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Multi-scalar Water Governance: Between State Failures and the Increasing Responsibility of Local Communities

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Abstract
In a context of increasing pressure on water resources due to climate change, rapid urbanisation and population growth, the limits of centralised state approaches to water management are becoming increasingly apparent. This study is part of a critical analysis of water governance mechanisms at different scales with views on the role of local communities in a multi-scalar system. Its main objective is to examine the extent to which the State's shortcomings in sustainable water management pave the way for local stakeholders greater responsibility. The methodology is based on a systematic and analytical literature review based on Elinor Ostrom's theory of the commons and multi-scalar governance. Scientific sources, institutional reports as well as national and international normative frameworks were consulted. The results reveal a gradual process of powers delegation, often under constraint, to local authorities and local users, without any effective transfer of technical and financial resources. Furthermore, the research also highlighted the emergence of hybrid arrangements among public, private and community actors, reflecting a reshaping of governance. The results suggest that effective water governance requires a coherent articulation of action at different scales, recognition of local knowledge, and endogenous capacity building. In addition, public water policies need to be rethought in terms of subsidiarity, inclusion and resilience.

Keywords: Local communities, multi-scalar, public policies, sustainable management, water governance

Introduction

Water is a vital resource which management is a major strategic challenge on a global scale. Sahelian countries are exacerbated by the combined effects of climate change, demographic pressure and rapid urbanization in a global context of the increasing scarcity of this vital resource. The issue of Water governance is arousing growing interest within the scientific, political and user communities (Ostrom, 1990; Allan, 2003). Long considered to be the exclusive prerogative of the state, water management nowadays reveals the limitations of a centralised model that is often inefficient and ill-suited to local realities (Aubert, 2017; Barone *et al.*, 2020). The issue of water is also the focus of development policies as proved by some examples such as the great hydraulic civilisations that were built on the Tigris, Euphrates, Nile, Mekong, Danube and Rhine (Meublat, 2001).

The vast majority of African, Asian and Latin American countries have made efforts, with the support of International Financial Institutions (IFIs) and bilateral cooperation, to build hydraulic infrastructures with a view to developing irrigation, fishing or hydroelectricity. These supports

aimed at favorizing the liberalisation and decentralisation of the water resource management chain (Maiga *et al.,* 2023). As a result, local populations have been given greater responsibility for irrigation infrastructure (Riaux, 2006 ; Ruf and Valony, 2007) and the management of water schemes has been transferred to farmers' organisations or management committees (Nébié, 2005 ; Ghiotti, 2006 ; Foy, 2014 ; Maiga *et al.,* 2023).

State disengagement process (Lunet De Lajonquière *et al.,* 2001 ; Janty, 2013) from hydraulic engineering works[1] , has resulted in the transfer of management of the schemes to farmers' organisations. Hence, farmers were free to become autonomous in the technical and financial management of hydro-agricultural schemes (Zoungrana *et al.,* 2005 ; Le Roy, 2006 ; Troy, 2013).

In this context, multi-scalar governance is emerging as a promising approach. It brings together actors at several levels (international, national, local) and encourages coordination between public institutions, private actors and local communities (Hoekstra, 2006 ; Pahl-Wostl, 2009). This model recognises the need for local communities to take greater responsibility for an effective sustainable management of water. In such a model, the grassroots population is not just a beneficiary but a co-manager of the resource (Blomquist and Schlager, 2005). Collective management of water resources, understood as community management of certain hydraulic structures, relies on a grassroots community through the establishment of management committees involving several categories of users (Traoré, 2012 ; Yanogo, 2012 ; Bruckmann, 2016 ; Kouassi and Béchi, 2019 ; Maiga, 2024). Consequently, the advent of decentralised management of waterworks has become a sine qua non condition for the sustainability of water resources (Cecchi, 2010 ; Gangneron, 2011).

This paper aims at analysing the dynamics of water governance from a multi-scalar perspective in highlighting the failings of traditional state systems and the emergence of new forms of local responsibility.

Methodology

Theoretical framework of the research

Methodological approach

This study is based on an in-depth literature review drawn from scientific articles, institutional reports (UN-Water, FAO, World Bank, GWP), theses, conferences reports and academic publications dealing with Integrated Water Resource Management (IWRM), environmental governance and local development.

