

Strengthening Water Governance Capacity for Transboundary Aquifers

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ABSTRACT

Groundwater reserves constitute the main source of fresh water available on Earth and represent a potential solution to contemporary water challenges. However, the lack of information on the natural status of groundwater and the absence of comprehensive norms for its regulation foster an unsustainable use of aquifers which can lead to their depletion. Transboundary aquifers are subject not only to competing demands from different uses at the national level, but also to diverse national jurisdictions. Competition for water resources, including groundwater, can lead to conflict, particularly in areas affected by socio-economical problems, political instability and cultural clashes. The creation of an appropriate legal framework for managing shared aquifers remains pending in the international agenda, despite the UN General Assembly Resolution on the “Law of Transboundary Aquifers” of December 2008 (A/RES/63/124). Aquifer states should conclude proper agreements in order to strengthen groundwater governance capacity, even though it might be a long and slow process, hindered by different factors such as political unwillingness and diverging economic interests. Experience on the ground shows the benefits of managing shared aquifers through specific projects implemented by international and local organizations. These projects require the compilation of available information on the status of the resources as well as the exchange of such information between aquifer states, the creation of joint committees and the implementation of cooperative mechanisms. They intend to rationalize the exploitation of groundwater resources and guarantee equitable benefits to participant States. Such projects might represent a more rapid and simple tool to foster the respect of those international principles contained in the aforementioned Resolution and to enhance shared groundwater governance capacity. Although limited in time and funds, and led by external institutions, those mechanisms initiate cooperation between aquifer states, improve the management of shared reserves, and demonstrate the positive effects of implementing appropriate joint utilization schemes; thus promoting and developing groundwater governance capacity. This paper argues that although such a project framework does not represent a long-term solution, it offers useful foundations for the creation of a permanent institutional structure and for the adoption of agreements which provide legal certainty and strengthen groundwater governance.

Keywords: Water Governance Capacity; Transboundary Aquifers; Legal and Institutional Framework; Cooperation mechanisms.

1. INTRODUCTION

The hidden nature of groundwater reserves is a major cause of the disregard towards such a resource and its marginalization in existing international law. However, being the primary source of water on Earth, it is regarded as a potential solution to current problems of water availability. Although the general principles applicable to groundwater resources are similar to those valid for surface waters (such as sovereignty, equitable and reasonable utilization, no significant harm and cooperation)¹, international agreements that rule the latter are generally inadequate for the protection and regulation of the former. The absence of clear and comprehensive norms at the international level aggravates the difficult situation of transboundary aquifers, which are subject to competing demands from different users at the national level and to diverse national jurisdictions. Moreover, transboundary ground waters are likely to be part of a wider system and to be connected with domestic or international surface waters (Eckstein, Y. and Eckstein, G., 2005). Beyond the normative gap, the peculiar characteristics of groundwater resources and the lack of information on their exact extension and qualitative status contributes to the inappropriate use of aquifers and their depletion. Drawing up a

¹ For a detailed description of the general principles included in the A/RES/63/124, see Mechlem, K. (2009)

proper legal framework aimed at protecting and managing groundwater reserves is still pending in the international agenda. The conclusion of *ad hoc* agreements can often be a long and slow process delayed by the conflicting political and economic interests of aquifer states. Therefore, shared aquifers are often unregulated. Nevertheless, there are positive examples of projects² implemented by international and local organizations in order to rationalize the use of transboundary groundwater reserves and properly distribute the related benefits, initiating cross-border cooperation between the participant States. Even if such a solution is limited in time and funds and externally driven, it represents a first step to recognizing the fundamental value of those resources hidden in the ground, to monitor and safeguard their status, to rationalize their extraction and better manage them. Cooperation activities can be developed at different levels and might entail various degrees of involvement; these efforts foster new and deeper commitments, creating a cooperation continuum that is “non-directional, dynamic and iterative” (Sadoff, C., Greiber, T., Smith, M. and Bergkamp, G., 2008). This paper argues that the positive results and the administrative structure created for the project constitute the first step of the continuum, offering a basis for the development of permanent institutions and the adoption of proper agreements in order to strengthen water governance capacity in relation to transboundary aquifers management.

2. DISCUSSION

Asymmetrical distribution and access to water reserves imply the possibility of an unequal exploitation in favor of those States with more financial and technical means. In such a way, these countries adopt a securitization strategy aimed at creating a *de facto* situation that affirms and preserves their right to exploit natural resources unilaterally. They exercise a “precautionary use” of resources; hence, it can be said, they act in a non-cooperative manner (Ferragina, E. and Greco F. 2008).

