



Governance of the irrigation commons under integrated water resources management – A comparative study in contemporary rural China



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ABSTRACT

This paper evaluates two key patterns of irrigation institutions under integrated water resources management reform – private contracting and collective management using Ostrom's (1990) design principles for robust common pool resources (CPRs) institutions and sees how and to what extent they are applicable in an authoritarian society. Our result extends Ostrom's work and shows that these principles are relevant but insufficient in evaluating local irrigation institutions in the Chinese context, where use of collective action and social capital to pursue one's interests are so prevalent. It concludes that use of collective action and social capital within particular socio-cultural contexts accounts for not only water users' behaviour but also the development and mixed performances of local irrigation institutions, both positive and negative including collective corruption and overexploitation which are better planned and more difficult to detect. Contextualized understanding and strategic uses of positive impacts of collective action and social capital on governance of the irrigation commons while minimizing their downsides are suggested.

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1. Introduction

Good governance is one of the key solutions to the pressing global water crisis (Rogers and Hall, 2003; Pahl-Wostl et al., 2012). Over the past few decades, irrigation management has undergone a remarkable shift from the traditional focus on technical and engineering based solutions to the construction of robust, flexible and sustainable institutions and decentralized integrated management (Nickum, 2010; Crase and Gandhi, 2009; Giordano and Shah, 2014). This requires collective efforts by different stakeholders especially those at local levels, who have the information and incentives to improve irrigation management and outcomes (Ostrom, 1990; Fraser et al., 2006; Araral, 2009; Yu et al., 2013).

Collective action, as the pursuit of a common goal or interests by more than one individual, lies at the centre of management of common-pool resources (CPRs) (Adger, 2010; Araral, 2014; Giest and Howlett, 2014). The most common and chronic problems preventing collective action include free-riding, shirking and destructive uses of CPRs by self-interested individuals (Hardin,

1968; Lane and McDonald, 2005). However, a large body of literature has shown that communities can and have managed to address local CPRs problems that cannot be addressed by either the government or the market alone (Tang, 1992; Lam, 1999; Joshi and Hooja, 2000; Araral, 2009). As Ostrom (1990) argues, local communities in both developing and developed countries have not only been capable of self-governing CPRs but also collectively establishing, maintaining and modifying institutional arrangements in specific contexts.

In order to identify factors and preconditions for robust CPRs institutions, Ostrom (1990) has proposed eight design principles through in-depth analyses of multiple case studies of CPRs management at local levels in both the developing and developed world. Some scholars have evaluated CPRs institutions using these design principles, and found them very effective in certain contexts (Quinn et al., 2007; Cox et al., 2010; López-Gunn, 2012; Agrawal, 2014). However, principles that are derived from or applicable to certain contexts can have substantially different meaning if used in another. Thus they must be studied within local contexts that they are implemented (Mosse, 2006; Selman, 2004), such as the authoritarian Chinese context.

Dozens of variables that affect collective action by resource-dependent populations have been identified. For instance, Wade (1988) and Meinzen-Dick et al. (2002) show that physical

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¹ Deceased.

