Disputed Waters

Improving communities' capacity to manage their water resources in Central Tanzania

Guido Nicolas Zingari, Università di Torino
ORCID: 0000-0002-9670-1797; guidonicolas.zingari@unito.it

Edoardo Forzano, UN-Habitat
ORCID: 0009-0008-8235-4561; edoardo.forzano@un.org

Abstract: The report focuses on the issue of water resource management in the rural context of the central Dodoma region of Tanzania, seeking to understand, through Participatory Visual Research-Action, how community water management works. The legal framework regarding water resource management in Tanzania has evolved over the past 20 years. The Water Resource Management Act and Water Supply and Sanitation Act of 2009 define the establishment of community-based organizations in rural areas, promoting decentralization, financial autonomy and citizen participation in water resource management. The recent history and the political ecology of the micro-context in consideration highlights the growing vulnerability of soils and water resources since colonial time, the forms of resilience, and the organization of local communities in managing the present and the future. Analysis of the water environment reveals a strong link between water resources, social practices and 'invisible infrastructure' present in the daily lives of communities. The research shows how in this cultural context water sources are often considered sacred places, intertwined with beliefs, rituals or social practices that regulate the access to and the use of this resource. The observations intertwining highlight the vivid interactions that occur around domestic water points, transforming these public spaces into vital centres of socialization, information exchange and collaboration among community members. However, challenges related to plumbing problems, suspicions of corruption and tensions between residents and institutions also emerge, underscoring the need for greater transparency, community involvement and coordination between local actors and development organizations.

Keywords: Water; Waterscapes; Natural Resource Management; Participatory Action Research; Community.

Antropologia pubblica, n.2, 2024 • Mimesis Edizioni, Milano-Udine
ISSN: 2531-8799 • ISBN: 9791222316390 • DOI: 10.7413/2531-87990031

Foreword

This research is part of the SANI project,[1] conceived and implemented by the Italian NGOs LVIA and CUAMM – *Doctors with Africa*, in partnership with Hydroaid, the University of Turin (CISAO, Interdepartmental Research Center and Technical Scientific Cooperation for Africa), the University of Dodoma (Department of Geography), the District Council of Kongwa, the District Council of Chamwino, the District Council of Iringa and the District Council of Mufindi.
This report returns the data, results and proposals generated during a research mission carried out between May and September 2019, by a team composed Guido Nicolas Zingari (CISAO Interdepartmental Research Center and Technical Scientific Cooperation for Africa, University of Turin) under the supervision of the prof. Egidio Dansero, and a student and scholarship (funded by the UNI.COO program) holder, Edoardo Forzano. The NGO LVIA, leader of the SANI project, provided a logistical and organizational support during the mission under the coordination of Francesco Riedo and the supervision of Italo Rizzi. The University of Dodoma, partner of the project, actively collaborated in certain phases ensuring availability and comparison between researchers and supervisors, under the guidance of the Prof. Enoch Makupa, and the operative support of Prof. J. Katonge. The District of Kongwa, partner of the project, has been able to guarantee safety and facilitation on the field. Finally, the fieldwork was accompanied by the work of the research assistant and translator Rachel Gamba. The research team also thanks the close collaboration and presence of Ester Sanna, prof. Mauro Van Aken and Barbara Aiolfi.

Water management between unfinished policies and disjointed practices. An Introduction

The waters of the research

Water is a resource inseparable from social relationships and cultural representations in which it is immersed. Behind its materiality and visibility, water weaves relationships, condenses meanings, builds bonds between people and places, communities and landscapes. These bonds are not always obvious or

[1] The SANI Project AID 10918/LVIA/TZA MAISHANI – Mji na Lishe "*Integrated Project for the Right to Water, Health and Nutrition in Dodoma and Iringa Regions – Central Tanzania*", funded by AICS (Agenzia Italiana per la Cooperazione allo Sviluppo), 2017-2020.

tangible, but this does not make them less efficient and important. Our approach therefore starts from the assumption that water is a good to be revealed, deeply relational, full of meanings and power relations. The central concern of our work starts precisely from the desire to build a dialogue between the numerous and innovative legal and institutional reforms that regulate water management in Tanzania, the translation of these policies into a project of international dimensions such as the SANI project and the concrete forms of implementation that take shape at a ground level. This dialogue aims, ultimately, at producing an interpretative framework that can be used outside this specific case study.

Relational waters

To accept the perspective that looks at water as a relational element, it is necessary to overcome the "persistent positivist prejudice that would make the H2O a mainly physical resource, a mute, passive and de-socialized object" (Casciarri, Van Aken 2013, p. 16). Such a perspective has led scholars to focus on phenomena such as commodification of water (Baron 2005) or the form of governance that take shape around water (Boëdec 2003; Schneier-Madanes 2010). Some recent works have seen water as a prism able to grasp the complexity of social and political systems as well as the density of processes of change and development (Strang 2005; Mosse 2008; Zwarteveen, Boelens 2006). In these works, the use of water and its infrastructures brings out the full intensity of relations among the local political actors. Stephen Lansing (1991) speaks of "ritual technologies" and ritual efficacy of water infrastructure and irrigation systems in a work that makes the political-economic management inseparable from the symbolic-religious dimension of a resource that is at the same time natural, economic and sacred. These scholars have highlighted the way in which the extreme technicalization of the resource and its consequent reduction to a manageable and measurable object was constitutive of development policies and rhetoric of modernization (Casciarri, Van Aken 2013). Reinstating the symbolic and political dimensions in the analysis of water management means proposing a framework that fully reinterprets the boundary between human beings and the environment.

Little waters

If we overcome a de-socialized view of water, it becomes possible to question the very importance of objective measurability from which the dichotomy abundance/scarcity derives. Lyla Mehta (2001; 2003) proposing a qualitative

approach to the study of water argues that notions such as scarcity or rarity of water are both real and socially constructed. Such a "social construction of scarcity" (Mehta 2001) will be very useful for us to understand how inhabitants look, evaluate and organize the management and the self-management of the resource. Overcoming a quantitative and "satellite" view of water (H2O), such a qualitative approach allows us to take an interest in "little waters" (Casciari, Van Aken 2013), local waters that shape the territories, giving rise to conflicts and power relations. Transforming water into a passive object and understandable only through technical languages means in fact neglecting even its political dimension. Indeed, Kaika (2005) speaks of the contemporary reinvention of water as a silent and hidden object. Water in many cultural contexts has its own subjectivity, is linked to the action of invisible presences and forces that impose ritual devices, codified behaviours and therefore generate political negotiations and collective responsibilities. You cannot touch, see or desecrate all water sources as easily as a simple tap. The representations that surround the locations of waters are all symbolic translations of this social and political density of water. But these representations cannot be reduced to archaic forms of magical-religious beliefs. In this sense we think that development interventions must consider these cultural dimensions and the knowledges they recall.

