

## **Water, water everywhere: Is Integrated Water Resource Management the right institutional prescription for South Africa's water management challenges?**

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### **Abstract**

Ostrom (2007) and Ostrom and Cox (2010) argue that natural resource management has been plagued by the “panacea problem”: that one-size-fits-all solutions to allocation and management problems have been applied without due consideration of the specific context. The outcome has been the disappointing results of many development and management programs. Integrated Water Resource Management (IWRM) has been recognised as a potentially effective way of allocating water where there are multiple, sometimes competing, users (Saravanan et al. 2009). It has been used successfully in a number of other developing country contexts, including Mexico, Brazil, India and Thailand (Orne-Giliemann 2008; Meinzen-Dick 2007). The principles of IWRM were also adopted in South Africa under the National Water Act (1998). Water User Associations (WUA) are seen as one of the key institutions driving IWRM, since they are designed to allow stake-holders at local level a say in the allocation and management of this important public good (Aoki 2001). However, WUAs in South Africa have mostly not been a success and are currently being reviewed at national level. For the most part, emerging black farmers and rural communities still do not have equal access to water, or a meaningful role in decision-making, and there are significant security of supply and allocation issues with regard to municipal users as well. Using the AID (Institutional Analysis and Development) framework (Ostrom 2007), with particular reference to economic theory relating to incentives and transactions costs, this paper asks if IWRM is a panacea treatment that does not fit the diagnosis of South Africa’s water management problems. A case study approach is used, focusing on one of the few established WUAs in the Sundays River Valley Municipality in a rural area of South Africa.

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### **Introduction**

Ostrom (2007) and Ostrom and Cox (2010) argue that natural resource management has been plagued by the “panacea problem”: that one-size-fits-all solutions to allocation and management problems have been applied without due consideration of the specific context. The outcome has been the disappointing results of many development and management programs. Integrated Water Resource Management (IWRM) has been recognised as a potentially effective way of allocating water where there are multiple, sometimes competing, users (Saravanan et al. 2009). It has been used successfully in a number of other

developing country contexts, including Mexico, Brazil, India and Thailand (Orne-Giliemann 2008; Meinzen-Dick 2007).

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Writing about WUA in South Africa, Orne-Gliemann (2008) reflected that, in post-apartheid South Africa, WUA were entrusted with much more than water management: they also had a strong political and transformation agenda. “The question remains however of the conciliation of these multiple objectives – IWRM, community participation, political agenda – within a unique local institution whose development is already impeded by historical legacies”. She concludes that, although WUA seem institutionally adequate for commercial and industrial users, there is some doubt about their ability to address the needs of small-scale farmers.

Using the Ostrom’s (2007) social-ecological systems (SESs), with particular reference to economic theory relating to incentives and transactions costs, this paper asks if, seventeen years on from the National Water Act (1998), IWRM is working, or if it is a “panacea” treatment that does not fit the diagnosis of South Africa’s water management problems. A case study approach is used, focusing on one of the few established WUAs in the Sundays River Valley (SRV) Municipality in a rural area of South Africa. In September 2014, the local residents of the Lower SRV Municipality displayed their frustrations over water supply disruptions through violent protests that resulted in setting alight a municipal building in Kirkwood in protest at poor service delivery (City Press, 2014). This is despite the fact that, owing to a large inter-basin transfer scheme, there is currently no actual shortage of raw water in the region (Munro, 2014).

Section two provides the theoretical framework, based in the field of New Institutional Economics. Section three presents a short overview of IWRM institutions in South Africa, Section four discusses the Sundays River Valley (SRV) Municipality case study. Section five presents the analysis, and Section six concludes.

### **Theoretical framework: Path dependency, transactions costs and institutional change**

Ostrom (2007) developed a framework for the analysis of SESs that sought to find a balance between developing broad descriptors, while still capturing the specific details of the context in which a particular SES operated (Figure 1). The framework allows the classification of the attributes of a system into a

number of nested levels and sub-levels, with each level becoming more specific to the particular case study. The four broad categories are Resource Systems (RS), Resource Units (RU), Governance Systems (GS) and Users (U). The purpose of the framework is to allow comparison and generalisation, but without misdiagnosis of what appear, at higher levels, to be similar problems, but which, when the specifics are examined at lower levels, turn out to require completely different prescriptions (Ostrom, 2007; Ostrom and Cox, 2010).



