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Is There an Alternative for Irrigation Reform?

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Summary. — Poor performance of government-managed irrigation systems persists in developing countries despite numerous policy interventions over the last four decades. We argue that many of these interventions have failed, because they did not recognize irrigation bureaucracies as prime actors in policy change. This paper examines the varied actors and agendas within irrigation bureaucracies, highlighting the dichotomy between "hydraulic missions" on the one hand and direct service provision to farmers on the other. To increase the significance of future reform, bureaucracies must be considered as explicit actors, and reform efforts should derive from better understanding of the farmer–agency interface.

Key words — irrigation bureaucracies, irrigation system performance, policy reform, hydraulic mission, farmer–agency interface

1. INTRODUCTION

Irrigation performance continues to be at the central stage of irrigation development debates. Some interpretations of irrigation performance focus on strict technical efficiency (e.g., Molden, Sakhtivadivel, Perry, de Fraiture, & Kloezen, 1998), while others link it with equity in water distribution (e.g., Malano & Hofwegen, 1999), and yet others with service provision (e.g., Huppert, Svendsen, & Murray-Rust, 2003). While the interpretations and definitions may vary, there is general agreement that performance of government-managed irrigation systems in developing countries has been and remains poor (Jones, 1995; Malano & Hofwegen, 1999; Mukherji, Fuleki, Shah, Suhardiman, Giordano, & Weligamage, 2009; Turral, 1995). There is also general agreement that poor performance is caused by deterioration of physical infrastructure due to deferred maintenance, itself a function of poor (financial) incentives and institutional arrangements for infrastructure management (Coward, 1984; Dinar & Subramanian, 1997; Groenfeldt & Svendsen, 2000).

In response to performance problems and the perceptions of their causes, repeated waves of reforms have been implemented across the developing world, usually backed with substantial financial support from major international donor agencies such as the World Bank, the Asian Development Bank (ADB), and the US Agency for International Development. These reforms have included a shift from construction and rehabilitation to Operation and Maintenance (O&M) (O'Mara, 1990) to improve infrastructure condition, formation of Water Users Associations (WUAs) to give farmers greater involvement in system management (Bottrall, 1981; World Bank, 1986), introduction of Irrigation Service Fees (ISFs) to improve system cost recovery (Dinar & Subramanian, 1997; Svendsen, 1994), and Irrigation Management Transfer (IMT) to reduce government expenditure and at the same time give farmers greater control and responsibility in irrigation management (Groenfeldt & Svendsen, 2000; Johnson, Svendsen, & Gonzalez, 2004).

Despite their outward tone, the range of irrigation reforms continues to be framed in neutral, a-political management approaches aimed at ending the deferred maintenance problem and the build, neglect, and rebuild cycle that typifies large-scale irrigation today. For example, the rationale to introduce ISFs was based on calls to get water pricing "right" (e.g., Dinar, 2000), which emphasize the need to develop the right incentive structures (Svendsen & Huppert, 2003) to enable actors to take correct actions. Similarly, IMT and WUA formation are derived from the assumption that systems and societies can be socially engineered to meet predefined policy targets and outcomes (Vermillion, 2000).

Within these a-political framings of irrigation problems and solutions, irrigation bureaucracies are positioned simply as instruments to facilitate policy implementation rather than policy actors in their own right. Furthermore, viewing the bureaucracies as homogenous managing organizations comprised of actors with common interests and goals (Christensen & Laegreid, 2003) rather than the heterogenous organizations that they are with varying interests, objectives, and policy preferences (Oorthuizen, 2003; Suhardiman, 2008; Yalcin and Mollinga, 2007), reforms have overlooked how those interests vary within each bureaucracy.

This article focuses on irrigation bureaucracies' interests and how these shape irrigation policy reform processes and outcomes. Its contribution lies in enhancing what might be called a "critical" approach to poor irrigation system performance—critical in the sense of questioning the way poor system performance is treated within the mainstream (presently neoliberal) development orthodoxy.[1] It argues

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that while there may be agreement on persistent poor irrigation system performance and its proximate causes, scholarship, and practice have overlooked the fact that irrigation bureaucracies' attitudes toward reform are influenced by factors and considerations beyond the objective of improved systems performance (Araral, 2008; Suhardiman & Mollinga, 2012). In the case of WUA formation and IMT for instance, national bureaucracies' perceptions of reform and therefore participation in it is defined by how they believe WUAs and management transfer will affect their position as the agency in charge of irrigation development (Oorthuizen, 2003; Rap, 2004; Rap and Wester, 2013), regardless of how this formation and transfer might potentially improve system performance.

The article argues that efforts to improve irrigation performance have been largely unsuccessful because, first, the simple framing of the problem as one of deferred maintenance obscures the complex realities of irrigation,[2] second, because they have not recognized irrigation bureaucracies as endogenous agents in the reform process, and third, because they have not recognized the heterogeneity of agents within a single bureaucracy. Unlike previous approaches that view poor system performance as a management problem, this article starts from the point of view that irrigation bureaucracies and their component parts must be viewed as political entities with their own missions and interests. In so doing, it links the problem of poor system performance with bureaucratic identity and the varied organizational cultures within a bureaucracy and how these influence bureaucratic motivation for (not) improving system performance.