This qualitative approach makes it possible to cross perspectives from different scales of analysis (global, regional, national and local), in line with the multi-scalar logic adopted in this work. The analysis is intended to be comparative, comparing the limitations observed in centralised governance systems with the emerging initiatives led by local actors in different geographical contexts. Choosing this methodology is based on reasons such as the availability of documentation, the ambition to take a cross-disciplinary and critical look at the changes underway in water governance. In order to identify general trends, good practices and relevant courses of action based on the current state of knowledge, a thematic analysis grid has been adopted, basing on three main themes:

1. The structural weaknesses of state water management;
2. The mechanisms and levers of local accountability;
3. The prospects for effective coordination between levels of governance.

[1] This process of disengagement began in the 1990s.

From conceptual clarification to research theories

Definition of concepts

Governance is the multi-level coordination of private and public actors around a project with the aim of resolving a production problem (Lamara, 2009). It essentially refers to the management of diversity and is useful in political and economic analysis in terms of the links between the state and the market (Baron, 2003). Such a governance is mainly based on networks and flows. The network refers to an interaction between actors, which may or may not be sustainable. Flow refers to the process of exchanging information and good practices. The coordination of actors stems from an awareness of the need to harness individual strengths and interests for the well-being and development of the whole community. It should be emphasised that this coordination of actors is essential for governance.

The 10(e) Principle of the Rio Conference (1992) on sustainable development states that the participation of citizens (from the local to the global level) in the decision-making processes is the social component of sustainable development. The second principle of this same Declaration, requires the citizens to be involved in making decisions related to their living space (Bonnard *et al.*, 2013). However, participation does not necessarily mean democratic debate. Indeed, even before talking about participation, it is important for decision-makers to clearly inform citizens about their projects. They also need to respond to any objections from citizens and facilitate any appeals against the taken decisions and, wherever necessary, explain why it is impossible to satisfy them (Lavigne Delville, 2011).

Thus, four (04) points structuring the concept of governance can be identified, namely: i) decisions taken by all interacting actors ; ii) civil society and citizens involvement at all stages of decision-making to effectively implement participatory democracy. In addition, the purpose of decisions concerning a common good must be clarified; iii) the gradual replacement of top-down, centralised management by more effective decentralised management.

To facilitate communication between stakeholders, "top-down tools help to transfer information from the municipality to citizens and bottom-up tools allow information transfer from citizens to the municipality. In addition, since citizens to express their views on a specific subject after the suggestion of the municipality there are two-way tools allowing to move towards an exchange of information" (Dubus, 2013, p. 102). The bottom-up approach involves a new way of making decisions that requires all the parties involved to negotiate in order to reach a consensus. In fact, in this context, the political decision-maker "no longer decides anything, but merely ratifies the decisions of stakeholders in the area" (Loubier, 2013, p. 126). However, the usual approach to spatial planning is top-down because decision-making capacity is based on knowledge. The ability and power to make decisions are closely linked to the knowledge and skills owned by the decision-maker. For example, experts' inspiration is drawn from the thinking of the political decision-maker. This concept needs to be put into perspective because knowledge, whatever it may be, is not the prerogative of the expert alone. In fact, when it comes to a specific area, grassroots communities sometimes have a very detailed knowledge of the environment in which they live.

In fact, participation can go from information to consultation, then to concertation, and finally to negotiation. If planning policies are to be implemented at local/regional level, it will be necessary to take account of a wide range of views, which is a sine qua non for sustainable regional planning.

Moreover, the participatory approach is most meaningful when it is based on trust. In particular, the trust of the populations consulted. They expect their opinions to be taken into account, even though the final decision is made by the elected representatives.

Water governance refers to all the processes, mechanisms, institutions and actors involved in decision-making, implementing and monitoring the use and management of water resources. It goes beyond simple technical management to include political, social, economic and environmental dimensions. According to the Global Water Partnership (GWP, 2000), water governance is the set of political, social, economic and administrative systems implemented that influence the use and management of water. Today's water governance challenges are among others the increasing scarcity of the resource, inequalities in access, pollution, conflicts over the use of water, and also the effects of climate change. Good governance is now seen as an essential lever for sustainable and equitable water management (UNESCO, 2019).

The Integrated Water Resources Management (IWRM): promoted by the Global Water Partnership (GWP), IWRM aims to achieve coordinated management of water resources, with a cross-sectoral and participatory approach. It has become an essential tool in sustainable water resource management policies based on the three (03) pillars of sustainable development which are the environmental, socio-institutional and economic aspects. As far as the environment is concerned, the IWRM considers the river basin as the optimum unit for managing water resources. For example, the French model of water management through river basin management (Sghaier *et al.*, 2006) and that country's experience in terms of political and institutional innovation have been rapidly popularised in low-income countries. However, this model has a number of limitations due to specific local features and the very limited capacity of public actors in southern countries. This is particularly true of Lebanon, which has embarked on a process of liberalising its water sector (Ghiotti and Riachi, 2013), leaving aside the collective aspect and the planning of its territory. To better implement this political and administrative of decentralisation model, the authorities are promoting the governance of water resources and the regionalisation of management on a national scale. Nevertheless, the French model cannot be perfectly implemented in the countries of the South, mainly because of the different social, economic and political contexts. However, this model has the advantage of being financially supported in these countries by international donors.

