



Editorial

Discursive Framing: Debates over Small Reservoirs in the Rural South

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Why small reservoirs? Why the rural South? What is meant by small reservoir? Why such a specific topic? These are questions readers of this collection of essays are likely to ask. This special issue on the *Policies, Politics and Realities of Small Reservoirs in the Rural South* was prompted by a simple observation: since the 1980s, the questions that revolve around small reservoirs have evolved little despite continuous development and academic attention to the topic worldwide. Continuous interests and related investments in small reservoirs in the context of long-known challenges and opportunities echo an observation by Diemer and Vincent (1992) on the "failure of collective memory and collective action" and reinforces a tendency to reiterate long-known problems in the field of irrigation in Africa (Lankford, 2009). Rather than providing normative answers to questions surrounding small reservoirs, the papers in this collection help understand how this 'stabilisation' of the debate came into being. Here, small reservoirs in the rural South provide an opportunity to better understand the emergence, malleability and persistence of specific 'models' for rural development, that is, interventions which ostensibly embody a dimension of 'success' and whose shortcomings are generally downplayed and framed as mere 'externalities' associated with the context of implementation (Molle, 2008). More specifically, and in line with critical analysts of development and environmental processes, we demonstrate the importance of looking at discursive framings of past and current agricultural water management projects and policies to understand how and what they do in practice for multiple actors.

Thousands of small dams dot the landscapes of the rural South (table 1); they have long attracted development and academic attention worldwide. They are known under multiple names in various regions of the world: *tanks* or *johads* in South Asia (Aubriot and Prabakhar; Gupta, this issue), *açudes* in Brazil (Molle, 1994), *small reservoirs* or *micro-dams* in sub-Saharan Africa (Nkhoma; Sally et al., Venot et al., this issue; Aberra, 2004), *lacs collinaires* in North Africa and the Middle East in general (Albergel et al., 2004) and Tunisia in particular (Selmi and Talineau, 1994), or just small dams in other regions where they are common, such as Northeast Thailand and Mexico. Defining what 'makes' a small reservoir is however not agreed upon, as criteria (size, type of infrastructure, modes of management, planning approaches, etc) and thresholds (volume, height, number of farmers, irrigated area, etc) can vary widely depending on the vantage point considered and the issues or actors at stake (see Turner, 1994 for a similar argument on small-scale irrigation).¹ We do not embark here upon definitional debates on

¹ For instance, many tank-based irrigation schemes would be considered as medium size projects if seen through the criteria commonly used in most sub-Saharan Africa (Turner, 1994). Similarly, the Ethiopian micro-dams are significantly larger (in terms of height, volume stored, potential irrigated areas) than small reservoirs in the Sahel (but smaller in terms of inundated area),

what is – and is not – a small reservoir. Rather we adopt a multidimensional approach that takes into account the multiplicity of meanings that small reservoirs can assume, as this collection of essays demonstrate.

Table 1. Distribution of small reservoirs in selected countries.

Country	Number (source)	Country	Number (source)
<i>Sub-Saharan Africa</i>		<i>North Africa and Middle East</i>	
Burkina Faso	> 1700 (Andreini et al., 2009)	Algeria	> 1000 (Morsli et al., 2007)
Ethiopia	> 110	Morocco	> 120 (Laamrani et al., 2006)
Ghana	> 1000	Tunisia	> 610 (Boufaroua et al., 2003)
Ivory Coast	> 600	Syria	> 50 (Albergel et al., 2007)
Mali	~ 800 (FAO, 2008a)	<i>Rest of the world</i>	
Mauritania	~ 350	Brazil (Nordeste)	> 70,000 (Molle and Cadier, 1992)
Mozambique	> 600 (World Bank, 2008)	India	> 208,000 (Palanisami, 2008)
Niger	~ 100 (FAO, 2008b)	Mexico	~ 12,000 (Sugunan, 1997)
Uganda	> 425 (Bashar et al., 2003)	Thailand	~ several thousands (Sanguan, 2000)
Zambia	2000-3000 (NCG, 2010)	Sri Lanka	> 15,000 (Sakthivadivel et al., 1997)
Zimbabwe	~ 10,000 (Sugunan, 1997)		

Source: AWM Solution Project, 2011a, unless indicated otherwise; in the context of definitional challenges (see above), estimates are based on locally (i.e. country or region) relevant criteria.

