens, whose private wells were no longer able to meet their increasing water demand due to rising living standards and augmented livestock numbers. After identifying suitable wells, they constructed the scheme in 1962 with technical and financial support from the department of meliorations of the Kanton. This support was provided, since the majority of the 12 households served at the time were farms (i.e., agricultural use) and the scheme also created reliable water access for their collective cheese production facility. Besides the installation of connections to three neighbouring schemes to share the excess water and the connection of two more households, the scheme remained unchanged. At the time of the research, it still consisted of four springs, whose water was being collected and then pumped into a reservoir above the households from where it was being delivered to the users.

In 2017, after facing regular breakdowns, it was decided to replace the aging infrastructure. From the start it was clear that due to the high project cost which could only be shared among 14 households, such a project would only be feasible with public subsidies. With the financial support of the cantonal department for agriculture and forestry, the cooperative commissioned an engineering consultancy to compile a feasibility study. Once the feasibility study was finalised, the cantonal department informed the scheme officials that since other, neighbouring water schemes also had issues with their water access, the proposed renovation would have to become part of a larger project connecting several

schemes (see Figure 4). The initial plan for this larger project was developed by a local engineering consultancy in collaboration with the cantonal department. While it was technically feasible and addressed several issues related to changing climatic conditions, it ignored all organisational implications for the three schemes that were to be connected. During the process, both consultants and government officials expressed that these small user-based structures only complicated modern functionality and merging them into one large cooperative would be simply in line with the time. Moreover, the prospected implementation of stricter regulations on water quality would render the implementation of new technologies necessary. The designers dismissed opposition from the cooperatives to this normalization of organisational forms and the modernisation of technical aspects as a lack of understanding of future challenges. Dialogue on these aspects was only initialised after the threat of one of the cooperatives to step out of the project.

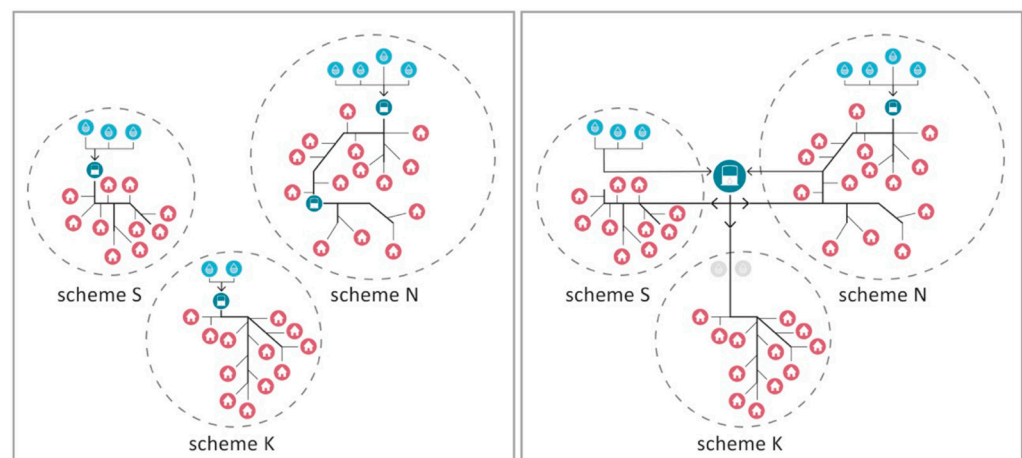


Figure 4. Current schemes (**left**) and connected schemes (**right**), scheme S is the one described in detail in this article (source: own elaboration).

5.3.1. Rootedness

While the committee members are receiving a small stipend for their work, all interviewed committee members stated that this was not a key element for their motivation to contribute. Two out of the three committee members that took on the most responsibility in managing the scheme during the past years are direct descendants of members of the initial group. Their primary motivation is related to solidarity and the need to respond to mutual reliance on a shared resource among neighbours, or as they would express it, “one of us has to do it”. They further expressed that other users recognize their contribution and are grateful as they are aware of their dependence on the scheme’s functioning. The president of the scheme, who has served in the steering committee for more than 20 years, explained that he finds it important to take responsibility within the community and to contribute to the common good. The cashier who was a long serving member of the committee decided to retire on account of her advanced age. Yet replacement was easy to find, despite the worries of fellow committee members about securing community members willing to contribute. This is an experience that other schemes in the region shared. While competitive elections for positions in schemes are rare, the social contractual reciprocity (cf. [109,110]) among users is strong enough that when a new committee member is needed, someone will volunteer.