Today, transboundary basins are also the subject of management agreements (Descroix, 2012) because of the inequality of uses between countries and their level of development. Catchment basins are areas where the density of human population means that rationalising uses becomes more complex. Hence, there is the need for multi-stakeholder and multi-level consultation frameworks to establish sustainable governance of water resources. However, the universal and western character of the IWRM comes up against local specificities in sub-Saharan Africa and the considerations of the populations as to the effectiveness of the IWRM. State management structures rely on networks of local actors, such as notables, to set up water users' associations.

The economic pillar considers water to be a limited good that is accessible through the payment of a withdrawal tax (Daré and Venot, 2016). The IWRM is centred on a multi-sectoral and participatory approach and takes into account all sectors of production activity. There are four (04) fundamental principles of the IWRM defined at the Dublin conference in 1992.

The first principle, refers to the "integrated approach", stipulates that freshwater and is a limited and vulnerable resource. For this reason, integrated management is the best approach, taking into account the variability of demands, uses and all the sectors of activity concerned by the use of the resource.

The second principle refers to the "participatory approach". Sustainable, rational and optimal management of water resources requires the effective participation of users, managers and decision-makers at all levels.

The third principle deals with the "role of women". Women play a major role in the supply, management and conservation of water. In sub-Saharan Africa, there are disparities from one country to another concerning women role in the integrated management of water resources (Dos Santos, 2012). Overall, women play a significant role in running and developing households. They are the homemakers and protectors of the family in terms of food and hygiene.

Taking women into account in the integrated management of water resources is part of a broad socio-spatial scale, because decision-making on water resource management is not the sole responsibility of men. However, in a patriarchal and gerontocratic African society, social hierarchies discriminate against women from the outset in public decision-making spheres, as women do not have the right to speak in the presence of men. Public decision-makers and hydraulic technicians are mostly men. Women have little interest in scientific and technical subjects. As a result, in Burkina Faso, the issue of water management is mainly discussed by men, also because of certain socio-cultural constraints and the preponderance of customary norms regarding the place and role of women in the traditional society. Yet they are the main users of water resources. On the contrary, in some African countries like Kenya, the role of women in the management of water resources is held in high esteem by the local population. Women are trained in hydraulics to ensure the sustainability of water infrastructures.

The major water projects generally financed by international donors do not always involve women in the process of setting up water points or in management via the management committees that have been set up. The affirmation of Dublin Principle 3 regarding the role of women in water management is not really perceptible in sub-Saharan Africa, where the role of women remains confined to the domestic sphere. Historical and socio-cultural realities, as well as gender inequalities, mean that the role of women is difficult to consider insofar as men are considered to be the sole guarantors of the stable functioning of society and everything that governs it. The emergence of the IWRM has nevertheless had the merit of enabling people, and women in particular, to participate in the management of water resources.

The fourth principle deals with the economic value of water. To this end, the various users of water must pay abstraction taxes, also known as "water charges", to benefit from this resource for better production. These Dublin principles are intended to put an end to conflicts over the use and sharing of water resources, even though these conflicts persist in practice.

Theoretical background

This research is based on two theories namely the multi-scalar governance theory and the Elinor Ostrom's theory of the commons (1990). The Multiscalar governance refers to a system in which authorities at several levels (from global to local) interact dynamically in the production and implementation of public policies (Hooghe and Marks, 2003). When it comes to water, authorities at the local, national, regional and international levels are interconnected with each level having its own specific challenges requiring coordination and coherence. According to Lasserre and Descroix (2013), multiscalarity makes it possible to take into account the complexity of territories, contextual issues and differentiated stakeholder logics (Bationo *et al.*, 2025). This theory therefore fits in with this research. It calls for coordination and collaboration between the various users and stakeholders involved in water resource management. In addition, it encourages to move beyond sectoral and top-down approaches and integrate local communities in a logic of subsidiarity, interdependence and co-responsibility. The IWRM, applied in several African countries such as Burkina Faso, and Asian countries such as Lebanon, is a practical example of multi-scalar management of water resources.