Long considered as soil- and water-conservation and drought-proofing measures (notably for watering livestock), small reservoirs have been increasingly equated to small-scale irrigation, especially in sub-Saharan Africa. This discursive shift has taken place over the past three decades and echoes several major rural development discourses. First, the growing disenchantment with the costs and social and environmental consequences of large-scale multi-purpose dams (WCD, 2000) has led to growing attention to small-scale projects (including a greater scrutiny over their performance) whose outcomes remain often assessed along the same lines as those of large-scale projects. Second, small-scale projects are made all the more appealing by their compatibility with current 'decentralisation' and 'participation' rhetoric. Third, there has been increasing research-based evidence that small-scale, farmer-based, irrigation could indeed have significant positive impacts on livelihoods, as observed in South Asia (see, for instance, Martin and Yoder, 1986; Yoder, 1994). Fourth, irrigation has been gaining in importance again as a potential driver of agricultural development in sub-Saharan Africa (World Bank, 2007), where a concerted effort is taking place to stimulate a home-grown Green Revolution. While mimicking its earlier counterpart in Asia in terms of boosting agricultural productivity, the African Green Revolution is envisioned to unfold in an environmentally sustainable manner.² Collectively, these factors have expanded the discursive justifications for small reservoirs, which were initially – and still are – framed as responses to climatic shocks (Molle, 1994; Cecchi, 2007; McCartney and Smakhtin, 2010; Sally et al.,

mainly due to topographical differences (deep valley gorge versus flat semiarid areas). In most cases, however, authors agree on the fact that small reservoirs 'imply' that farmers – and related local management bodies – have the upper hand in terms of decision making over the allocation and management of the resources and the infrastructure, though capital investments remain externally driven.

² The board of the Alliance for a Green Revolution in Africa (AGRA), one of the major players in the agriculture sector in Africa, is chaired by the former UN Secretary General, Kofi A. Annan, and count several senior managers of major US-based foundations in its board.

this issue). Current debates on small reservoirs have come to resonate with broader discussions over small-scale irrigation in the developing world (table 2; see the collection of essays published in 1994 in *Land Use Policy* 11(4) on the topic of small-scale irrigation).

Table 2. Framing the academic debate around small reservoirs and small-scale irrigation.

Opportunities/stated advantages	Limitations/stated drawbacks
<i>Planning</i>	
Viable/practical alternatives to large projects	Multiple approaches/lack of benchmarking
Compatibility with local farming systems	Low visibility and limited funding
Easily adaptable to local conditions and allowing involvement of population in the siting/design	Planning processes similar to those of large-scale projects
Quicker/higher returns than large-scale projects	Lack of attention to complexity of intervention
	Lack of involvement of population in planning phases
<i>Infrastructure/Development</i>	
Low costs (absolute value)	High costs relative to benefits
Simple technology	Inconsistent commitment by governments/donors
Large scope for development (area, region)	Difficulty to replicate (context specificity)
Substantial aggregate areas	Need/lack of attention to proper feasibility studies
Spread benefits spatially/reach remote areas	Lack of capacity (engineering)/low quality of construction
<i>Management</i>	
Easy to maintain and manage	Low management capacity (community/extension agents)
Compatible with local culture and knowledge	Need/lack of attention to training
Amenable to participatory management	No sustained interest for participatory management
	Lack of empowerment/ownership
	Complexity of institutional (land and water) arrangements
	Lack of maintenance/Low performance
	Local power structures impeding equitable access
<i>Impacts</i>	
Multiple uses (irrigation, livestock, fisheries)	Weak forward/backward linkages (market/inputs)
Substantial impacts on economy (diversification)	Conflicts
Generate employment opportunities	Capture by local elites
Buffer against climate variability/change	Sensitivity to extreme events (droughts, floods)
Promote local entrepreneurship	Health (malaria) and environmental (pollution) issues
Limit migration and related negative impacts	May silt-up rapidly
Limited social and environmental externalities	

NB. The objective of this paper is not to discuss the validity of the claims presented in this table (one could easily spot contradictions among some of the arguments), but rather to show that small reservoirs are malleable entities.