Figure 1: Possible attributes within Ostrom's (2007) SES Framework (Ostrom, 2007:15183)

Ostrom (2007) demonstrates how Hardin's (1968) theory of the "tragedy of commons" rests on a number of specific, lower level attributes or assumption that: the RS is a pasture; no GS is present; the RUs (cattle) are mobile, identifiable and can be owned by individuals; U is large; and resource users maximise short-term benefits and do not communicate with each other. Changing even one of these assumptions, Ostrom (2007) argues, will lead to a different outcome from the resource destruction Hardin predicted for commons where no individual property rights exist. Nevertheless, assigning private property rights in communal resources was regarded for many years as a panacea for all such resource management problems, even though it sometimes produced poor results (Ostrom 2007).

It has been argued that one of the recent panacea prescriptions for sustainable natural resource management, development and poverty alleviation is decentralisation and community-based conservation (Ostrom and Cox, 2010; Bartley et al. 2008). Bartley et al. (2008) suggest that, particularly where natural resource management problems "requiring redistribution amidst extreme inequality" are present, decentralisation could lead to "perverse" outcomes. Such perverse outcomes are also likely

where the incentives of individual actors are mixed or missing, so that “individual self-interest and collective benefit” are not aligned (Bartley et al. 2008:165).

Ostrom and Cox (2010:6) suggest that “typological decomposition” of the attributes of an SES is an important step in the diagnostic approach to analysing management challenges associated with natural resources. The aim is to identify individual aspects of the system that are important for explaining how institutions “sustain themselves in the face of disturbances over time”, often referred to as resilience. While identifying such attributes is obviously important, resilience may not be a wholly positive thing where institutional change is the aim. In this case, resilience is often referred to as “path dependency” by historical institutionalists (Pierson, 2000) and is used to explain resistance to institutional change, even when new arrangements will increase welfare or efficiency. As Helderman (2007) points out, institutional theory is often better at explaining institutional stability with slow, incremental change, than how more radical institutional changes occur. Sehring (2009) agrees, adding that institutional reforms often focus on creating new institutions without considering either the deinstitutionalisation of old organisations, or the potential complementarity between old and new institutions.

Institutional resilience and resistance to change are explained by economists using theories of increasing returns, and the resultant incentives to maintain the current way of doing things (Pierson, 2000; Streeck and Thelen, 2005). The theory of increasing returns argues that, once formal and informal institutions are established and that there is a “business as usual” model, the transactions costs of changing this model will be large, since the new way of doing things will require renegotiation and reformulation of the rules and norms governing a wide range of decision-making agents (Pierson 2000; Woerdman, 2004). Pagan (2009:24, in Crase and Ghandi) define transactions costs as “all costs associated with the creation, use and change of an institution”. More generally, transactions costs can be defined as “the costs incurred in organising and coordinating human interaction” (Challen 2000:38). Transactions costs can be disaggregated into static costs associated with a particular institutional environment, and dynamic costs associated with a changing institutional environment (Pagan 2009). Institutions emerge as a way of reducing transactions costs, since they provide a framework of formal or informal rules that govern how allocation decisions are arrived at. Superior institutions are those that minimise transactions costs in a particular context (Pagan, 2009). However, once they are in place, institutions are resilient to change and subject to positive feedback that results in path dependency (Pierson, 2000). Transactions costs arise because of large set-up costs; the increasing returns to knowledge (learning-by-doing); coordination effects (increasing returns as others adopt similar, complementary ways of doing things); and adaptive (or self-fulfilling) expectations (see Pierson 2000 for further discussion).

“One of the key premises in institutional economics literature is that institutional change occurs only when the transaction costs of reform are less than the corresponding opportunity costs of doing nothing” (Saleth and Dinar 2004:14). Game theoretical approaches to understanding institutional change emphasise that, for an institution to exist, the costs of maintaining the institution must be weighed against the benefits derived from it. If costs are more than benefits, agents will have an incentive to engage in non-cooperative behaviour (free riding) (Mbatha 2005). Similarly, for institutional change to occur, perceived potential benefits must be more than the costs of implementing the change.

In the case of water management, Saleth and Dinar (2004) argue that the benefits of institutional change are likely to increase as scarcity, and thus the marginal value of water, increases.