To do this, we first look at the creation of the "hydraulic mission," how it shapes national irrigation bureaucracies' identities, their interests in infrastructure development, and the use of the project approach to sustain their bureaucratic power. We then use the specific case of IMT to show how national irrigation bureaucracies have reduced reform programs from institutional issues to infrastructure development, derailing the very substance of reforms aimed at breaking the vicious cycle of build–neglect–rebuild. Finally, we highlight the farmer–agency interface as an alternative entry point for irrigation reform. The article's main messages are that bureaucracies are actors rather than instruments in reforms, that reform efforts often focus on the wrong part of bureaucracies, and that irrigation reform efforts should place more emphasis on field level practices, where the farmer–agency interface occurs rather than national level bureaucracies.

2. IRRIGATION BUREAUCRACIES' IDENTITIES[3]

To understand how a bureaucracy functions and the strategies it uses to gain and maintain its power, one needs to understand its identity (Quarles van Ufford, 1988). As with other bureaucracies, the identity of irrigation bureaucracies is shaped by "*their own sets of interests and ideologies*" (Molle, Mollinga, & Wester, 2009: 336). In the case of irrigation bureaucracies, this identity is tied to the notion of a hydraulic mission. To clarify the linkage between the hydraulic mission and irrigation reform, we discuss here: (1) the creation of the hydraulic mission and how it shapes national irrigation bureaucracies' identities; (2) the central positioning of infrastructure development as a strategic means to sustain bureaucratic autonomy; and (3) the shaping of project funds as their means to sustain bureaucratic power.

(a) *Hydraulic mission and the shaping of national irrigation bureaucracies' identity*

Irrigated agriculture dates to ancient times (Goldsmith & Hildyard, 1984; Gunawardana, 1971; Hauser-Schaublin, 2003). Historians and political scientists have extensively described and analyzed the role of irrigation as part of the state formation processes and in relation to the emergence of new agrarian societies (Geertz, 1980; Schulte-Nordholt, 2011; Wertheim, 1979; Wittfogel, 1957). In many countries of the now developing world, irrigation grew in importance under colonialism as a means for revenue generation (Shah, 2009) and played an important role in supporting plantation agriculture (i.e., rubber, coffee, tea, cotton, tea, and wheat among other crops) for colonial economic interests in global trade and industry (Hofstede & Santbrink, 1979; Stone, 1984). Colonial powers focused their irrigation efforts on the design and construction of large water conveyance infrastructure (such as dams, canals, and weirs to link water source with farmers' fields) as well as the development of water distribution techniques such as rotation and scheduling (Eijsvogel, 1949; Lamminga, 1905).

After independence, the role of irrigation and irrigation management in former colonial countries changed dramatically. Irrigation was no longer seen as a means to support export agriculture but rather as part of national economic strategies to eradicate hunger and poverty and provide employment. The focus of irrigation practice continued to be on design and construction, though with investment now taking place at speeds much greater than in the colonial era (Schoengold & Zilberman, 2004). Rapid infrastructure development not only represented the power of the new nation states, but also illustrated the emerging importance of planned intervention (Scott, 1998) and marked the birth of modern "hydraulic missions" (Wester, Rap, & Vargaz-Velazques, 2009).

Hydraulic missions were based on the positioning of infrastructure development and water supply enhancement as key structural means to achieve national economic development (Booth, 1988; Suhardiman & Mollinga, 2012). This positioning legitimized irrigation agencies' existence in terms of budget and bureaucratic power. As stated in Molle *et al.* (2009: 332): "*Water bureaucracies had their secular priesthoods, acting in the name of the common good and in tandem with politicians and national leaders. Not a single drop of water should reach the sea without being put to work for the benefit of man.*"[4]

The hydraulic mission manifested itself in a strong technical focus on irrigation development, with construction and rehabilitation of new and existing irrigation systems and an emphasis on technical development to ensure water supply to farmers' fields.[5] Infrastructure development became irrigation bureaucracies' existential purpose and the source of their bureaucratic importance (Bakker & Molle, 2004) and was expressed in the establishment of an engineering ethos (Espeland, 2000; Stone, 1984). The emergence and reproduction of this engineering ethos have become the hallmarks of most if not all irrigation bureaucracies. To this day, the professional staff of irrigation bureaucracies everywhere in the world are almost synonymous with engineering staff (Rap, 2004; Suhardiman, 2008; Wade, 1982, 1985). In India, for example, the irrigation bureaucracy is made up almost entirely of junior engineers, para-professional engineers, assistant engineers, and executive engineers (Cantle, 2010).

The funding to support post-colonial, engineering focused irrigation bureaucracies came in part from international donors in the form of loans, grants, and technical assistance