At the core of our current understanding of small reservoirs appears to be a two-fold diagnosis: small reservoirs have tremendous potential but have not yet delivered on their promises. On the one hand, small reservoirs are said to limit rural out-migration, enhance local population incomes (Fromageot et al., 2006) and contribute to food security (Savy et al., 2006) by supporting multiple uses of water, such as irrigation, livestock watering, fisheries, and domestic uses (Cecchi, 2007). Further, they are seen as a viable option to buffer against extreme weather events and changing climatic patterns (McCartney and Smakhtin, 2010). On the other hand, many studies point out their underperformance and propose technical improvements (Mugabe et al., 2003; Faulkner et al., 2008; Mdemu et al., 2009). Others highlight the governance challenges faced by small reservoir projects, both at the local (participation

and empowerment) and national levels (Birner et al., 2010) and call for further attention to local institutional development at the community or watershed level (Shah and Raju, 2001; Sakthivadivel et al., 2004; Vermillion and Al-Shaybani, 2004). In addition, there is emerging evidence that uses of small reservoirs contribute towards environmental deterioration – erosion of the shoreline due to upstream pumping, decreasing water quality – and have adverse health impacts though adequate management could lead to improved human health (Ersado, 2005; Boelee et al., 2009; see table 1 for further information on the pros and cons of small reservoirs). This two-fold diagnosis, we argue, warrants interest and investment in small reservoirs. But it also echoes the *build-neglect-rebuild* syndrome characteristic of the South-Asia surface irrigation sector (Shah, 2009).

The papers in this collection clearly show the multiple claims that are made upon small reservoirs from the local to the global level. They engage with some of the issues highlighted above and notably the notion – and assessment – of performance, the link between local management dynamics and equity, and planning and implementation practices of small reservoir projects. Gupta, Nkhoma, and Sally et al. (this issue) for example delve into the debates over the performance of small reservoirs. In Rajasthan, Gupta (this issue) questions the claim that *johads* can ensure long-term water security to drought-proof areas, though this is one of the major justifications behind recent construction and/or rehabilitation programmes. Nkhoma and Sally et al. (this issue) list well-known challenges to irrigation performance in Africa (see also Lankford, 2009): small-size plots, non-remunerative crops, lack of maintenance, conflicting usages, and diverging priorities between development practitioners and governments and farmers, the latter tending to value their rain-fed systems over irrigation. But what transpires from these contributions is that small reservoir performance can assume multiple meanings and depends on the vantage point considered (see Molden et al., 2007 for a generic argument on irrigation performance; Venot and Cecchi, 2011). Debates on the topic should move from a single-use approach to recognize this multiple users/uses, as was already identified by Vincent (1994).

Aubriot and Prabakhar, and Sally et al. (this issue) address issues related to local management. Development actors have asserted the primacy of Water User Associations – and other local water committees – as the rightful entities for maintaining and managing small reservoirs and enhancing their performance (for instance, IFAD, 2009). However, these associations appear not to be as participatory as intended or claimed. They operate amidst, hardly questioned, unequal socio-political power relations. In India, decision making largely remains in the hands of the traditional local elite, or an emerging elite that is closely affiliated to political parties. In Burkina Faso, historical or powerful water users (downstream irrigators and agro-industries) and the state machinery – through its local offices – keep the upper hand on water allocation. In both cases, the voices of the marginalised are muffled. Challenges to equity are also highlighted by Gupta in Rajasthan. There, the promotion of *johads* in the name of 'tradition' has perverse consequences. Voluntary labour (*shramdaan*) induces lower wages for workers and groundwater recharge mainly benefits well-off farmers who can invest in wells and pump-sets to irrigate their crops. Beyond the specificities of each case study, these three contributions show that the governance of small reservoirs is the result of an 'institutional bricolage' (Clever, 2000) among multiple arenas and actors: farmers, users' groups, local government, line ministries, development actors, and politicians. Equity concerns may, thus, be best addressed by promoting arrangements enhancing multiple institutional relationships at multiple scales rather than promoting a single management body.