The theory of the commons (Ostrom, 1990) emphasises the ability of local communities to manage their resources collectively and sustainably, above a strict state control or a purely commer-

cial logic. From a theoretical point of view, Ostrom has demonstrated that, contrary to the pessimistic vision defended by Garrett Hardin, communities are capable of self-organisation and sustainable management of a common good, provided they respect a set of principles. Elinor Ostrom's theory, which breaks with the idea of an inevitable "tragedy of the commons", shows that local communities can build effective self-management mechanisms, provided they respect certain key principles such as establishing clear rules, inclusive governance, shared monitoring, fair sanctions and local conflict resolution mechanisms (Bationo, 2024).

These two theories constitute the basis of adaptive governance because they emphasise flexibility, collective learning and the capacity of systems to adapt to environmental uncertainties. They also show that effective water governance cannot be thought of at a single level of action, or by the state only, but requires a systemic, collaborative and territorial approach.

Results and discussion

Limits and shortcomings of centralised state approaches to water resource management

The limits of centralised management and an opening towards local water governance

State institutions are often faced with major structural weaknesses when water management is carried out solely by them. The lack of coordination between the ministries in charge of water, agriculture, the environment and health creates a compartmentalisation, detrimental to integrated management (Kraemer *et al.,* 2003). In addition, the lack of technical resources (obsolete infrastructure, insufficient hydrological data) and financial resources makes interventions ineffective or incomplete. The top-down approach adopted by many governments does not take into account local social dynamics and the experience of local populations. In developing countries, many problems have arisen as a result of the establishment of water bureaucracies. Large irrigation schemes have experienced a number of crises, resulting in mixed economic performance and often strained relations between the hydraulic bureaucracy and the local peasantry. These tensions are rooted in hydraulic and agricultural policies drawn up mainly by technicians or politicians, often unaware of the practical realities on the ground (Molle, 2012 ; Le Visage *et al.,* 2018). Irrigation water management does not consist in preserving a rigid state bureaucracy impeding the participation of local populations. Furthermore, the role of the State, which is to administer and control large-scale hydraulics, has gradually been eroded through a transfer of powers to local populations in the management of hydraulic works. Hence the necessity to move towards endogenous development, freeing people from top-down hierarchical power relationships that are completely disconnected from local realities and specificities.

The large irrigation schemes in Niger, like those in sub-Saharan Africa, underwent a phase of state disengagement following the structural adjustment programmes[2]. At the behest of the major international financial institutions, this situation led to the transfer of skills in the management of sometimes sophisticated water schemes to farmers' organisations. This led to the involvement of users in irrigation management (Jamin *et al.,* 2005). However, this management approach ran out of

[2] Structural adjustment programmes led to a gradual transition to a market economy. In fact, following the injunctions of the major International Financial Institutions (IFIs) such as the World Bank and the International Monetary Fund (IMF) in 1991 to clean up public accounts, the government of Burkina Faso initiated a first Structural Adjustment Plan with the aim of balancing its balance of payments and boosting the national economy. This Structural Adjustment Programme (SAP) went through a number of difficult episodes, with the introduction of a liberal regime of authoritarian price-fixing for inputs, agricultural products and hydraulic equipment. This neo-liberal model sought to align itself with international trade standards (Zoungrana *et al.,* 2005).

steam because of the management difficulties that ensued. It was due to the lack of resources available to these grassroots communities and, above all, the lack of skills needed to manage the water infrastructure effectively. In addition to these infrastructure management difficulties, the State's disengagement from the management scene has in some cases contributed to the emergence of land tenure problems, with lineage and clan-based land management, threats as well as attempts to withdraw plots of land from the weakest members of the community (Mathieu, 1990 ; Maiga *et al.*, 2021).

Furthermore, the management of these infrastructures can only be sustained over the long term through co-management going beyond the framework of good governance advocated at global level. The participation of local populations, referred to as empowerment, implies the participation in the operationalisation of the rules (Ruf and Kleiche-Dray, 2018). However, this approach has a number of weaknesses. Hence the proposal to involve local people upstream in drawing up the rules.

Problems of sustainability and ownership

One of the major failures of public water policies is the lack of effective local communities participation. The concerned populations are rarely consulted in the development and implementation of water projects, which leads to a lack of ownership. Initiatives imposed without consultation lead to the abandonment of structures, poor maintenance or misuse. This lack of local ownership compromises the sustainability of the initiatives (Cleaver and Franks, 2005).