Invisible infrastructures

Our research has focused on the locations and routes of the waters where they come into contact with human activities, social relations and everyday uses. In this sense, we have chosen to analyse the "biography of the waters" intended as a category capable of describing all the technical and social sequences that lead from sources to households, crossing analytical focal points such as management, distribution, consumption and nutrition. In this chain of sequences, the water is incorporated into the local social reality (Mosse 2008), embedded in the relationships between social groups, divergent interests and between forces that include the institutional frameworks of the State and its national policies animating or fuelling rivalry and local tensions. However, it is important to look at water as a vector of cooperation and micro-solidarity that makes local management extremely flexible. In this sense we wanted to talk, taking up the expression of Abdoumaliq Simone (2006), of "invisible infrastructures" to refer to all those forms of collaboration and cooperation not codified by institutional or juridical frames but whose impact on daily and concrete access to the resource is fundamental. The management models proposed by development intervention, despite interpreting laws, norms and consolidated policies, can-

not be conceived in a rigid way with respect to the local reality. The relational nature of water imposes respect for the specific nature of local relationships and representations, precisely in the perspective of improving and implementing knowledge, skills and invisible infrastructures already partly present.

Unfinished policies

Underestimating the importance of the process of landing development models and norms in local micro-contexts risks to produce two distortions. (1) From below, it can lead to a managerial and political malformation of the subjects involved in the management of the resource. The first, the one we called management malformation, results in what some have called a pidginization of language and bureaucratic representations (Bayart, Poudiougou, Zanoletti 2019) without a fully matured development process. It is an unfinished appropriation of languages and technical tools that are often esoteric and opaque in the eyes of those who work at a ground level. The political malformation results of a missed appointment by the subjects responsible of the resource management with the opportunity to fully constitute themselves as political subjects able to take care of a common good. In the name of strictly technical-administrative role, there will be no overall vision, an action strategy coupled with wide-ranging decision-making processes, a sense of collective responsibility involving the rest of the community. (2) The second distortion comes from the top, that is from the point of view of national (State) and international actors. The risk is to propose or impose macro-political innovation models, understood as successful modernization processes. In this perspective, which some have also called "techno-politics" (Mitchell 2002), high institutions would have the first and the last word on the processes and languages, the models and the knowledge to be realized. The incompleteness of the policies would derive from a lack, an alleged defect of the local communities and their governance in realizing the mission of change offered by macro-techno-political policies (Molle *et al.* 2009). This second distortion leads also to underestimating of concrete and situated impact of intermediate actors, such as agencies and development organizations, in processes of social change.

Shaping waters

To avoid this risk of de-politicizing water management processes, it is necessary to accept the fundamental juridical-institutional incompleteness of norms

and policies and to recognize that the latter does not leave a void or a lack, but reveals the social, cultural and political density of local worlds and waters. Turning our attention to what we have called invisible infrastructures, these forms of solidarity and cooperation, those local knowledge and technical efforts, allows us to better reconcile the landing of new expert knowledge and models, new languages (often extremely bureaucratic) and concepts on the territory and its resources. Understanding the water means revealing the history of a territory, of the formation of the State as a process of constant transformation inscribed in the environment and landscapes as well as in the constitution of new local political elites (Mosse 2003). In this scenario, international organizations are not neutral actors. They are political subjects that are wholly part of local and national history and take part in contemporary processes of social change.

Accepting the juridical-institutional incompleteness of national policies of resource management means recognizing the plural and sometimes ambiguous nature of institutional and juridical frameworks. Pre-existing local management models cannot be de-legitimized by new abstract bureaucratic visions and decontextualized efficiency prototypes: above all, because the former configuration is often deeply socialized and inscribed in shared everyday uses, that cannot be ignored. To think of local level, however, it is not enough to refer to simplified and reified category of "community" (Olivier de Sardan 1995). Communities do not exist as homogeneous, peaceful contexts, moved by a monolithic will or vision. Local communities are constantly crossed by divergent interests, they are arenas populated by public, private and hybrid subjects, they are torn apart or linked by conflict and forms of cooperation. They are inhabited by heterogeneous and dynamic people and groups. They are interested in constant migratory movement and forms of (social) mobility.

Research question and structure of the report

The report is divided into three interdependent parts. The first, *Looking for Waters*, summarizes tools and methods used for the collection and circulation of data. It also offers an account of the analysis process and a description of the privileged frameworks and steps of the participatory process of constructing results and proposals. The second, *The Context*, briefly returns the juridical-institutional framework on water management according to the laws and policies currently in force in Tanzania. It also defines and situates the study context chosen by the research team in collaboration with the project partners, and

especially the NGO LVIA and the District of Kongwa. The third part, *Shaping Waters*, presents the results of the qualitative and intensive visual research conducted in the chosen context.

Looking for waters. The methodology

The "machine" set up for doing the research has three main different methodological souls: an ethnographic approach, aimed to unveil narratives from the ground level. The direction of this process instead is laid out by a Participatory Action Research (PAR) process, while the interpretation is carried out through the lens of a visual perspective.[2] PAR is a cyclical process comprising phases of data collection, reflection and action: data is collected, shared and analysed with the participants, thus stimulating reflection and awareness of what comes up. The current systems and habits may be questioned, and participants are facilitated to take action, moving from "what is" to "how it could be" (Wang 1999; Baum 2006; Tracy 2012). For this study it meant a constant process of restitution with all the participants and collaborators. A dialogical and reflective approach to put the knowledge in circle, interview after interview, one focus group after one other. It meant, in the final stage, going back and forth at different scales and administrative levels, to discuss with the authorities what was going on at the ground level to come back afterwards to discuss with the local organizations the responses, and prepare together the next steps.
The visual dimension on its part, evolved following the iterative path of the fieldwork process. At the beginning, in our first draft we thought to use *photovoice*[3] as PAR method, to gather people's voice and promote discussion among the participants and with the policymakers. However, we realised that due to linguistic barriers, time and logistic constraints, that approach would have ended up being too ineffective, and mostly it would have sacrificed the time we had to deeper the relationship with the interlocutors. Regardless, the visual way to look at things remained a key element during the data collection as well at the analysis stage: pictures and maps became a precious and essential tool

[2] Due to editorial constraints, the visual documents, which were integral to the restitution in the original report, could not be included in this publication.