Nkhoma and Venot et al. (this issue) engage with issues pertaining to the governance of small reservoir projects planning. They draw a link between planning and implementation shortcomings and the outcomes of projects. In Malawi, a country with large run-of-the-river irrigation potential, Nkhoma (this issue) argues that the recent framing of small dams as a strategy for irrigation development constituted a pragmatic move to secure external funding, rather than a proactive choice; international development partners were keen to finance such infrastructure, notably in the driest part of the country. Lack of attention to planning and local circumstances, and lack of buy-in by the national government (whose interest towards irrigation seems to remain mere rhetoric), led to low involvement

of local communities – who associated small dams with the colonial power – and ultimately to the failure of projects. These observations echo the work of Vermillion and Al-Shaybani (2004) who highlight the influence of donors' strategies on the outcomes of small reservoir projects. In Ghana, where investments in small reservoirs are actively pursued by government and international partners alike, Venot et al. (this issue) describe long documented (see for instance, Morardet et al., 2005) macro-level deficiencies along the project cycle (perverse incentives governing planning of projects, little attention to pre-feasibility studies, lack of information, transparency and accountability, mishandling of procurement processes, and inadequate monitoring and supervision). These shortcomings hang on a tension between formal practices and informal rules that constitute the working culture of development planning and public action in sub-Saharan Africa and beyond (Bierschenk, 2010), and breed opportunities for corrupt practices. The suite of petty misconduct and corrupt practices results in delays in implementation, poor construction, escalating costs and, ultimately, failures of small reservoirs vis-à-vis their stated goals and a widely shared frustration among donor agencies, civil servants, contractors and communities. Limiting undesirable practices starts by recognizing their underlying complexity; a good starting point is to map the 'exchange relationships' that prevail in a particular situation to gain some understanding of the incentives of the various actors, the potential conflicts of interests and the hot spots that are most vulnerable to capture (AWM Solutions Project, 2011b).

The contributors also bring to the fore the socio-political nature and the flexibility of small reservoirs, which lend themselves to associations with multiple development discourses and buzzwords (see Cornwall and Eade, 2010 for a comprehensive discussion; table 3). Aubriot and Prabhakar and Gupta (this issue) show how *tanks* and *johads* are discussed along the lines of tradition and modernity. *Tanks* and *johads* are cast as the symbols of a lost and desired 'tradition' that need to be 'rejuvenated', or 'revived' (a disputable notion; see also Mosse, 2003). In the African context, small reservoirs are, on the contrary, embedded in a modernist development discourse of efficiency (for instance, Aberra, 2004). Our argument here is not to come to a decision on whether small reservoirs are 'modern' or 'traditional' (both contributions remind us that such categorization is not fruitful to understand how small reservoirs function) but to show that, depending on circumstances (India and Africa) and actors (environmental NGOs or development practitioners), they can be framed in both ways.