Since the technology of the scheme has only been updated slightly since the construction of the scheme, it is possible for an amateur operator, or master of the well as he/she is called in the local context, to operate the scheme. The operator and the president also take care of smaller maintenance tasks, while they receive support from a local plumber when this is needed. The father of this plumber was the one doing the plumbing works during the original construction in the 1960s. In case of emergency, other users also come and help

depending on their availability. These long-standing relationships have resulted in a vast number of shared anecdotes and friendships.

5.3.2. Internal Structure and Capacities

The rooted collective managing this scheme resembles the management of most such collectives in the region and is governed by a committee and structured as a cooperative. The general assembly, which consists of all members of the cooperative, elects the committee members, negotiates and takes collective decisions on the operation and maintenance, financial issues and future investments. These meetings take place once a year in the restaurant located in the vicinity of the scheme, and after the meeting the members eat and drink together. During the above-described project, the intention to merge the cooperatives became clear, it was the opposition of another steering committee that blocked this from happening. This resistance was shared by the members of the described scheme, with the president stating: “this is something that the next generation can discuss”.

The composition of the committee is very stable, with many long serving members. The developed capacity to operate and maintain the scheme tends to be handed on to the following generation. For instance, the cashier who retired introduced her successor to the tasks and remained available to assist in case of any questions cropping up. While it is not unusual for women to take care of administrative tasks, they usually do so in the background, and it is their husbands take a seat on the committee. This was also the case with the cashier of the described collective, until she decided that she did not just want to do the work but sit on the committee herself. Her proposal to join the committee was accepted without opposition.

5.3.3. Effectiveness of Activities

This collective is a vernacular institution within which the knowledge is handed from one generation to the next. The president stated that they would very well know how to ensure a high quality of water and that they had their internal procedures to react in case of a water quality health threat. Committee members therefore express very little understanding for the increasingly strict regulations and mandatory procedures from the government in this regard. He expressed the feeling that new regulations are primarily in place to keep government officials busy, but that they had no other way than to obey.

There is no advocacy group representing the interest of such schemes even though they are increasingly under pressure by the dominant neoliberal/modernist discourse of officials and engineers who regard them as single purposed and outdated. The latter aim to improve these schemes to the state of the art defined by bureaucrats (see [74]), which results in upgraded water schemes relying on high-tech infrastructure and forming larger units of management. Such schemes dissolve the close connection that users have to their scheme and render the management of schemes by vernacular knowledge holders increasingly difficult. Such a development results ultimately in professionalization or in other words outsourcing of the management to commercial parties and turning users into consumers (see also [62,81,111,112]).

6. Discussion

In all described cases it can be observed that it is not the state or the market that provide water services, but it is people who actively collaborate to create water access. It is not our intention to romanticize or essentialize these collectives, but we aim to show the rationale according to which they operate and describe their role within societies and the underlying dynamics that counter or sustain them. The three collectives described in this article differ significantly not only considering their context, but also in how they emerged and are organized.

In the case of Tshakuma, the described collective emerged independently, merely without outside support, exploiting the availability of perennial water streams upstream of the village and a population with the economic means to invest. While the initial

motivation of the initiators was to create water access for themselves, their motivation shifted during the project to 'doing something for the community'. This is an aspect that comes back in the other examples. The motivation to work for these collectives is not based on a calculated transactional relationship among self-interested, so-called rational individuals, but the result of solidarity and livelihood-insisted and context-urged 'contractual reciprocity' among community members. These collectives create points of social interaction and positions of purpose within communities and through that, create identity. However, the emergence of this collective also indicates their potential to reinforce social inequalities and exclusion. Only those willing and able to contribute to a project with unknown success chances could join the scheme. As explained above, the remaining households formed a second collective but enjoyed more erratic, inferior service.

The case of Ga-Moela shows two examples of collectives that were introduced through an outside intervention based on an elaborate process of participative diagnosis and planning and user-led construction. By applying such an approach, capacity, awareness and identification were built among community members, which serve as motivational and enabling factors to organize around operating and maintaining the scheme. This differs significantly from the neoliberal approach in public-private partnership projects, where private service providers marginalize tedious and expansive community participation to reduce costs [76]. The rootedness of these collectives is a core pillar and fundament but may also constitute their Achilles heel. One such challenge in the described case is the emigration of key community members due to the lack of economic opportunities in the village. Another is the reproduction of local power structures, which led to the adaptation of the construction plan to move the tap point of the chief upstream of the valve for the rest of the section. Since the Ga-Moela collectives operate in the same space as the municipality, they are negatively affected by the unclear assignment of responsibilities and the lack of accountability from the voluntary operators toward them. The described examples further indicate that to deal with conflicts and tackle issues beyond local financial and technical capacity, these collectives need to receive some form of continuous outside support, which again increases their dependency and vulnerability.