[3] Photovoice is a visual method that enables people to communicate, reflect and interpret their everyday life in an easy and effective way, overcoming social barriers and inhibitions, and it helps people unlock their expressive potential.
Such method has three main goals: "(1) to enable people to record and reflect their personal and community strengths and concerns, (2) to promote critical dialogue and knowledge about personal community issues through group discussions of photographs, and (3) to reach policymakers" (Wang 1999).

to guide interviews, to capture relevant moments during participant observations, to reconstruct the social and technical map of waters, through *photographic transect walks*[4] or *mental maps* sketching. Privileging, although, a more flexible approach, where the relationship with the actors was always put in the foreground, and the visual component has been used just when it was actually able to add value to the interaction or the data collection, rather than bending the situation at any cost following a pre-set structure.

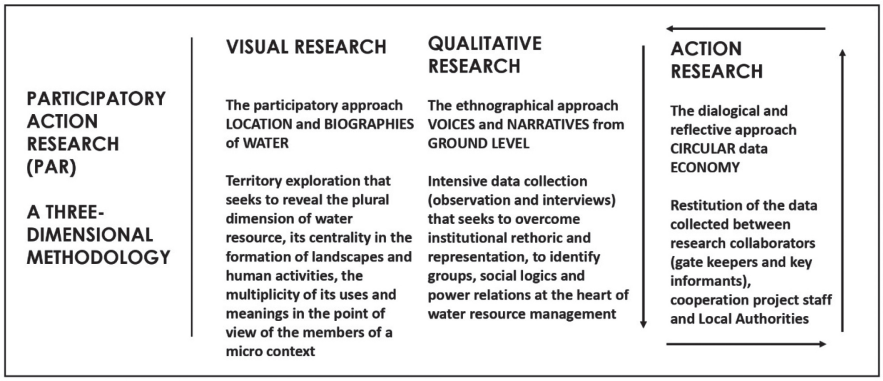

Figure 1. The three methodological components of the research theoretical umbrella.

The context. Water juridical framework and research's geographical setting

From National Water Policy (1991-2002) to centralized decentralization (RUWASA 2019) – Policy Background

The new National Water Policy (NAWAPO), published in 2002, represents the starting point through which the principles that still organize the water sector in Tanzania are defined. While the new Water Supply and Sanitation

[4] As transect walks we mean going around with the participants following specific, or in some case improvised tours to get information about the ecological, social and technical environment, "[…] observing, asking, listening, discussing, identifying different zones, soils, land uses, vegetation, seeking problems, solutions and opportunities; and mapping and diagramming the zones, resources and findings" (Chambers 1994, p.960). To this we used the photos to capture the information alongside fieldnotes.

Act, of 2019, which provides for the foundation of a national Agency for Rural Water Supply and Sanitation, constitutes the latest and most innovative framework in which we will find elements of reflection very close to those that emerge from data collected in the field.

– The NAWAPO 2002: community participation and ownership in rural water supply system

NAWAPO of 2002 outlines the three key areas of the water sector: that of Water Resources Management, which concern the definition and management of water intended as a natural resource; the field of Water Supply in Urban Areas; the field of Water Supply in Rural Areas. The latter is what interests our research and the SANI project in general. In this sense, the 2002 NAWAPO represents an important reform compared to the previous NAWAPO, from 1991, because it introduces a triple innovation. (1) NAWAPO of 2002 recognizes and defines the role of other actors (local and private) just as it resizes that of public institutions, now understood as "regulator, facilitator and coordinator alongside other actors, including development partners and private sector" (Mangione, Pozzobon 2019, p. 13). (2) Consequently, therefore, it recognizes a central role for the communities in the ownership of the facilities and in the planning and management of the resource (3) Finally, it encourages the participation of the private sector and development partners in the implementation of water supply services.

– The WSSA 2009 and the invention of Community *Owned* Water Supply Organizations (COWSO)

Two laws were passed in 2009, The Water Resource Management Act (WRMA) and The Water Supply and Sanitation Act (WSSA). This new legislative framework defines two new subjects responsible for water supply services. For urban contexts, Water Authorities (WA) are established, while for rural contexts, Community Owned Water Supply Organization (COWSO) are invented: "organizations legally responsible for water provision" (Fierro, Nelaj, Mwendamseke 2015, p. 9). The new principles identified by WSSA in terms of water resource management are as follows: (1) *decentralization* of management functions to a lowest appropriate level; (2) *financial autonomy* of water authorities (WA and COWSO); (3) *community ownership* of water facilities in rural areas through COWSO; (4) *community based management*: costs of operation and maintenance handled by local communities; (5) promotion of *Public & Private Partnership* (PPP) in water and sanitation services (Fierro, Nelaj,

Mwendamseke 2015, p. 9). WSSA also regulates private sector participation in water supply. In this juridical-institutional configuration, the field of action of the COWSO is strongly tied, not to say dependent, to the Local Government Authorities. Together with the members of COWSO, at the local level, it is in fact the government authorities that have a key role in decision making, planning and therefore managing the schemes. Beyond ordinary maintenance, any infrastructure intervention must in fact pass to the scrutiny of Village and District Authorities. As we will see, such a configuration entails many short-circuiting possibilities between the sought-after community participation and the effective heteronomy of the organizations.

– The WSSA 2019 and the invention of Community *Based* Water Supply Organizations (CBWSA)

In 2019 a new WSSA was approved. This Act stipulates the creation of a new national entity, the Rural Water Supply and Sanitation Agency (RUWASA), responsible for the provision of water in rural areas, as well as the development and management of water supply and sanitation projects. Consequently, at the local level, the RUWASA "assumes all the duties previously attributed to Local Government Authorities in relation to community organisations, with the addition of the cooperation with local government authorities for the submission of plans and operational reports to full councils for information" (Mangione, Pozzobon 2019, p. 23). The Agency will also have a central role in the creation, constitution and registration processes of the new community organizations. Finally, it can play a role of mediation and supervision between community organizations and private providers.
WSSA 2019 foresees a restructuring of COWSO, renamed Community Based Water Supply Organizations (CBSWO). The system configured by WSSA 2019 aims to establish a new set of skills and actors in the direction of a "decentralised centralization" (Mangione, Pozzobon 2019, p. 26) in which RUWASA and CBWSO contribute to strategic management but at the same time grounded in everyday operation and services. Finally, the distinction between an operational team and a stakeholder representative committee appears, as will emerge from our research, to be a good omen for the resolution of many critical issues inherent in the institutional set-up deriving from the application of the WSSA 2009.