When describing the role of small reservoirs in the Burkinabe irrigation sector, Sally et al. (this issue) echo the continent-wide rhetoric of the Comprehensive Africa Agriculture Development Programme (CAADP) in which the New Partnership for Africa's Development (NEPAD) has singled out small-scale irrigation as one of the solutions to poverty and agricultural water management challenges in Africa (CAADP; NEPAD, 2003). But the authors are also able to situate small reservoirs in a broader discourse on (good) water governance – and notably Integrated Water Resources Management (IWRM). They illustrate how small reservoirs can act as vehicles for policy choices in what can be described as a true 'reworking' of a global policy model (IWRM) and a national water strategy (inspired by water management practices in France, the former colonial power) on the basis of local understandings and priorities. This link between an infrastructural artefact and broader water governance issues is also common in the Indian context, where small reservoirs are discussed vis-à-vis their potential in terms of drought-proofing and groundwater recharge (Aubriot and Prabhakar and Gupta, this issue; Shah and Raju, 2001). These are two fundamental elements of the watershed development discourse, which is now gaining prominence (see Chhotray, 2007 for a critique) and which is likely to assume an even greater importance as changing climatic patterns take centre stage.

Table 3. Actors, interests and development buzzwords: Small reservoirs at a crossroad.

Development 'buzzword'	Small reservoir 'fit'	'Engaged' actors
Poverty reduction	Agricultural intensification Irrigation development Multiple uses/benefits	International donors National governments National and local politicians Local communities
Environment and sustainability Climate change adaptation	Drought proofing Groundwater recharge	Environmental NGOs International donors National governments
(Good) (water) governance	IWRM Watershed management Community-led management	International NGOs and think-tanks
Participation and empowerment	Community-led management Users' organisations Local politics	'Community-oriented' NGOs International donors Researchers (social dynamics)
Transparency, accountability	Project planning	International think-tanks International donors Researchers (social dynamics)
Tradition/ modernity	Rejuvenation/ (Irrigation) efficiency	Environmental NGOs/ Civil engineers and line ministries Researchers (technical aspects)

NB. For the sake of clarity, the table makes a link between each 'buzzword' and a set of 'engaged' actors. This is to show that a given buzzword is strongly appealing to some actors of the water and development sector based on their agenda, priorities and practices; this does not mean that other actors do not engage with the given buzzword but, rather, that other key words are more central to explaining their practices.

But this is not the only way through which small reservoirs and governance are linked. Nkhoma and Venot et al. (this issue) use small reservoirs to highlight broader issues of transparency, accountability, corruption and development practices – notably the interplay between national governments and international donors. At a more local scale, Aubriot and Prabhakar, Gupta and Sally et al. (this issue) discuss small reservoirs against the backdrop of participation, decentralization and empowerment; beyond the rhetoric, they illustrate the political dimension and the risk of capture of collective action and participation. Discussing small reservoirs through broader lenses, such as the debates over the governance of natural resources and far-reaching political reforms such as decentralization, contributes to sustaining the interest of development practitioners and researchers in the topic.

By their ability to articulate multiple discourses and meet diverse interests, small reservoirs act as boundary objects (Star and Griesemer, 1989); that is, entities that are multivalent in character and can be cast in different ways that speak to diverse communities of practices. Amenable to multiple narratives, boundary objects – and small reservoirs in particular – act to mediate between different actors (international funding agencies, national and local decision makers, local users, researchers) who can keep their identity and prime objectives and carry on with their work whilst interfacing with others on common interests of a secondary nature (Star and Griesemer, 1989; Trompette and Winck, 2009). It is because small reservoirs are sustained by discourse coalitions (Hajer, 1995) and interpretative communities (Mosse, 2004) that they endure as development objects, irrespective of their outcomes.

As argued by Mosse (2004), the events become secondary to their interpretation; projects do not fail (or succeed); they are failed (or made successful) by wider networks of support and validation.

Research on small reservoirs should move away from dichotomous questions such as 'are small reservoirs beneficial to local communities?', or 'are renewed investments in small reservoirs economically sound?' that still dominate the academic and development debates. Indeed, selective evidence can be drawn to make the case either *for* or *against* small reservoirs, depending on actors' motives and agency. The multivalent character of small reservoirs calls, rather, for questioning the motives of multiple actors and investigating how they unfold. Understanding the wider networks and the dynamics of knowledge that sustain development models and projects, notably small reservoirs, is the first step towards comprehending the complex interactions between discourse, policy formulation and implementation. This departs from a linear vision of development and paves the way towards more sustainable agricultural water development.

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