Given the ineffectiveness of bureaucratic control and the abuse of water resources by money, Elinor Ostrom (Ruf, 2011) admits that water can be better managed provided that common management rules are established for all categories of users. These management rules must first be the subject of a consensus between users and public water managers, or between users and representatives of their communities, or even both. This reminds users the importance to abide by the rules of the community, which help to keep good relations between users and reconcile uses, thereby helping to ensure the long-term future of the resource. When users fail to comply with the rules, penalties are imposed on trespassers. This Ostromian concept of the commons has made a significant contribution to the debate on water resources and has given local communities a place in the administration and management of water resources and infrastructure. In the same vein, the major international institutions have transferred the management of water resources to grassroots communities, giving them a sense of responsibility and delegating to them certain tasks usually performed by the central government. The downside of this approach is that it is virtually impossible to limit or permanently control the imponderable users of water resources. They are "stowaways"[3] (Baron *et al.,* 2008) who undermine the sustainability of water resources and water infrastructure. For example, in Hombori, in the Gourma commune of Mali there are difficulties in collecting contributions from each user, and some fund-raising operations remained effectless and have sometimes ended in failure (Gangneron *et al.,* 2010). The main reason is the low contributory capacity of users. Indeed, the management of the committees is delegated to influential and charismatic individuals such as the village chiefs or imams. These personalities are the focus of all attention, making management opaque, if not anarchic. They are the masters of the place, sometimes taking dictatorial positions, without any consultation of the populations (Sanou *et al.*, 2022). According to Gangneron *et al.*, (2010), the contributions of each user are not recorded in a register. Transactions are carried out orally, which suggests that funds may be misappropriated or even reallocated to certain small traders who take out loan. The

[3] The free rider is a user who takes free advantage of a common resource that he shares with other users, leaving them to pay for the services linked to this resource. It can also be described as a person who, without paying the cost of a service, nevertheless benefits from it.

funds are also used to take care of some personalities visiting the village. These excesses in management and the lack of transparency in the allocation of financial resources from the community fund can be described as a "community illusion".

Furthermore, populations participation, plays a fundamental role in the success or failure of development or management actions for a given resource or infrastructure. It has become an essential tool in the development as well as action research and intervention research projects. This participation requires the adherence or consent of the stakeholders to contribute to the change initiated by endogenous or exogenous interventions. The legitimacy of this participation seems ambiguous insofar as one wonders : i) who is legitimate to participate or not ? ii) who has a say and what is their capacity to influence the actions to be taken ? Participation also contributes in the preservation of the said resource and the sustainability of hydraulic structures.

The participatory approaches that have long been praised are not universally accepted, even among the pioneers and experts in the field, because of the specific nature of complex social contexts that are difficult to grasp (D'Aquino, 2009). However, it is possible to explain participation more clearly and make it more accessible by seeing it as a strategy that permeates the social context, rather than as a "turnkey" method that focuses solely on facilitating consultation workshops. That is the reason why "progressive autonomous management" is a good strategy for intervention and impact on the social environment, leaving most of the work to the local communities. Local actors must be the only experts to implement development tools and Institutional experts are merely enlightened advisors.

The resulting asymmetries of power can significantly alter the scope of a decision that can be taken by a single actor. It can also alter the behaviour, perceptions and even opinions of other stakeholders, who may find themselves powerless to put up strong resistance. The researcher's neutrality may favour the direction taken by the most influential social actors in the decision-making process, whereas the researcher's bias in favour of socially weak actors in no way legitimises the decision-making process that will be set in motion. For example, in Thailand, the rule of water management which stipulates that "first come, first served" denotes the socio-cultural influence on the legitimacy of decisions taken in resource management. This will disrupt the willingness of users to participate in the water management decision-making process. In Mae Salep, a region of Thailand (Barnaud, 2013), farmers with no access to water but supported by a charismatic religious leader found it necessary to build small dams by themselves on the streams in the catchment area in order to increase the number of irrigable plantations.

Local development in Africa is based on the ingenuity of local populations, not on a type of development described as a panacea (Leloup *et al.*, 2003). Local development is inextricably linked to the notion of local governance, which is now taking on a dual meaning in the scientific literature. It refers both to the emergence of new local political and economic elites acting as "transmission belts" with central government, but also to the emergence of power sharing or transfer to local authorities based on horizontal networks, partnership and cooperation between actors. It is important to recognise that local development is not a "turnkey" model. Each territory, each nation has its own specific characteristics. Local development, in the broadest sense of the term, really comes into its own depending on local territorial contexts, in particular cultural, social and identity-related factors and a unique history. It which therefore implies a unique development rationale. The uniqueness of a region lies not only in its products, but also in the way it organises production, creates and manages available resources, and develops skills and know-how. To achieve this, there is no single, universal model for local development. It is not a mechanical, automatic and systematised process that can be easily implemented through general policies and programmes. It is up to the actors, working togeth-

er, who shape or model the development they want for their area. It is the work of a synergy of creative actions likely to mobilise many actors with development effects.