An important determinant of path dependency can be power asymmetry. Pierson (2000:259) suggests that, where significant power asymmetry exists, it may not even be apparent. Politically powerful agents have the opportunity to subtly adjust the 'rules of the game' in ways that enhance their power, so that, over time "the employment of power may be self-reinforcing". Helderman (2007) contends that strong path dependency can only be overcome during periods of "revolutionary upheaval", which usually occur because of some major external event, such as a war or, in the case of South Africa, a political regime shift post 1994. At these times, "windows of opportunity" for institutional change may emerge (Helderman 2007), perhaps as a result of a shift in power balances that reduces the "power of the few" to engage in rent-seeking behaviour, or because a reform of the whole system reduces the transactions costs of reforming any particular institution (Saleth and Dinar 2004).

Cruse (2009, in Cruse and Ghandi) discusses the reform of water management institutions in Australia based on four broad principles (very similar to those found in the National Water Act of South Africa): the need to allocate water for environmental purposes; the need to clearly define water user rights, particularly with regard to irrigation; the shift of control of the water resource to end-users and away from the state; and the use of prices to send signals about resource scarcity and value. As in South Africa, there was the additional need to allocate water rights more equitably between white commercial farmers and smaller-scale Aboriginal farmers. While many aspects of water reform in Australia have been successful, there is no doubt that transactions costs have been high. In order to offset some of these (such as losses by farmers as a result of changes to water rights), some of the costs were borne by the state. However, Pagan (2009) also notes that, while there will always be dynamic transactions costs associated with institutional reform, there may be even greater static costs associated with "doing nothing" under an inefficient current system.

Sehring, (2009) discusses the concept of institutional change through "bricolage", where old institutions and ways of doing things can be recombined into new, transformative institutions. As such, old institutions are not only constraints to change, they can also be enablers, providing a set of resources or "logics" on which empowered agents can draw. Along with Helderman (2007), Sehring (2009) argues that institutional change is "messy" and often not completely conscious. "Institutional bricolage therefore offers an approach to institutional change that is situated between path dependency and the development of new, alternative paths, which are never completely new, but a recombination of existing institutional elements and new concepts" (Sehring, 2009:66).

While existing institutions can thus be a resource on which to build, they may also lead to problems of path dependency, particularly if the institutional bricolage (or multilevel governance structures) that result contradict, rather than complement, each other. For example, in their discussion of forest management in Uganda, Bartley et al. (2008) found that the pressure to generate revenue from forests resulted in a contradiction between conservation and extraction. Thus, while national policies emphasised environmental sustainability and poverty alleviation, there are few incentives, at local level, to prioritise these objectives above short-term commercial revenue generation objectives.

## **Integrated Water Resource Management and Water User Associations in South Africa**

Over the past five decades, a number of institutional arrangements have emerged globally in an effort to improve water management, increase effectiveness and efficiency in the water sector, and to promote poverty reduction gains associated with inclusive water allocation (Agrawal, 2001; Meinzen-Dick, 2007; Orne-Gliemann, 2008; van Steenberg, 2013). Such arrangements include water markets, government agencies and Water Users Associations (WUA) (Agrawal, 2001; Meinzen-Dick, 2007; Orne-Gliemann, 2008). Integrated Water Resource Management (IWRM) emerged from the 1992 Dublin Principles for Water Resource Management. One of the key Dublin Principles was integrated decision making on the allocation of scarce water resources - a shift away from top-down hierarchical water resource management of the past (Van der Zaag and Savenije, 2000; Perret, 2002; Brown, 2013).

WUAs are cooperative associations of water users established legally to govern decision-making processes towards a common goal related to sustainable water management for the benefit of all members (Pegram and Mazibuko 2003). Generally, the main objective of WUAs is the maintenance of infrastructure in order to provide an uninterrupted and dependable water supply to water users, and may extend to issuing water licenses, provision of human capital development, and serving as overall consultants in the water sector (Subramanian *et al.*, 1997; Pegram and Mazibuko, 2003). The establishment of WUAs in some countries was a result of a need to curb the problems and challenges of a centralised system. Considerable variations in the nature and models of WUAs exist as local needs and realities have to be considered and incorporated when WUAs are established (Ostrom, 1990; Orne-Gliemann, 2008). In some countries, WUAs have failed to operate sustainably as they were given great responsibilities with limited resources, while other countries are success stories (Subramanian *et al.*, 1997; Faysse, 2004; van Steenberg, 2013).