– The ambiguous profile of water consumer/user associations

One of the most important innovations that WSSA 2009 has introduced is as simple as it is widely underestimated. In the previous legal structure, the

institutional body responsible for the local management of domestic water was the Village Water Committee (VWC). The latter was entirely subordinated to the Local Authorities and in no way functioned as a representative body of civil society. The COWSO, for their part, are instead defined by WSSA 2009 as Consumers/Users Associations. This passage theoretically reverses the power relations and transforms an institutional structure integrated within the Local Government into an associative body that emanates from Civil Society. Such a transformation radically redefines the political and moral contract that is established between the members of the association and the local community, as well as the relationship between the organization and the governmental institutions with which it is called to interact. As we will see along this border between organization and institution, numerous frictions and tension run.

In practice, the landing of national laws and policies at local level is never a linear process, but the legal and institutional incompleteness is not to be considered as a lack. In addition, there is also an irreducible juridical plurality with which local actors, both at institutional and citizenship level, have to deal. The *grand schemes* transmitted by policies and sometimes infused in the lexicon and the tools of development interventions necessarily clash with the ordinary language and practices. To encourage the landing processes of the policies, those involved in development interventions are called not to generate further technicality, bureaucratic opacity and lexical esotericism. What we have often observed in the daily routine of resource management practices are phenomena of *pidginization* of languages, management and action categories. The "bureaucratization of the world" (Hibou 2012) that many policies and development interventions entail produce, from the point of view of target groups, a proliferation of words, categories, terms. These instead of making them capable of mastering the experience produce overlaps, semantic confusions and mimetic processes. In an attempt to emulate the "magic of the State" and its bureaucratic apparatus, social actors often lose the overall view and the familiarity of a more conscious and confident look at reality.

In this sense, we noticed that no member of the COWSO of our case study was aware of the distinction between a Water Consumer Association, with the rights and duties that this entails, and a Village Committee. No one could distinguish accurately a government institution by an organization of citizens and consumers, even though they were part. Distinguishing and separating governmental institutions and organizations expressed by a set of social forces present in the area, by a network of stakeholders of which the administrative institutions themselves are part, is a fundamental step.

Geographical, socio-economic and cultural profile

HN, are two adjacent villages located in the Ward of Hogoro, in the central-western part of Kongwa District, in the eastern part of Dodoma Region. Until 2018, the Village of Nyerere did not extend as an autonomous administrative entity. It included the set of neighbourhoods located beyond the east side of the Kongwa-Mkoka-Kibaya road. The villages of HN together comprise around 14.000 inhabitants. The current water scheme, built by the Village Government in 2006, is powered by a bore hole equipped with ad electric/diesel mono-pump. The COWSO of HN, although formally founded only in Hogoro, was trained (by LVIA) between 2018 and 2019, registered in April 2019 and started operating in May 2019.
HN are villages composed mainly of groups of agro-sheperds Gogo and Kaguro. A small community of Bena, a population of farmers from the Iringa region, constitutes a substantial and concentrated minority in a neighbourhood that bears the name of the ethnic group (*Ubena* – "the place of the Bena"). The lands present in the territory of HN currently have an agro-pastoral vocation and are therefore mainly composed of grassland and cultivated lands.

Brief history and political ecology of the territory

Several interviews collected among some members of the older generations of the village show how, in the precolonial period, the territories of HN were much less intensely cultivated lands, dominated by forests (arboreal savannah) and pastures, game and small settlements. The profile that Peter Rigby (1969) traces of the Gogo society that dominated the area confirm this version. Before the arrival of the British, the water was more abundant, the land more fertile, and the rains marked the calendar, agricultural practices, transhumance and internal migrations.
Between 1919 and 1961, the formal British Rule period, things changed radically (Neumann 2001). The Overseas Food Corporation with the support of the colonial administration evacuated an area that corresponds today to a large part of Kongwa District, with the aim of creating a gigantic peanut cultivation area. The memory of this forced displacement is still strong among the elders. But the memory of the ecological impact it entailed is also alive. The entire area was drastically deforested, with the result of irreversibly degrading the soils thus causing the company's production prospects to fail. The area was the converted into a huge cattle farm (Kongwa Ranch) under the control of the British. The traces of colonial settlements are still present in the hinterland of Hogoro, as well as those of infrastructures they had built, from the industrial

exploitation system of waters of Mount Hogoro to the railway network that was supposed to channel the production of peanuts to the ports of the coast. The main degradation factor of newly deforested soils was undoubtedly the evaporation that ensued. It was only in the period of *villagization* (*ujamaa*), between 1971 and 1973, as numerous biographies collected also report, that the local populations returned, reassembling and funding the village of Hogoro. In an area shaped by such a violent ecological and political history, the vulnerability of soils and its water is of fundamental importance for governing the present and the future of the communities that inhabit it.

Shaping Waters. Unveiling the waterscape of Hogoro and Nyerere

Building the waterscape

In the territories of the Kongwa District we find a recurrent morphology in the spatial and symbolic relationship between inhabited centres and water sources. In some locations, natural sources of water are considered and treated as sacred places. The contents of beliefs populate it with supernatural mythological creatures, therefore on the border between the human and the non-human world. This also involves a set of ritual devices, taboos and prohibitions, which strongly regulate the approach to these sacred places by ordinary people, when they do not make it unacceptable. These sources are accessed only by following a certain type of ritual dispositions. These beliefs and rituals therefore surround these places with an aura of mystery and importance, purity and danger (Douglas 1969), which is directly reflected on landscape. The sources must remain far from the human world, its ordinary practices. An almost uncontaminated nature unfolds around them, a rich riparian zone recognizable at a distance of kilometres. At a safe distance it becomes possible to build houses, to tame the land in cultivable perimeters, to cross stretches of pastures with cattle. This territorial configuration has not completely disappeared not even with the creation of artificial water sources ant the redefinition of spaces that occurred since the period of villagization, *ujamaa*.
Above this pattern we can outline a counter-example and an exception in HN. The counter-example is represented by the houses of white men (*mzungo*). As explained, in the colonial period the territory of HN had been converted into a huge cash crop possession owned by a British company (the *Overseas*). Some settlers representing this company lived right at the foot of Mount Hogoro, within houses whose remains are still present and called the houses of the *mzungo*. Here, at the foot of the Mount Hogoro, there was an important source of