In the Egyptian context (Ayeb, 2006), participation is a term that is less recognised in practice. The political authorities and members of the public administration see participation as the voluntary or compulsory collaboration of users in the implementation of plans and programmes defined by the state. Farmers are unable to engage in collective action because of their individual and collective poverty. Also, lack of time and fear of political authority inevitably lead to a lack of participation and membership of a water users' association. Governments are reluctant to encourage any form of autonomous organisation because it is perceived as a form of anti-power. In addition, managers have a fixed perception of farmers as incapable, ignorant and lacking any real skills for managing water resources. This situation is at the root of many of the malfunctions in the associative structures responsible for water management.

Indeed, the lack of local management initiatives - which are, moreover, prohibited and inhibited by the central government and the bottom-up imposition of management rules are the seeds of the systematic failure of water governance. When political decision-makers set up local water management organisations without transferring competences and resources, as well as autonomy or decision-making power, it is difficult to envisage in the long term a democratic basis likely to promote sustainable and efficient management of water resources at local level. The case of the WUAs (Water Users' Associations) in the governorate of Minya (Egypt) is revealing of the dysfunctions that actually exist. The members of these structures are often appointed by the central administration without their consent. They have no knowledge of the structure's internal regulations or the related management procedures. As a result, consultation sessions are non-existent in practice.

In Brazil, the implementation of institutional reforms in the transfer of water management known as 'emancipation' has led to the creation of irrigation districts (Martins, 2013). These are responsible for operating and maintaining irrigation networks and infrastructure. The Maniçoba irrigation scheme, created in 1981 in the São Francisco valley, has undergone far-reaching institutional, technical and economic changes. This has altered the prevailing management structures and the management methods in use. However, there are difficulties in involving users in water management. This is due to the lack of transparency in expenditure on the operation and maintenance of water infrastructure. There is also a lack of trust inherent to past management practices, which made it difficult to raise the price of the water charges that each user must pay. For example, the criticism that has been levelled at the lax management of expenditure has failed to justify the increase in the price of water charges. Also, the absence of penalties for non-payment of water charges appeared incompatible with the increase in water prices for users in a regular situation, i.e. those who were already paying their bills.

Pluralism in the management of renewable natural resources pits several categories of users against each other, with sometimes conflicting visions and interests. Access to resources is sometimes limited for some users because of their low purchasing power and poor representation in multi-level decision-making bodies. The management mechanisms promoted at central level are only likely to be applied if they are genuinely appropriated to local populations. And this could be the start of local management with significant support from grassroots communities.

The rise of local communities: between necessity and opportunity

Emergence of local initiatives

In several Southern regions, facing structural shortcomings on the part of governments, local populations are organising themselves to guarantee a minimum and sustainable access to water. Village water committees, community management networks and self-managed cooperatives have

emerged. These structures are responsible for maintaining water points, raising awareness and collecting fees. They embody bottom-up forms of governance built on proximity, customary or religious legitimacy, and social reciprocity. In a country like India (Aubriot, 2004), governance of water resources has long been managed by the state. But the cumbersome and lax way in which the public water administration operates, combined with the weakness of the systems for monitoring and taking action, prove the limitations and the fragility of public management. To compensate for these shortcomings in state governance of water resources, international institutions, in particular the World Bank, have advocated for users participation in local management of water resources for irrigation (Erismann, 2014; Venot and Clement, 2013). Thereby limiting the role of the Indian state in management but leading to the empowerment of local users followed by a transfer of powers to them.

The experience of Chile shows that the public authorities have suffered setbacks in the governance of water resources (Bied-Charreton *et al.*, 2006). To this end, private ownership of water resources was instituted and generalised to prevent not only the emergence of opportunistic users known as 'free riders', but also the corruption plaguing the state administration. However, this market logic, in which water is considered as an economic good, clashes with another logic, in which it is inconceivable to sell water because of its symbolic and vital nature. Nowadays water governance in Chile is on the borderline between two (02) diametrically opposed modes of governance, but seeking a kind of compromise. On the one hand, there are the liberal logics and, on the other, the logics that take account of the public interest. These two approaches are in force, insofar as the Chilean Water Code recognises the central role of the State in the administration of public goods and common resources such as water, but does not rule out the accepted and legitimate intrusion of private market transactions.