The idea is that a decentralised water management system is more likely to create incentives for conservation and general participation of the local communities in water management through the generation of distinctive intangible social capital for members (Aoki, 2001). The argument is that decentralisation creates a common sense of belonging, solidarity and social esteem. These are important elements needed for encouraging networking, building relationships and enabling collective action (Aoki, 2001; Tropp, 2007). Meinzen-Dick (2007) argues that despite the limited resources of farmer-managed irrigation associations, they generally have better managed cooperative structures, and contribute more to farm output, than government-run irrigation associations. He suggests that this is because the cooperation of farmers in large systems with top-down, rigid hierarchies, is often unsatisfactory as many such systems fail to align their operations with the needs of farmers.

The National Water Act (NWA) of South Africa (RSA, 1998) classifies water as a common good and that needs to be used in an efficient, sustainable and equitable way to the benefit of all South Africans. Under the Apartheid system, access to water was based largely on riparian rights, and thus linked to land ownership. Since black South Africans could not own land, except in specially designated "homeland" areas, this system favoured white commercial farmers who used 70% of water resources, mainly for irrigation (Dollar *et al.*, 2010; Kemerink *et al.*, 2011; RSA, 1998). Quantities were neither limited, nor monitored, and there were no water charges. The NWA recognised that water has the

potential to be “a powerful tool for restructuring society” (Dollar et al. 2010) and required that its allocation be used to help to combat rural poverty and underdevelopment (Molobela and Sinha, 2011). Water was designated as a common resource, to which all South Africans had rights. Central government was the trustee, but most water allocation decisions were to be made at provincial and catchment levels in accordance with the principles of IWRM. Water management was to aim for equitable distribution, sustainability and efficiency.

In addition, environmental quality was addressed through the provision of an “ecological reserve”: the minimum flow level needed to ensure ecosystems health. Determining the ecological reserve for each catchment is an integral part of the development of the Catchment Management Plan. However, setting aside water for the ecological reserve implies an opportunity cost, in that the reserve cannot be allocated for other productive uses. An in-depth study of water users in one rural catchment (Kemerink et al., 2011) showed that black rural people questioned the idea of putting aside water for environmental sustainability, and saw it as a primarily elitist concern, driven by white people: “As if they [read Whites] find fish more important than our lives” (Kemerink et al., 2011).

While the right to water by all South Africans is recognised in the NWA and enshrined in the Constitution, this is limited in practice to water needed by households for drinking, washing, and cooking - 25 litres per person per day (NWA, 1998). Stein (2005) also points out that the Bill of Rights guarantees South Africans the right of access to water, and places the onus on the State to achieve this. It also holds that “no provision of the property rights clause may impede the state from taking legislative and other measures in order to achieve land, water and related reform to address the results of past racial discrimination” (Stein 2005:2172). However, the NWA also allows for compensation to be paid to those who may lose water rights because of reduced allocations under the new system, but only if they suffer significant financial losses.

The National Water Strategy originally divided South Africa into 19 Catchment Management Agencies (CMAs), which made up the second tier of water governance (the Department of Water Affairs and Forestry, DWAF, being the first tier). Each area is required to produce a catchment management strategy that sets out principles for the allocation of water rights within the catchment, addresses planning for sustainable water management, and ensures that water resources are “protected, used, developed, managed, conserved and controlled” (NWA, 1998). According to the Water Management Institutions Overview provided by DWAF (c2000:33), “The ability of a WUA to fund itself is vital to its existence”. The administrative, as well as operational, maintenance and capital costs must be covered through water use charges levied on the WUA members. DWAF *may* provide financial assistance to historically disadvantaged members of the WUA (Water Management Institutions Overview, c2000).

The NWA (Act 36 of 1998) and the 1997 White Paper of a National Water Policy for South Africa (RSA, 1997) legislate the establishment of WUAs in South Africa, which make up the third tier of water management and allow for the input of local users. Historically, irrigation boards dealt with the allocation and management water resources for commercial farmers (Mokgope et al., 2001; Brown, 2011; Nash; 2012). The NWA required the transformation of Irrigation Boards into more inclusive WUAs,

with representation from residential, industrial, commercial and small-scale farm users, as well as environmental groups and other interest groups allowed (Brown, 2011; Pegram and Mazibuko, 2003).

The NWA outlines a range of functions to be performed by the WUA, including: to prevent wastage, to protect the resource; to prevent “unlawful” use; to keep watercourses clear; to prevent “unlawful acts” likely to negatively affect water quality; to provide general supervision; to record and regulate watercourse flow; to acquire, operate and manage waterworks; and to supervise and regulate the distribution of water (RSA, 1998).