water that fed the current Kongwa Ranch. The colonial settlement of Hogoro was built right next to the water sources. Isolated and abandoned, today they are proof that the only houses ever built near a source did not belong to the local people. The exception that we encountered concerns instead an artificial and private water source present inside the village of HN. This source is only a few steps away from other houses. But immediately next to it a small church was built. Even if it is a newly built Pentecostal church (contemporary to the source itself), such a combination of water source and place of worship seems to confirm the pattern by integrating our exception in the rule that in some way sanctifies water sources.

What analytical benefits can we draw from observing this particular way of distancing sources from daily life? What do the culturally active and significant traces of traditional figures such as guardians of sacred sources (Håkansson 1998) tell us about the local management of resources and their possible insertion into development interventions designed by bureaucratic apparatuses only apparently far from religious and traditional structures? The fact that these sources are taken over by the communities to the point of constituting a recurring pattern in the "natural" landscape, the architecture of inhabited areas, and in the social practices and ritual uses reveals a long-standing dimension. The waters have always been resources located along a highly regulated border between the domestic world and the wild/supernatural one. The processes of domestication of water pass through a collective way of taking charge/care of a good (water) whose importance goes far beyond its usefulness and extractability. The stakes in taking care of such a special good concern the well-being of the whole community. The political dimension of the sacred, understood as an object of a collective care and highly regulated moral codes and symbolic values, appears evident when it meets a basic necessity. The communities have always placed themselves at a safe distance from a scarce good that no one can live without and from whose management derives the well-being of all members of the human and familiar world.

Invisible infrastructures and social practices

From the previous observations thus derives the need to get closer to what happens when the waters enter the inhabited spaces and places. We enter a sphere much closer to daily experience. While the sources belong to extraordinary registers and claims, both in terms of cosmological representations and in terms of development interventions (the incessant requests for construction of a new source or *kisima* by the inhabitants of the village of Nyerere reveal the

definition of a political will to emancipate from Hogoro, beyond the real and proven need for a new infrastructure: as Nyerere's new Village Executive Officer states: "the community of Nyerere they want to have their own *kisima*!"), the domestic water distribution (DP) infrastructures deeply intertwine with ordinary and intimate issues.

To fully understand what emerges from data on the use of domestic water of the DPs, on daily micro-management of a resource at the centre of social life of each family and inhabitant, it is important to reject an approach entirely focused on the water scheme and its performances expressed in purely technical terms, rather facing the complexity of a socio-ecological system. The infrastructural dimension of the scheme is therefore inseparable from what we have defined as invisible infrastructures. What in technical terms is defined as simple DP of the water scheme are actually densely lived places. The interactions that take place around the DPs, in the hours when COWSO provides the distribution service (8 am to 12 and 4 pm to 6 pm), reveals that these places come alive like full-fledged squares of the village. They are places of socialization among neighbours, of meeting and exchange, and aggregation mainly between women. They are key points for the recreational activities of children and adolescents, often responsible for the collection of domestic water. They are places where water becomes an excuse to meet or a reason to complain about inefficient public services. Quite often queues are created during which forms of collaboration and mutual help are activated. The water is mostly collected by young women and the elderly, groups of children or, more rarely, also men. Most of them reach the DP by bicycle. The fact that these distribution sites are experienced as village squares is also indicated by the fact that many of them have been renamed. Some DPs are named after well-known personalities in the village, others after the neighbourhood in which they are located or the institutional buildings near which they were built.

The nuclear families of COWSO members are entitled to a certain amount of free water every week. This measure is intended as an additional benefit to the meagre monthly compensation (10,000 TZS) received directly by the members of the committee. In addition to this, another facility is applied to the most vulnerable sections of society such as the elderly and people with disabilities. There is also a form of gift in water, which COWSO grants to the inhabitants on the occasion of a funeral. Finally, another practice established by the COWSO of HN consists in making credit to those who supply themselves to DPs.

The public sources of the scheme are identifiable with the 9 DPs serving the population at large. The private (PT) ones are owned by individuals, linked to the same scheme. Since it began to operate in April 2019, HN's COWSO has put 24 private DPs into operation in the homes that have requested them.

Compared to the previous management system, this represents an important innovation in continuous expansion. The private service that this represents, the presence of numerous private taps generates an economy parallel to that of public DPs. Just as PTs act as large-scale DPs, there are other domestic water markets. We have already mentioned above the presence of private source owned by a family who administers a Pentecostal church. This alternative source act as an important distribution system complementary to the water scheme. When the wait gets too long in the village public DPs, many turns to their social networks to access a PT or the church source. Similarly, when a mechanical failure prevents the water scheme from delivering water, the church source becomes a strategic DP.
In just a few months, COWSO has been able to invent and institutionalize forms of capillary solidarity that go far beyond the services provided by the policies. Furthermore, the inhabitants themselves show forms of self-organization and exchange that revolve around the distribution of domestic water. To understand it is also important to overcome the simple dichotomy between the formal and the informal to see, in what might seem informal economies, well-established forms of collaboration, solidarity and compensation in the resource distribution system at a ground level. In this sense, COWSO and its members, who have shown themselves to be extremely aware of these interstitial dimensions of the distribution and supply system, turn out to be a real bridge between visible and invisible infrastructures adapt to elaborate strategies to reduce vulnerability.

The ordinary every day and its malcontents

The picture emerging from previous results needs some nuances since numerous frictions emerge with respect to the aspects listed above. One of the most recurring issues raised by the inhabitants concerns hydraulic failures. According to some members of COWSO, today these are due to the scarcity of tools and means to repair the scheme in case of failure. In fact, according to the set of statements collected on the scheme's performance level, this seems to have improved greatly since COWSO started operating in 2019. From the point of view of consumer-inhabitants, lacking in technical skills and overview, many malcontents are spilling over into the questions of waiting queues for DPs. Many complains of too long waits, especially when there is no electricity that supplies the source pump.
Suspicious and rumours about mismanagement of accounts and consumption are on the agenda. Previous managements of the resource by PO and Village

Water Committee have certainly contributed to building a climate of suspicion and tension that still unfolds today in everyday life toward the new organization. However, the creation of COWSO in an unfinished process that has to deal with numerous obstacles partly inherited from the previous configuration, partly unavoidable due to the deeply negotiated nature of such a path of manufacturing skills and responsibilities.