The case of Tunisia demonstrates the need for user participation in the management of water resources. In this country, the establishment of AUEAs (Agricultural Water Users' Associations) or GICs (Collective Interest Groups) has enabled local users to take charge of water infrastructure and limit wastage of water resources. In the valley of Aït Bouguemez, located in the upper watershed of the Oued Lakhdar in Morocco (Keita, 2006), AUEAs have been set up in the valley to manage water resources even though, they have received a bad press. Indeed, the vast majority of irrigators seem to be unaware of the very existence of any association officially set up to manage water. They openly deny having participated in the process of appointing representatives to these associations. This undoubtedly explains the paradox whereby there are representatives of the AUEAs who have been appointed but who do not practise irrigation.

Local water governance challenged by inequalities and the dynamics of exclusion

Local communities have assets such as in-depth knowledge of ecosystems, the ability to adapt and flexibility in decision-making but often underestimated. However, this governance is also based on unequal dynamics (gender, age, traditional power), and can generate tensions or conflicts over water use, particularly during periods of shortage or when plots are being shared out if the rules are unclear and marginalise other social categories among the population. The lack of financial resources, technical skills and formal mediation mechanisms sometimes limits the scope of these initiatives. As a general rule, local water management structures face a number of operating difficulties, including a lack of financial resources and the technical incompetence of their members (Ayeb, 2006 ; Marlet, 2018).

In Burkina Faso, particularly in the Western part of the country, water use is regulated by locally constituted management committees (Baron and Bonnassieux, 2011). They take initiatives to ensure that each category of user can carry out its activities under good conditions. However, the

influence of certain village notables proves that the committees are indirectly under control and do not meet the management requirements laid down at a higher level.

The inexperience of some waterpoint management committees, coupled with their lack of technical training, significantly hampers their management. Conflicts of use between categories of users are increasingly exacerbated and often lead to sharp tensions between users (Reverdy *et al.*, 2003) who claim that their rights to use the resource take precedence over those of others. This situation sometimes creates inequalities between users. For example, indigenous populations prioritise their use of water resources to the detriment of non-indigenous users, excluded from permanent access to water. This is the particular case of transhumant Peulh pastoralists, who are denied access to watering points for their animals on the pretext that they have no right to use the resource (Boelens, 2000). The access is said to be reserved to a certain category of users, namely indigenous agricultural users. In the Western region of Burkina Faso, the Mossi population and Fulani herders described as foreigners are also discriminated when it comes to access to water (Baron and Bonnassieux, 2011). In Sudan, for example, transhumant pastoralists were forced to limit their use of the Butana grazing lands as a result of the ecological crisis caused by the drought from 1949 to 1950. The temporary strategy of these pastoralists, known as Ahâmda (Casciarri, 2013), was to extend their stay in dry-season camps in order to have access to water resources that were already limited by the expansion of commercial farms.

Role of NGOs, donors and civil society in setting up local committees

NGOs and technical and financial partners, who often provide support, assist with the local structuring of water use. They provide training, equipment and funding, and help to lobby for the inclusion of communities in water policies. They act as catalysts, but must be careful not to impose exogenous models that destabilise endogenous approaches. The involvement of local populations in the management of natural resources is supported by donors and institutions responsible for biodiversity conservation programmes (Robbins *et al.*, 2006).

Towards an articulated and resilient governance: what prospects?

Co-construction of public policies

The emergence of truly effective water governance inevitably involves the co-construction of policies, understood as a dynamic process of collective development between public, private and community actors. Far from traditional top-down approaches, this method values local knowledge, social legitimacy and the diversity of knowledge to produce sustainable and socially acceptable decisions (Sabatier and Weible, 2007).

Participatory mechanisms such as multi-stakeholder committees, territorial consultations and inclusive dialogue platforms help to defuse conflicts of use, integrate specific territorial features and strengthen accountability (Blomquist and Schlager, 2005). In several African countries, including Burkina Faso, the IWRM (Integrated Water Resources Management) schemes have shown that the effective involvement of local stakeholders in defining strategic priorities significantly improves implementation (FAO, 2011).

However, co-construction requires favourable institutional conditions such as effective decentralisation, inclusive legal frameworks and local capacity building. Otherwise, participation can become symbolic or instrumental.