However, WUAs are allowed to select the range of their intended functions from the list, and/or to propose their own set of functions upon registration, as long as they are consistent with the general principles of IWRM and serve the interests of WUA members. For example, some WUAs in Limpopo Province have conflict resolution mechanisms between users with competing interests as one of their functions, while others do not (Orne-Gliemann, 2008). In addition to the proposed principal functions, WUAs should also perform ancillary functions, such as the provision of training and management services for rural communities if the WUAs have sufficient resource capacity for the successful execution of their principal functions (Pegram and Mazibuko, 2003).

Molobela and Sinha (2011) point out that legislation, by itself, is not enough to reform actual practices: “Legislation which is not preceded by, or does not explicitly involve the adoption of certain policies, is unlikely to be effective”. Such arguments are supported by the findings of Kemerink et al. (2011), who found that black subsistence and small-scale farmers were seen as disorganised (thus had trouble negotiating improved water access), and tended to rely on social grants and expect help from NGOs and Government (a culture of dependency), rather than on their own entrepreneurial capacity. Brown (2013) is highly critical of what she calls the “participatory charade” of IWRM in South Africa. She argues that the power imbalance between mostly white commercial farmers and mostly black small-scale farmers is too large to enable real change through participatory management and that the state should play a larger, more decisive role. Despite their finding that IWRM has the potential to improve water resource governance in South Africa, Dollar et al. (2010) do acknowledge that similar systems of IWRM in other developing countries have not all worked well, largely because they failed to take the institutional, social and political context into account.

Kemerink et al. (2011) observe that commercial farmers have so far been highly effective in maintaining the status quo of the unfair distribution of water. The power of the commercial farmers also stems from the government’s acknowledgement that their agricultural productivity is important to the welfare of the country, and has thus far been cautious about large-scale allocation of water away from the sector (Kemerink et al., 2011). In a study of one CMA, Brown (2013) found that commercial farmers threatened to withhold payment of water levies if their representation on the WUA was not increased. Since the CMA is intended to be self-funding (through the water levies), it is vulnerable to such strategies. At a 2012 meeting of the Parliamentary Monitoring Group, problems raised included that the CMA funding model emphasised the generation of revenue above the provision of services.

Thus, while there has been slow progress on licensing for both commercial and small-scale subsistence farmers, the consequences are much worse for the latter because of the highly uneven access represented by the status quo (Stein, 2005). At the time of writing, no small-scale farmers had been allocated water rights.

### The Sundays River Valley Municipality case study

The Sundays River Valley Municipality (SRVM) is one of nine local municipalities in the Cacadu District, Eastern Cape, South Africa (Figure 1). It is located at an area characterised by wide, fertile flood plains, with its annual rainfall ranging between 250 – 500 mm (SRVM, 2011). It has an estimated population of 54 500 people living in 14 700 households (Statistics South Africa, 2012). The area is largely rural, with the small towns of Kirkwood and Addo still being divided along racial lines. As in many rural areas in the Eastern Cape, poverty is widespread, with 60% of people in the SRVM living below the poverty line and literacy rates of just 55% (SRVM, 2011).



Figure 2: Location of the SRVM in South Africa (Source: Clifford-Holmes et al, 2013)

There is strong irrigation-based economic activity in the catchment as citrus production, mainly for export, is the major industry in the SRVM, and agricultural activities provide about half the jobs in the area (SRVM, 2011). In terms of water distribution, commercial farmers receive the largest amount (90% of water resources), while the Sundays River Valley Municipality receives less than 4% of the allocation for domestic and industrial use (Clifford-Holmes et al., 2012). The Municipality acts as the water services authority and water service provider to non-agricultural water users in the area.

The Sundays River Irrigation Board (SRIB) was established through an Act of Parliament in 1917, with the fundamental aim of constructing Darlington (LSR-WUA, 2014). The government of the time provided funds in the form of a loan to finance the dam building project (LSR-WUA, 2014). The loan repayment was the responsibility of the irrigators who raised funds through paying a canal levy imposed by the

Irrigation Board (LSR-WUA, 2014). The Irrigation Board, made up of elected representatives chosen from irrigators. The SRIB had a constitution, setting out election procedures and their roles and responsibilities, which included ensuring that the canals were well-maintained and operational, management of finances and other administration, and drafting of location-specific policies (Munro, 2014).