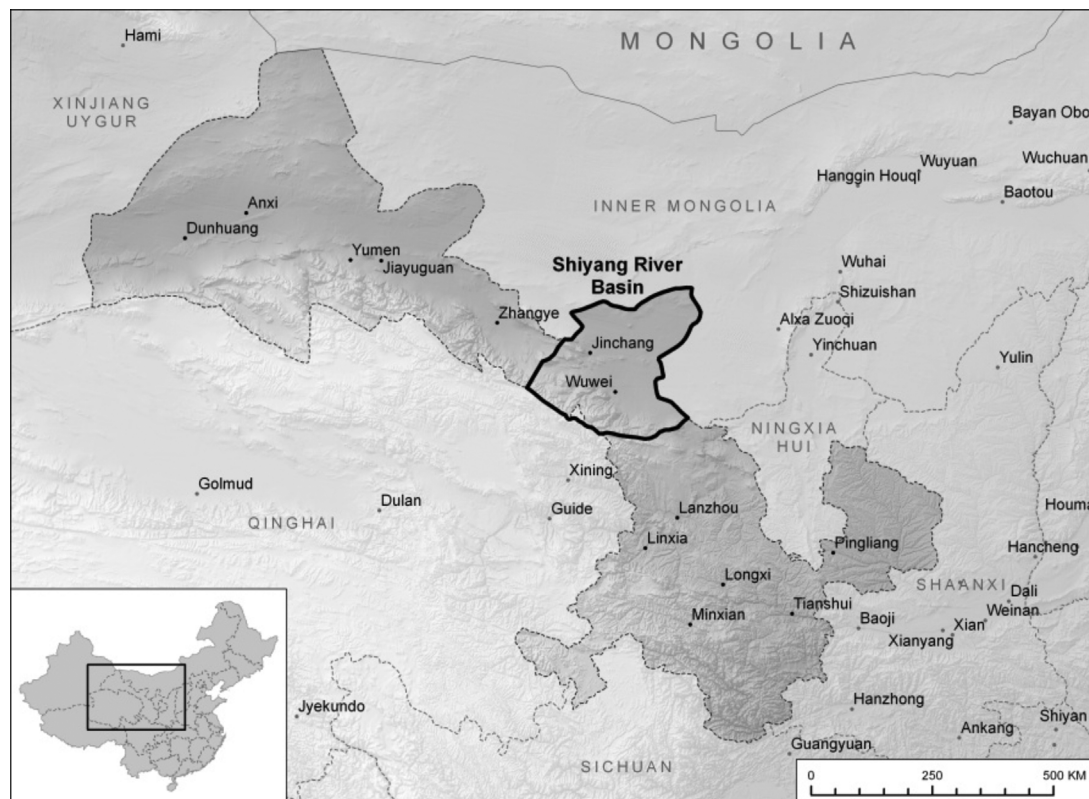


Fig. 1. Location of the Shiyang River basin in Gansu Province, China.

characteristics of CPRs including physical scarcity, size, and proximity to markets affect local collective management action. Others investigate influencing factors such as heterogeneity (Reyes-Garcia et al., 2011), group size (Poteete and Ostrom, 2004), and social capital in local resources management (Coleman, 1988; Uphoff, 2000; Pretty, 2003; Poteete and Ostrom, 2004; Adger, 2010) and more specifically the roles of social capital in collective action and CPRs governance (Pretty and Ward, 2001; Bowles and Gintis, 2002; Pretty, 2003; Mosse, 2006; Bouma et al., 2008; Jones et al., 2012). Social capital is “features of social organization such as networks, norms and trust that facilitate coordination and co-operation for mutual benefit” (Putnam et al., 1994).

With much literature has focused on origins and maintenance of social capital and collective action in CPRs management (Agrawal, 2014; Lane and McDonald, 2005; Lam, 1999; Mosse and Sivan, 2003; López-Gunn, 2012), the linkages of social capital and collective action are far from clear (Ostrom and Ahn, 2009; Sharp et al., 2012). One explanation may be the incomplete understanding of how to tailor programs to build or make effective use of social capital based on differences in the implications of social capital (Ghazouani et al., 2012). Alternatively this may be due to the fact that stakeholders with their individual identity, often are motivated to use social capital in their personal benefits even in a collective environment (Tiewtoy et al., 2011). Moreover much of the focus has been one-sided, looking at intrinsically positive aspects as a built-in mechanism ensuring cooperative behaviours and collective action (Ostrom, 1990; Uphoff, 2000), while few studies have paid attention to the diverse outcomes of localized uses of collective action and social capital. Their mixed roles and especially the downsides have been generally overlooked (Ghazouani et al., 2009; Adhikari and Goldey, 2010).

Through accessing and analysing villagers’ everyday water struggles and socio-political experiences of irrigation management

in water-scarce regions in Northwest China, the objective of this paper is to apply local irrigation institutions using Ostrom’s (1990) design principles and evaluate local water institutions in the Chinese context. Instead of following most literature which focuses on enabling conditions or factors for successful collective action in CPRs governance (Agrawal, 2014), this paper paid attention to a much needed investigation – exploration of the mixed outcomes of collective action and social capital including trust, reciprocity and social networks (Guanxi²) (Abernethy et al., 2001; Xin and Pearce, 1996; Gold et al., 2002), and their roles in governing irrigation commons in two typical villages in arid and semi-arid regions of the Shiyang River Basin where people’s water behaviours and livelihoods are closely tied to embedded physical, socio-economic and political realities (Yu et al., 2013). It will have implications for future water reforms, especially considering the increasing discussion about using Western-based analytical and management tools to resolve water issues in specific contexts.

2. Methods

2.1. Study area

The study was carried out in the Shiyang river basin (longitude 101°41′–104°16′ E, latitude 36°29′–39°27′ N), in Gansu province, Northwest China (see Fig. 1). It covers an area of 41,600 km², and has a population of over 2.26 million. Over 77% of its population depends on agriculture for their main livelihood. It is one of the most water-stressed, highly developed and ecologically vulnerable inland river basins in China (Ma et al., 2005). It has an arid continental inland climate with low irregular annual rainfall of 220 mm and extremely high annual evaporation between

² Guanxi is a Chinese term which generally means relationships, social connections and networks between individuals and groups.

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