Unilateral exploitation of shared natural resources, such as transboundary aquifers, can result in an irrational and unsustainable use of them, impacting on the right to an equitable use that all the other States that share such resources have. This situation must serve as an inflexion point to reflect upon the potential damages which can occur to States and their people, in order to start a dialogue towards reaching cooperative agreements that set up the basis for effective governance of the aforementioned resources.

In this context, developing an *ad hoc* project brings numerous benefits, particularly in those areas with a low endowment of surface water resources and which suffer from droughts. Africa, for example, is commonly considered the driest continent, however, it hosts some of the major groundwater reserves on Earth: 38 aquifers, all shared between two or more States. Significant evaporation rates, caused by high temperatures, increasing desertification and climate change are adding pressures on limited fresh water resources naturally located in some African regions. The constant decrease in water supply increases the risk of conflicts, especially in areas already affected by economic and political instability, social rivalries and cultural clashes. Nevertheless, water is well known for its cooperative potential, thus, the appropriate management of groundwater resources is fundamental to avoid confrontations between those countries sharing them. Aware of the fundamental role that groundwater reserves can play as an alternative solution to water shortages, various international agencies, supported by local organizations, have been studying, elaborating and implementing projects to this end.³ In some way, this external contribution to the improvement of groundwater sustainability and management intends to balance the scarce capacities of national governments in administering such a

² In this paper, the term “project” refers to a methodological strategy conceived in order to develop plans and activities aimed at properly managing groundwater resources and strengthening water governance capacity of those people who benefit from the aforementioned actions. Both funds and operational efforts required to develop such strategy belong to donors from outside the beneficiary State/States. In this context, the terms “project” and “initiative” are used as equivalent.

³ Inter alia the International Atomic Energy Agency (IAEA) and the Global Environmental Facility (GEF).

resource⁴. In fact, the appropriate cooperative management of shared aquifers stands on an efficient administrative system developed at national level. What is needed to enhance a country’s “water governance capacity” is not only national policy and law, but also competent institutions, adequate mechanisms of implementation and effective enforcement mechanisms⁵.

The involvement and lead of an international organization is valuable for a variety of reasons. First of all, external interventions intend to bring the financial support and the expertise missing at the national level. Moreover, international institutions are usually considered as third parties: trustworthy and authoritative. Hence, they are perceived as capable of resolving differences between aquifer states and as competent in organizing and rationalizing the conflicting interests of various users. Where national institutions are ill-equipped or corrupted, the presence of a foreign and impartial agency with an established institutional structure can represent a guarantee of equity and effectiveness. Thus, aquifer States are encouraged to collaborate with the aforementioned third party and their engagement in the externally-led project brings a direct and consequent commitment to each other.

Ultimately, the intervention of external bodies and the implementation of a pilot project reduce the lack of trust between participant States in setting up a cooperative system that considers their demands and distributes benefits between them. These benefits include: more information on the status of the aquifer, new technology, improved knowledge on how to adapt national plans according to sustainable rates of extraction and in respect of other aquifer States’ rights. Presumably, participant States would understand that a joint management of shared groundwater brings more benefits than acting unilaterally.

One of the best inputs in terms of governance capacity is that these projects try to empower local populations and involve them in the decision-making process. Public participation represents one of the pillars of water governance capacity as instrumental for an appropriate implementation of law and policy. For this reason, it has been incorporated in legal instruments and institutional procedures and it constitutes a fundamental element of pilot projects too. The engagement of local communities and representative groups is fair and fundamental, given that they know the local reality and can easily identify the essential social needs that have to be satisfied. Their involvement implies easier access to information, including technical information, and higher transparency in the decision-making process. Civil society can also play an active role in the implementation phase, participating in co-management water schemes, and in the performance of monitoring activities. In addition, bringing those people to the table gives them a sense of responsibility, strengthening their respect for the rules they contributed to forming, and enables them to take future decisions and to lead water reform⁶.