Disputed waters and unfinished policies

COWSO: the crafting of an institutional subject

If we think of the creation of COWSO as a simple matter of implementation of national policies at the local level we will encounter only incompleteness and inadequacy. What appears to be evident to a more careful observation of the organization's way to operate is the constantly negotiated dimension, crafted and produced in the daily life of both the COWSO group and the respective skills of its members.
The affirmation and legitimacy of COWSO, both from the point of view of the local authorities and of ordinary people is not granted at all. The main difficulties encountered by the COWSO group therefore concern two levels: the relationship with the Local Leaders, which we will discuss in the next paragraph, and the relationship with the inhabitants of the area, which includes the members of the organization themselves. As one of the most active members of COWSO states:

> Since we started to work as COWSO, we didn't meet the villagers. I mean we didn't do a village meeting to explain the village about the work we do. I suggested that the village government could help us to introduce ourselves to them and about what we do, something that would help us to be free with our activities. Because some of the villages said to us that we are using the money of water by our own interest. Something that is not true (Interview to Ms).

This speech highlights how the affirmation of the organization is not a simple bureaucratic act. The drafting and registration of the Memorandum of Understanding are fundamental but not sufficient steps. There is a sort of moral contract that the organization stipulate with the local community. Although this contract passes through an election of the group, it does not end with the appointment of its members. It is only the beginning of a long process that we have been able to observe in everyday life. The work and the commitment shown by

the group, both from a managerial and technical point of view, builds the trust that the COWSO of HN gains from the inhabitant day after day. Everything happens as if the process of routinization of their role and work unfolded over time well beyond formal institutionalization. In this sense, it seems that the village needs concrete evidence of this commitment: from ordinary maintenance of the scheme to the construction/planning of public and infrastructural works (such as a new DP, a new tank or… a new source) they recur daily as a mantra. What we have called the crafting of COWSO also passes through a new form of subjectification of the group members themselves. Through the assignment of roles defined by legislation, an important path of subjectivation is activated. In fact, within the team there is a chairperson, managers, a secretary and, finally, a group of tap guardians. Each of these roles corresponds to very different responsibilities and competences. We have observed how these two dimensions are built progressively in practice, in the effort and daily commitment to improve their skills and to socially assert their role on the public scene.

The establishment of COWSO has introduced an important social change. However, COWSO's position seems to lie between an institutional authority, endowed with a power structure and its own political body, and an organization of civil society configured as a citizen-consumers association. The ambiguity of the legislation in force regarding this social status of institution-organization is also seen at a more lexical level. What does water manager actually and concretely mean? How many of the group members or inhabitants really know the meaning of COWSO?[5] Everything happens as if such a social innovation has brought, in its local landing, a proliferation of technical, bureaucratic terms, in an often-foreign language for local people, such as English, but also a plurality of legal framework (think of the current coexistence of two laws that are in some respects very different, WSSA 2009 and 2019) whose effect is to increase the opacity of the innovation process itself. The use of these terms or of the bureaucratic procedures that imply does not correspond to an administrative linearity or transparency. Indeed, each COWSO's decision is filtered by a process of approval of decisions and costs mediated by letters and official requests addressed to Village Leaders whose response often depends on the arbitrariness with which the latter (personally) interpret the request.

Much of the work done by COWSO members is a profession learned by doing, made up of knowledge exchanged and distributed through informal channels. Much of the lexicon used generates a real pidginization of the bureaucratic language which tend to make the use of technical terms almost esoteric. At the

[5] The organisation, at the time of the search, did not have a local term.

same time, this technicalization of language hides real political dynamics. From the genesis of tensions and factions within the group to the design of new infrastructures, everything seems to be attributable to a question of technical performance. There is no room for a political decision on these issues. The most striking example is the idea that villages need a new source (*kisima*). Most of the inhabitants agree with this vision, explaining that it is a technical necessity due to the dysfunctions of the scheme. The members of COWSO's operational team say that technically speaking there is no need for a new source, but for a new storage tank. Most of the surrounding villages have neither COWSO nor tanks. Many resorts to natural sources or to the HN's scheme itself. Trying to get out of a technical vision to trigger a political reflection we notice a double reversal. The first has to do with the cultural codes of the context, which we have outlined above. Having a new source of water has a profound cosmological meaning in building the world itself. It means having your own territory, being able to claim your own autonomy towards other villages and territories, other political communities. Therefore, imagining the creation of a new source, for the inhabitants of two villages that have just been recently divided into two administrative units HN, entails an evident political horizon. Thus, each village would have its own source. Each village would be fully established and autonomous. This political dimension is part of the way people think about future and belonging. But there is a second reversal, which is perhaps more useful to effectively face the vulnerability of the two villages. Thinking about the construction of a new infrastructure (so much so that the expert members of COWSO specify the fact that technically speaking it must be a new tank, not a new source) means developing the territory through water. This entails not only a general interest in the community (assuming a real political value from now on) but also an interest in COWSO, which is constantly looking, as we have seen, for its own subjectivity, legitimacy, authority. Planning and implementing the scheme through large works, and not only thanks to small limited maintenance interventions, is this not the highest mission that such an organization can give itself? Isn't that what it would honour the moral contract it made with the community, generating trust and consequently, removing the corrupted immobility that characterized the previous institutional condition for decades?

Incompleteness between formal authorities, micro-corruption, strategies and tactics: redefining the role of NGOs in local political processes

"The ones who don't want us are the one who used to work with *Mzabuni*" (interview to Jk). *Mzabuni* is the Swahili term to indicate the Private Operator

who dispensed the water service until the creation of the COWSO. This brief quote brings out the main nerve of water management at the local level. The creation of COWSO in HN has put an end to a micro-corruption system that revolved around water and that occurs in many other contexts. Until April 18th, 2019, the scheme was managed by a PO, who, in agreement with some Local Government officials, circumvented part of the revenues by corrupting the officials:

> They [Village Leaders] used to work with Mzabuni, and if they got a problem, they go to Mzabuni to ask for the money. This is why for us as member of COWSO they dislike us, because we don't pay them anything. […] The one who don't want us are the village government. As I told you that yesterday the village government, they wanted us to give the money that would be used for taking a car from Hogoro to Mkoka. But we didn't agree with them. We said that all the money collected belongs to the water, so in that case we don't want them to take the money we collected to use it for their own use (interview to Jk).