Moreover, the management of these infrastructures can only last long enough through co-management that goes beyond the framework of good governance advocated at global level. The participation of local populations, referred to as empowerment, implies participation in the operationalisation of the rules. Empowerment, which is a concept in vogue in official discourse and scientific debate, is similar to a notion that emphasising buttom-up approach to development, in contrast to

the centralist, top-down approaches that have long prevailed in societies and state or international development institutions. According to Calvès (2009), empowering local populations to take control of their own destiny is more important than exogenous development. Such a model lacks authenticity and is not adapted to the local realities experienced by local communities.

Scale and subsidiarity

Multi-scalar governance of water must be rooted in a logic of active subsidiarity, where responsibilities are assigned to the most relevant level for effective action (Hooghe and Marks, 2003 ; Ostrom, 2009). Subsidiarity does not mean local withdrawal, but rather functional complementarity between the local, national and global levels.

To achieve this, articulation requires institutional bridges (intersectoral platforms, inter-level committees, territorial networks) that promote vertical and horizontal coordination (UNDP, 2004). It also requires legal frameworks to be adapted to better reflect the diversity of hydro-social contexts, with flexibility in allocation, access and responsibility standards (Lasserre *et al.,* 2013 ; World Bank, 2017).

In addition, the empowerment of local stakeholders must work hand in hand with accountability mechanisms at all levels, to avoid abuses or elite capture[4] (Ribot, 2002). Successful experiments show that this linkage produces greater resilience in the face of water crises, by enabling a fluid flow of information, resources and innovation.

Lessons, good practice and innovation

Successful experiments show the way the IWRM approach in Burkina Faso, basin committees in Brazil, community management in Nepal. These cases reveal the importance of social innovation (local mobilisation), technological innovation (remote sensing, sensors) and organisational innovation (integrated multi-actor management). Drawing lessons from these practices will enable the formulation of operational recommendations and provide ingredients for thought on adaptive governance.

The challenges associated with multi-scalar water governance do not only require institutional reforms, but also greater attention to successful experiments, often stemming from local contexts, which can fuel a dynamic of collective learning and innovation. The good practices identified through local, national and transnational initiatives reveal that clarity of institutional roles, recognition of indigenous or local knowledge and the involvement of women and young people in decision-making processes strengthen the sustainability of governance systems (Cleaver and Whaley, 2018). Cases such as community management of water points in Uganda or basin agencies in France show the importance of institutional proximity and local accountability. Social innovation also plays a strategic role. The self-organisation of stakeholders, cross-community coalitions and community water monitoring networks are all forms of collective intelligence that sometimes compensate for the failings of the state (Pahl-Wostl, 2009). Added to this is technological innovation, such as participatory digital platforms and community GIS (Geographic Information Systems), which enable more transparent and responsive management.

Finally, institutional innovation, such as the introduction of hybrid mechanisms (public-community, NGO-State), offers models that can be adapted to suit different contexts. These practices, which are often empirical, can be modelled and transposed, for a rational dissemination[5] (Hassenforder *et al.*, 2016).

[4] It is a term that refers to the fact that power or resources that are supposed to benefit everyone are "captured" by a privileged minority. This concept is important in local governance, development, natural resource management, etc., because it highlights the risks associated with failing to take account of inequalities in power.

[5] Spin-off refers to the replication of an initiative in other contexts, in a planned way that is adapted to local realities.

Conclusion

Water governance, a major issue in this 21st century, is facing structural, institutional and socio-environmental challenges on an unprecedented scale. Confronted to the limitations of centralised state management, marked by deficits in coordination, participation and sustainability, a new multi-scalar, inclusive and resilient governance architecture is needed. Through a conceptual, theoretical and empirical analysis, this article highlights the tensions and also the potential of a model in which the state, without disengaging, co-constructs with local actors a form of governance that is more firmly rooted in the realities.

The increasing responsibility of local communities, encouraged by endogenous initiatives and supported by NGOs, civil society and technical and financial partners, demonstrates a strong capacity for adaptation, innovation and ownership. However, there are still limits to this dynamic, particularly in terms of resources, equity and inter-level coordination. This is why the future lies in articulated governance, where each level of intervention contributes added value in a spirit of subsidiarity and complementarity.

This paradigm shift requires a genuine political will, an evolving legal framework, a robust participatory mechanisms and active networking of stakeholders. It also calls for good practice to be documented and disseminated, collective learning to be promoted and innovations (social, technical and organisational) to be incorporated into water management systems. In short, strengthening water governance means working towards sustainable development based on social justice, environmental efficiency and territorial resilience.

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