Another major focus of the discussed projects is to address the open-access problem. Given the lack of precise regulation at the international and national levels, the lack of adequate knowledge about the extension and properties of groundwater reserves and the inexperience in managing them in a sustainable way, these resources are “open” to unregulated exploitation and over-extraction from anyone with sufficient financial and technical means to do it. This uncontrolled, excessive and unequal use might compromise an aquifer, particularly in cases of confined or fossil ones which have low or non-existent regeneration capacities and risk being exhausted. Specifically, in case of transboundary reserves the inappropriate behavior of one State might threaten the possibilities of other aquifer States to benefit from groundwater utilization. An *a priori* assessment of the resource, in terms of extension, qualitative and quantitative status helps in evaluating the potentiality of exploitation for each aquifer and in determining the rate and pace of utilization. It goes hand in hand with the right of all States to

⁴ Lopez-Gunn (2009) talks about private environmental governance, underlying the role that private actors (from transnational corporations and microfinance institutions to non-governmental organizations and international governmental institutions) can play in order to counterbalance the reduced capacities of national governments in providing public goods.

⁵ The concept of “water governance capacity” is extensively treated in Iza, A. and Stein, R. (Eds) (2009).

⁶ For further details on public participation see Iza, A. and Stein, R. (Eds) (2008), pp. 86 ss.

equally exploit shared groundwater resources, but also the responsibility to protect them⁷ in order to avoid the risk of pollution that might cause irreversible damage⁸. Thereafter, the water management scheme implemented during the pilot project constitutes a useful basis to learn how to deal with open access resource management in the context of transboundary aquifers.

Although the main aim of an externally-led project is the proper assessment, protection and appropriate management of groundwater resources, there are other advantages, apparently unconnected, deriving from such interventions: *in primis* a socio-economical and cultural growth in aquifer States due to external financial support, instrumental availability and knowledge-sharing; and a stronger managing capability, in terms of administrative structure and operational capacities. In relation to the latter, it is worth mentioning that the lessons learned in managing groundwater reserves can be replicated and used as examples for the appropriate utilization of other natural resources. In the end, these projects might generate successful practices and results that, as a positive loop, tend to reinforce themselves and facilitate the managerial independence of aquifer States.

Some elements introduced through pilot projects are particularly sensitive, considering the highly political and strategic characteristics of groundwater; therefore it is argued that these initiatives serve as foundations to create a governance structure for transboundary aquifers. This *ad hoc* road to a governance scheme is just one of many, and complementary to an appropriate legal framework developed according to the principles contained in the UN General Assembly Resolution on the "Law of Transboundary Aquifers". Ideally, that framework would include a universal or at least a regional convention that delineates the contours of the rights and responsibilities of all aquifer states, and would be supported as well by specific bi or multilateral agreements which take into consideration the local characteristics of each underground shared water body.

From an international perspective it is fundamental to follow up with the development of the main principles included in the Resolution of the General Assembly on the "Law of Transboundary Aquifers" and to adopt shared normative instruments that close the existing formal and material gap in groundwater law. The Resolution sets up the founding values which should constitute the basis of inter-state agreements and be adapted according to the specific circumstances of the aquifer at issue. Although limited in number, there are valid examples of groundwater instruments that could serve as model for future agreements⁹. Beyond specific groundwater norms and principles, it is essential to develop new normative instruments in respect of and in connection with international agreements on wetlands, pollutants and land use, among others, since groundwater management and sustainability cannot be detached from them.

⁷ In relation to the need of reinforcing the protection of groundwater resources through appropriate norms see Mechlem, K. (2005), p. 59.

⁸ The issue of contamination of a transboundary aquifer and the related liability of the contaminant State is particularly complex and has not been directly addressed in the Resolution of the General Assembly (A/RES/63/124), which includes a provision on the "Obligation not to cause significant harm" (Art. 6), on "Prevention, reduction and control of pollution" (Art.12) and another on "Emergency situations" (Art.17). Failing specific rules, apply international norms on the matter, in particular, the conventions on specific substances or other source of contamination and the "polluter pays" principle. It is worth to underline that International environmental law allows a certain degree of contamination as demonstrated by the obligation not to cause significant harm and the principles of precaution and prevention. However, the main problem in those cases is that there are no clear criteria aimed at fixing the maximum level of damage, hence, there is a scarce opportunity to ascertain the liability for water contamination and to obtain the reparation of damage, especially in relation to groundwater reserves due to their natural peculiarities.

⁹ The 1977 Agreement on the Protection, Utilization and Recharge of the Franco-Swiss Genevese Aquifer is a unique example of international cooperation in managing a transboundary aquifer. It addresses issues of quality, quantity, abstraction and recharge and creates a Management Commission that sets up annual utilization plans and decides all the other issues connected with the conservation, extraction and management of the aquifer. The 1973 Agreement on a Permanent and Definitive Solution to the Salinity of the Colorado River between Mexico and the United States limits groundwater extraction rates in the Arizona-Sonora boundary area. Other useful norms are included in the 1992 UNECE Helsinki Convention which aims at protecting transboundary ground and surface waters and reducing transboundary impacts. A satisfactory overview on existing groundwater norms is offered in Burchi, S. and Mechlem, K. (2005). See also Mechlem, K. (2005), p. 62 ss.