The rooted collective in Switzerland concerns a collective that has already existed for 60 years and operates as a structure highly independent from the state. With the described project to rehabilitate the aging infrastructure and the connected dependence on state subsidies, the collective is forced to interact again with outside actors—also conceptualized as 'shotgun marriage' or 'forced engagement' among state and commons institutions; they need each other in mutual recognition and resource exchange, to remain credible, operational and not lose legitimacy [113,114]. The small size, the low level of technology, and the particular forms of organization of these schemes mean that they do not fit into the normalizing rationale of modernizing public servants and private engineers and are seen as a complicating factor for interventions. These actors tend to take a positivist approach within which social aspects like the creation of positions of purpose and points of social interaction are considered irrelevant. The lack of understanding regarding the core logic of these collectives as alternative forms of social organization results in interventions planned by government officials and consultants undermining their continued existence. The increased complexity related to growing perimeters and modern technology further reduces the capacity of laypeople rooted within local communities to manage and operate these schemes. This results in the operation of schemes being professionalized and users being detached from water access creation. The simplistic expert view of these collective actions as conglomerates of self-interested and rational individuals and the promotion of "efficient" and "safe" technologies, therefore, actively undermines the viability of these rooted collectives and will (if unchallenged) lead to a reduction in the variety and number of such collectives.

Governance issues related to a lack of recognition of the heterogeneity and complexity of collective arrangements and unequal power relations in participatory processes have also been described by other scholars. Höhl et al. show for example, how technical and mea-

surable knowledge is imposed during indigenous consultation processes in hydropower projects [115] and Wessels et al. describe how the reduction in water management issues to technical problems allows powerful actors to obscure the political nature of water access inequalities [116]. Seeman analyses how ignoring the contested character and complexity of rights frameworks and geopolitical spaces leads to a misrecognition of marginalised people [117]. Hoogedam stresses that issues of rural water justice need to be tackled through a thorough investigation since rural areas are “not homogeneous but consists of diverse, complex and dynamic realities.” [118] (p. 143). De Vos et al. further highlight that the recognition of diverse local water management arrangements is not only crucial to improve rural livelihoods but also for the “building of self-respect, identity, capacity, power, and collective action” [119] (p. 45).

Dupuits et al. therefore call for “a reflection on the necessary mechanisms for ensuring water knowledge co-creation processes that would benefit water conservation for all, instead of designing and implementing partial solutions and spaces that reproduce power inequalities among actors” [120] (p. 367).

7. Conclusions

The presented cases demonstrate that rooted collectives are more than just a form of instrumentalist water access creation. The need for collective management and ownership forces community members to interact to make decisions and create positions of purpose within society. The three described collectives exemplify three critical lessons about such schemes. Firstly, the example of Tshakuma indicates that such collectives can emerge spontaneously if favourable conditions exist. Secondly, the collectives in Ga-Moela suggest that if the value of such collectives is recognized and interventions are not guided solely by market-rationalistic or state-institutionalist principles, such collectives can be introduced or strengthened with targeted outside interventions. Lastly, the collective in the Swiss context demonstrates how interventions guided by a neoliberal and modernist imaginary reduce the viability of such schemes. Each of these three examples provides us with a part of the answer to the research question, how are rooted water collectives affected by the dominant neoliberal imaginary? The motivation of members to contribute is in all three schemes, not functionalist-transactional and void of local morals and meaning but based on co-dependence, reciprocity and solidarity. Since these collectives operate in this other-than-capitalistic manner, we consider them to both form part and depend on an alternative imaginary in line with recent understandings of the commons.

We align with a diversity of political ecology, empowerment and critical action-oriented approaches that side with the intentions and strategies of self-supply communities to create low-tech and locally owned and governed water schemes as inspiring and liveable institutions for rural water supply. We are convinced that such collectives cannot proliferate in a neoliberal/modernist or state-bureaucratic imaginary. To make this a viable form of organization, the imaginary of the modernist and neoliberal commensurate association of individual and functionalistic agents must make room for a power-critical and context-specific imaginary of rooted commons.

We refrain from romanticising or glorifying these collectives, since the evidence we have discussed also shows how local commons always operate in and constitute messy, conflict-ridden arenas, including local power imbalances and complex forms of exclusion. However, considering their potential to expand collective water control and access that is inclusive of vulnerable groups otherwise marginalized, and which builds (on) forms of conviviality, we argue for the need to create room for, foster, and learn from such collectives.

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