> For me COWSO is a good thing. Because previously the village government was controlling the water but they used the money for their own interests. But now COWSO doesn't keep the money, they collect it to the bank every day (interview to Es).

> Some of the Mzabuni corrupt village leaders to win the elections (interview to As).

Even some local administration officials, unrelated to this system, offered their testimony:

> The people who want Mzabuni are the one […] from the village government. Because every village where Mzabuni manage the water, there is an indicator of corruption. And it's true that those leaders were being given money to choose Mzabuni to manage water (interview to Wh).

It is interesting to note that those who were accused of corruption from the aforementioned testimonies, defended themselves with the same recriminations:

> You may find that people [COWSO members] are selling water for one tap [and they collect] 15.000 TZS. In that case he collects 10.000 TZS in the office and 5.000 TZS it remains for him/herself. Other they take more than 5.000 TZS. Previously they used this office [Hogoro village government's office]. But they decided to change, they started to use Nyerere Office for their activities. So, in that case you may find that they have a problem. […] So, in that way you see the difference between Mzabuni [Private

> Operator] and the Water Committee [COWSO]. Mzabuni after signed a contract that he will pay the same amount of money he contributed every day. But for the Water Committee it's different. They don't have a specific amount of money collect every month or every day. […] They normally base in their self-interests rather than to depend in the community interests. […] For me, I prefer to have Mzabuni because it would be easy to control him. And even if there is a problem it would be easy to face him and to punish him. But for the Water Committee it's difficult. […] the members of COWSO misuse the money collected for their private interests (interview to Vl).

The conflict appeared, in July-August of 2019, still intensely experienced and felt. It is evident that beyond the undeniable dignity of each point of view, some positions are clearly compromised in favour of the exercise of power whose borders are not clear. However, in our opinion this type of conflict of interest is structurally favoured by the legal-institutional framework contained in the WSSA 2009. Opening up to the Private Sector in a regime of Public Private Partnership (PPP) has generated the institutional conditions for similar micro-corruption systems. Many members of the COWSO, or officials engaged in other public sectors, complain of the presence of local power relations which are unfavourable to the proper functioning of the services. Even today, despite the dismissal of the Private Operator in favour of COWSO, the bureaucratic procedures and the function of the Village Leaders configure a system that deeply questions the organization's decision-making autonomy and room of manoeuvre: "We are still under village government; because if we want to do something, we write a letter to the village government, then we are waiting for the answer" (interview to Jk). Until October 2019, the same people who ruled the village before the arrival of COWSO remained in office, fuelling resentments and tensions resulting from the conflict described above. But the legal institutional structure should not allow the arbitrariness of corruptible officials to mark the fate of an organization like COWSO: in this sense, we believe that the establishment of RUWASA with WSSA 2019 can contribute to improving the operating system of COWSO precisely because it bypasses in a sophisticated way the authority, potentially arbitrary and corrupt as we have documented, of the Village Government, and reintegrating it into a wider network of local stakeholders. It is only by removing this potential decision-making arbitrariness from local authorities that the organization, by connecting equally to a network of stakeholders and national bodies, will be able to operate with greater transparency, independency and systematic rigor. In such a configuration, it is important that Non-Governmental Organizations find their aware place, without denying their role as promoters and accelerators of social and political changes.

In conclusion of this chapter, another main obstacle we have documented through the observation of the process of making and shaping COWSO is the fact that their members move in a contested space (the water scheme and the village public water sphere), that is widely ignored and unfamiliar for the authorities and policymakers operating at higher scales, as for the inhabitants themselves. The decisions taken by the water committees are generally still circumstantial, responding to one problem after another without having a long-run perspective. Their actions remain in a fragmented perspective that is not able to fully capitalize on its own advantages, its position, preparing expansion and independence with respect to the local authorities. The COWSOs are not the object of real and public construction (as wish by the policy), but of micro and often hidden negotiating processes. A greater coordination between COWSO and the higher administrative levels than village/ward context, mediated by the presence of development actors, could constitute a promising horizon in this sense, recognizing the potential of the COWSOs in terms of self-organization, learning and action.

Conclusions

In order to unveil the complexity of water management it is necessary to go beyond a purely technical and reductive perspective, rather trying to deeply look at the social and cultural dimensions, the visible and invisible infrastructures shaping and reshaping the socio-technical map of waters. On this regard, the methodology designed for this research has been a valuable tool to investigate these aspects in a flexible and open way, giving the chance to a "vulnerable" group of the local society to bring their voices to the policy makers, to put the information in circle in order to improve the work of all the actors involved in the resource's management and usage.
We addressed our first research question – *How does the "community" water management work, in the rural context of the central region of Dodoma in Tanzania?* – analysing and discussing in detail the actual configuration of the local water system we observed, relying on the research's experience in HN and in the other villages between the regions of Dodoma and Iringa. Hence, we argued that water management does not coincide merely with the maintenance of the water scheme but is a broader matter that has to be addressed and understood in its complexity. The incompleteness of the national policy on water is a key aspect undermining the work of the community's organizations: COWSOs are at the mercy of the local village's authorities, squeezed between the responsibility of the management of the most important resource in the village on one hand, and the missed attribution of an actual independency in their activity on

the other, as well as the full recognition of their role. This strongly undermines the capacity of the COWSOs to do their job, to improve as organizations and reach a real autonomy and dignity, as well as a sustainable management of the resources. This gap in the application of the law, opens the space for a micro-scaled process of negotiation of the COWSO's position in each village context, of whose result depends on the local history of power relations. Consequently, fracturing a national effort to improve the water's management and supply in thousands of microscopic uncontrollable competitions.
At the same time, the iper-technicalization of the water-related issues, that most of the time characterises the perspective of the policy makers at each level and of the NGOs, reduces the work of the COWSOs in terms of performances, avoiding or ignoring to assess if they are effectively able or not to do what they are asked to. The aforementioned de-politization, technicalization and down-scaling of the alleged role of the community water organizations, contributes once again to make more opaque and weaker their position among the local societies, exposing them to the possible abuse of the local political authorities.