In August 2004, the SRIB was transformed into the (LSR-WUA) in terms of National Water Act, 1998. According to the Association's constitution, the objectives of the WUA are to ensure fair, equitable and efficient distribution of water to all members; improve access to water in previously disadvantaged communities; ensure efficient and consistent distribution of water by maintaining infrastructure in order to minimise water loss; promote efficient water use through capacity building; and encourage environmental management within its area of jurisdiction (LSR-WUA, 2003).

Subsequent to transformation, the WUA "retained all of the staff from the Irrigation Board" (Lower SRV WUA, 2014). Furthermore, the LSR-WUA was founded by elected members of the old Irrigation Board (LSR-WUA, 2004). The decision of the LSR-WUA to entrust former SRIB members with LSR-WUA duties was largely influenced by section 98(3)(c) of the NWA of 1998, which states that "any person holding office with an [irrigation] board when this Act commences continues in office for the term of that person's appointment".

The problem of disrupted municipal water supply is prevalent in the catchment with frequent interruptions to supply of municipal water (D'hont *et al.*, 2013). There is also a perception that the wealthier town of Kirkwood is supplied first and more generously than surrounding settlements of poorer, mainly black populations, who often face interrupted supply over weekends for which the municipality (responsible for the supply of potable water) and the WUA (responsible for the supply of untreated bulk water to the water treatment works) are blamed. The municipality is incorporated as a "user" by the LSR-WUA, and hence it is represented by a nominated member who serves in the Management Committee of the Association (LSR-WUA, 2003; Clifford-Holmes *et al.*, 2013). One of the contributory factors to this challenge is the lack of a contract between the LSR-WUA and the SRVM necessary for governing their operations (D'Hont *et al.*, 2013; Clifford-Holmes *et al.*, 2013). According to Clifford-Holmes *et al.* (2013: 6), the refusal of the LSR-WUA to formulate a binding contract between itself and the SRVM is based on the argument that,

"[T]he WUA treats all users the same, and does not require a contract between itself and a particular user - interactions are mandated by the constitution, facilitated and carried out by the WUA staff and overseen by the Management".

Moreover, the current SRV Municipality representative neither attends the Management Committee meetings regularly, nor was he elected based on qualifications other than his knowledge on "how to handle those white commercial farmers" (Clifford-Holmes *et al.*, 2013: 7) currently serving in various capacities in the LSR-WUA.

In their research of the area, D'hont *et al.* (2013) found that the frequent interruptions to supply to black townships over weekends had a technical, rather than political, explanation. Simply stated, the

WUA does not operate over weekends or public holidays. It is thus the responsibility of the users (agricultural and municipal) to store water sufficient for their needs over these periods. The growing population in the area has meant however, that the municipal reservoirs hold insufficient water to meet supply over weekends. To prevent damage to the municipal pump, the pump cuts out if reservoir levels fall to less than 20%. However, Kirkwood town is at a significantly lower altitude compared to the surrounding townships, so they continue to receive water via gravitational feed. This has led to the perception that wealthier residents who live in the town receive preferential treatment compared to poorer communities and commercial farmers (D'hont et al. 2013). Resolution of the problem has been delayed: The municipality argues that the WUA should pump water over the weekends; the WUA argues that the municipality should increase its storage capacity, since the WUA can deliver (pump) the required water volume during a normal working week. *Agricultural water supply*

The National Water Act of 1998 calls for a “balanced representation in terms of the various categories of users” (RSA, 1998). However, Kemerink et al. (2013) point out that the concept of balanced representation proposed by the NWA remains loosely defined: it is not clear whether the categories referred to by the NWA mean demographic groups, specific gender groups or to a mix of small-scale black farmers and commercial farmers.

The LSR-WUA is divided into seven wards: six for commercial farmers (who each have one emerging farmer representative) and one for emerging farmers (three representatives). However, in his Chairperson’s Overview for financial year 2013/2014, Mr Myers, the Chairperson of LSR-WUA noted that they are yet to meaningfully expand the representation of emerging farmers on the Managing Committee of the Association (LSR-WUA, 2013). He also noted that that the WUA has yet to establish and promote its communication with emerging farmers in order to ascertain long-term mutual benefits between the farmers and the Association (LSR-WUA, 2013). As one black, emerging farmer from the area put it,

“Having a representative within the Association gives us [emerging farmers] the voice and the platform to communicate our concerns. It also helps because we get mentorship in various forms. But we [emerging farmers] do not have the power to influence the decisions on [water] charges and other things made by commercial farmers. Remember, big commercial farmers run the Association” (Emerging Farmer, Pers. Comm. 2014).