As for the national legal frameworks, it is also relevant to address basic issues which in the context of transboundary aquifers must be harmonized. An appropriate groundwater national regulation should address issues such as rights of abstraction and utilization; hydrological connections with surface waters and with other ecosystems (wetlands, oases, etc.); impacts of land-use and other human activities; and the inclusion of wastewater discharge licensing and other legal mechanisms aimed at protecting groundwater reserves and their recharge areas from pollution, over-exploitation and consequent exhaustion. Moreover, it is important to include normative procedures that facilitate the establishment of users' groups, enable public participation and citizens' empowerment, and to create specific and capable authorities charged with implementing groundwater law, enforcing it, adjudicating disputes and intervening in critical situations. On the one hand, the aforementioned body of norms should be clear, “flexible, enabling and enforceable”, aimed at establishing the main principles and powers and complemented with detailed regulations and implementation programmes¹⁰, on the other hand, groundwater institutions should be equipped with operational capacities. Given that within the national dimension there is an interaction of different levels of regulation and administration (local, regional, federal), an effective coordination between those instances and the pursuit of common objectives are fundamental to guarantee a cohesive and sustainable management of the aquifer. While some States are already endowed with normative instruments which regulate groundwater and other natural resources or are prepared to develop appropriate norms, there are some others that do not present such a favorable legal background. Although the latter cases might be more challenging, the delineation of an adequate national legal regime is essential, not only for the urgency of the issue at stake, but also as a prerequisite for the adoption of bilateral and multilateral agreement between countries which share groundwater reserves.

Pilot international projects constitute the basis for further and independent cooperation between aquifer States. They support the development of trust, which in turn is the basis of political will for developing different kinds of agreements for governing transboundary aquifers, which also permeate to the national legislation of the aquifer states. This relationship between international initiatives and the development of legal frameworks for managing groundwater resources is not a linear process, but a necessary-complementary one.

3. CONCLUSIONS

Groundwater reserves hold a strategic role in contemporary global water challenges. However, they are scarcely protected from a normative perspective, as international water law do not address specific groundwater concerns, and mismanaged for lack of knowledge and capacities. In the case of shared aquifers, the situation is particularly complicated due to the lack of specific agreements and common administrative structures. The process of developing adequate norms and institutions might be long and complicated. A possible solution is represented by the implementation of international pilot projects which set the basis for further cooperation between aquifer States and adequate management of shared groundwater resources¹¹.

The positive results and the administrative structure created through international projects represent the first step of the cooperation continuum, offering a basis for the development of permanent institutions and the adoption of proper agreements in order to strengthen water governance capacity in relation to transboundary aquifers management.

Shared strategies, cooperative programmes and mechanisms for the management of transboundary aquifers are set up as a result of pilot projects. They are aimed at creating a cooperative spirit between the parties involved, giving a sense of responsibility to such participants and enabling them to further establish a permanent institutional structure for managing these resources. Lack of cooperation entails

¹⁰ For further detail on groundwater legislation see in Nanni, M., Foster, S., Dumars, C. et al. (2002-2006).

¹¹ A successful example is offered by the GEF-funded Guarani Aquifer Project, see Foster, S., Kemper, K. and Garduño, H. (2004).

in some way lack of capacity, hence data sharing, a common vision and joint actions are consecutive and complementary steps aimed at fostering a mutual understanding of the resources and their proper governance.

Recently, the UN General Assembly recognized the human right to water and sanitation, underlying their importance in pursuing the Millennium Development Goals. Thus, water should be universally considered a public good and adequately protected, preserved, and shared in order to ensure peace, sustainability and justice. Such a declaration also reinforces the importance of aquifers in a context of uncertainty due to climate variability and water shortage; it mainstreams the UN Resolution on Transboundary Aquifers as platform for developing agreements that establish the basis for effective and equitable governance of groundwater.

The UN General Resolution on Transboundary Aquifers is a clear statement, delivered by the international community, of the strategic relevance of groundwater resources and the need of adequate governance frameworks; however, it is not enough. In an ideal scenario, there should be a treaty that provides a general framework for regulating shared aquifers between States, complemented by specific agreements which are developed according to the unique characteristics of single groundwater bodies, following the logic of subsidiarity.

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