References

Baron, C.
2007 *De l'eau sacrée à l'eau marchandise. Représentations de l'eau en Afrique*, in H. Aubry (ed.), *Imaginaires de l'eau, imaginaire du monde. 10 regards sur l'eau et sa symbolique dans les sociétés humaines*, La Dispute, Paris, pp. 109-137.

Baum, F., MacDougall, C., Smith, D.
2006 Participatory Action Research, *Journal of Epidemiology & Community Health*, 60 (10), pp. 854-857.

Bayart, J.-F., Poudiougou, I., Zanoletti, G.
2019 *L'État de distorsion en Afrique de l'Ouest. Des empires à la nation*, Karthala – AFD, Paris.

Boëdec, F. (ed.)
2003 Dossier spécial : l'eau. *Afrique contemporaine*, 2003, 205.

Casciari, B., Van Aken, M.
2013 Anthropologie et eau(x) affaires globales, eaux locales et flux de cultures. *Journal des Anthropologues*, 132-133, pp. 15-44.

Chambers, R.
1994 The Origins and Practice of Participatory Rural Appraisal. *World Development*, 22 (7), pp. 953-969.

Douglas, M.
1969 *Purity and Danger*, Routledge, London.

Fierro, A.
2017 Rural Water Supply Management in Tanzania: an Empirical Study on COWSO Strategy Implementation and Private Sector Participation. *JUNCO – Journal of Universities and International Development Cooperation*, 2, pp. 1-27.

GLOWS-FIU
2014 *A Rapid Ecohydrological Assessment of the Ruvu River Estuary*, Tanzania. 93.

Government of Tanzania
2003 *Initial National Communication of Kenya to the Conference of the Parties to the United Nations Framework Convention on Climate Change* (UNFCCC), United Republic of Tanzania Vice President's Office, Dar es Salaam.

2007 *National Adaptation Programme of Action, United Republic of Tanzania Vice President's Office*, Dar es Salaam, 52pp. Retrieved from http://unfccc.int/resource/docs/napa/tza01.pdf

Håkansson, N. T.
1998 Rulers and Rainmakers in Precolonial South Pare, Tanzania: Exchange and Ritual Experts in Political Centralization. *Ethnology*, 37 (3), pp. 263-283.

Hibou, B.
2012 *La bureaucratisation du monde à l'ère néolibérale*, La Découverte, Paris.

IUCN Eastern and Southern Africa Programme
2010 *The Wami Basin: A Situation Analysis*, xviii, 92.

2012 *IUCN Red List of Threatened Species. Version 1.* http://www.iucnredlist.org.

JICA
2013 *The study on Water Resources Management and Development in Wami/Ruvu basin in the United Republic of Tanzania. A report by Japan International Cooperation Agency*, Water Resources Division and the Ministry of Water, Tanzania.

Kaika, M.
2005 *City of Flows. Modernities, Nature and the City*, Routeledge, New York.

Lansing, J. S.
1991 *Priest and Programmers. Technologies of Power in the Engineers Landscape of Bali*, Princeton University Press, Princeton.

Mangione, R., Pozzobon, C.
2019 *Rural Water Supply Management: A focus on COWSO Strategy Implementation, Private Sector Participation, Monitoring Systems and Performance of the Water Schemes in Iringa Region –Tanzania*, University of Turin and LVIA – Uni.Coo-Report, Turin.

Mehta, L.
2001 The Manufacture of Popular Perception of Scarcity: Dams and Water-Related Narratives in Gujarat, India. *World Development*, 29 (12), pp. 2025-2041.
2003 *Problems of Publicness and Access Rights: Perspectives from the Water Domain*, in I. Kaul (ed.), *Providing global public goods: manging globalization*. Oxford University Press, Oxford, pp. 556-576.

2007 Whose Scarcity? Whose Property? The Case of Water in Western India. *Land Use Policy*, 24 (4), pp. 654-663.

Mitchell, T.
2002 *The Rule of Experts. Egypt, Techno-Politics, Modernity*, University of California, London.

Mosse, D.
2003 *The Rule of Water. Statecraft, Ecology and Collective Action in South India*, Oxford University Press, Oxford.

2008 Epilogue: The Cultural Politics of Water. A Comparative Perspective. *Journal of Southern African Studies*, 34 (4), pp. 939-948.

Molle, F., Mollinga, P.P., Wester, P.
2009 Hydraulic Bureaucracies and Hydraulic Mission: Flows of Water, Flows of Power. *Water Alternatives*, 2 (3), pp. 328-349.

Neumann, R. P.
2001 Africa's 'Last Wilderness': Reordering Space for Political and Economic Control in Colonial Tanzania. *Africa*, 71 (4), pp. 641-665.

Olivier De Sardan, J.-P.
1995 *Anthropologie et développement. Essai de socio-anthropologie du changement social*, Karthala, Paris.

Rigby, P.
1969 *Cattle and Kinship Among the Gogo*, Cornell University Press, Ithaca.

Strang, V.
2005 Common Sense: Water, Sensory Experience and the Generation of Meaning. *Journal of Material Culture*, 10 (1), pp. 92-120.

Tracy, S.J.
2012 *Qualitative Research Methods: Collecting Evidence, Crafting Analysis, Communicating Impact*, John Wiley & Sons, Hoboken. Wami/Ruvu Basin Water Office (WRBWO)

2006 *Baseline Study on Water Quality in Wami/Ruvu Basin*. WRBWO, Morogoro.

2007 *Final Report on Water Quality Monitoring*. WRBWO, Morogoro.

2008 *Business Plan*. WRBWO, Morogoro.

Wang, C. C.
1999 Photovoice: A Participatory Action Research Strategy Applied to Women's Health. *Journal of Women's Health*, 8 (2), pp. 185-19.

Van Aken, M.
2012 *La diversità delleacque, Antropologiadi un bene moltocomune*, Edizioni Altravista, Campospinoso Albaredo (PV).

Zwateveen, M., Boelens, R.
2006 *Rights, Meanings and Discourses: Gender Dimensions of Water Rights in Diverging Regimes of Representation in the Andes,* in K. Lahiri-Dutt (ed.), *Fluid Bonds. Views on Gender and Water*, Stree, Kolkata, pp. 3-28.