WUAs are required to be self-funding through the collection of various levies on behalf of the Department of Water Affairs, such as water resource management charges, consumptive use charges, and water research levies. While the LSR-WUA has experienced a growth in its total expenses over the past four years, the Association has maintained a positive financial balance, with net income, from the collection of water charges, growing consistently. Sound financial management can be attributed to careful budgeting and the practice of keeping “reserve funds” to cover large costs, such as canal replacement (LSR-WUA, 2014).

While emerging farmers report their struggle to access and pay for water (Emerging Farmer, Pers. Comm. 2014), the WUA has more incentive to focus on “efficiency”. In his 2011/2012 Chairman’s

Overview, Mr Myers highlighted that the Managing Committee of the LSR-WUA had adopted new governance and compliance systems which were not going to result in reduced costs, but which would “certainly serve to contribute to more effective control and general efficiency of our operation” (LSR-WUA, 2011).

### **An analysis within the Framework of New Institutional Economics**

Using Ostrom’s (2007) method of diagnosis, and with reference to other theory within institutional economics, the following section attempts to unpack some of the lower-level “symptoms” that have led to various Interactions (I) and resulted in the problematic outcomes (O) being experienced in the LSRV municipality with regards to water allocation.

An interesting feature of the SES is that there is currently no actual shortage of raw water in the area because of the water transfer scheme from the Orange River. Research on the water usage of commercial farmers in the area by Munro (2014:103) found that “the 9000m<sup>3</sup> allocation that farmers currently receive is more than sufficient to meet farmers’ irrigation requirements for all citrus cultivars and for all irrigation systems even within dry years” and that the 10-year average use was 6298 m<sup>3</sup>/ha. Despite this, and the additional 38 million m<sup>3</sup> of water allocated to small-scale black farmers in the area by DWAF (2005), water is still not being equitably distributed. Currently experienced problems with water supply are thus being caused primarily by a lack of effective governance Systems (GS), and by the attributes of users (U), rather than by supply constraints of the resource itself.

One set of explanation has to do with User attributes (U) that can be explained through path dependency and the lack of incentives to change (Pierson, 2000; Woerdman, 2004). Before the establishment of the WUA, there was a strong formal existing institution, in the form of the old Irrigation Board. When the new IWRM system and WUA was implemented, change was highly superficial, mostly consisting of a change in signage. No additional staff, training or resources were provided. Commercial farmers had strong vested interests in maintaining the status quo, since their business depended on it, and they had invested financial capital in building the irrigation canals and dams. This resulted in strong path dependency of the institutional way of doing things, including decision-making.

There was also no incentive for those in positions of power to change the rules of the game in any meaningful way to include emerging farmers. A change in institutional structure is always associated with risk and uncertainty, and dynamic transactions costs as rules and norms are reformulated (Saleth and Dinar, 2004; Pagan, 2009). Since no additional resources or support were provided by provincial or national government, the WUA focused on maintaining financial sustainability, largely through water charges to commercial farmers, rather than risk extending current services to improve equity and efficiency. Commercial farmers are still the major financial contributors to the WUA, since they are the major users of water, and can pay for it.

An important part of the problem is that emerging farmers were faced with significant transactions costs in organising themselves in order to have effective representation on the WUA. This difficulty, along with the lack of human capital and financial resources, emphasised power differentials. Emerging farmers, and to some extent, municipal officials, have essentially remained outsiders in both the formal and informal decision-making processes of the WUA. Because of the long history of use and dominance

of commercial farmers in the WUA, norms and rules for decision-making have essentially remained the same.

There are also problems in the Governance System (GS). There is a fundamental institutional mismatch between the developmental values underlying national water policies and IWRM and the “user pays” principle on which WUA financing is based. As in the case of Ugandan forest management (Bartley et al. 2008), the system provides incentives for local-level managers to focus on short-term financial aims, rather than median and longer-term development goals. Thus, despite the window of opportunity for a system-wide institutional reform (Helderman, 2007) that the new NWA provided in post-apartheid South Africa, the funding model entrenched unequal power relations between commercial and emerging farmers in rural communities, rather than helping to spread the benefits more equitably.

The lack of formal contracts between the WUA and other stakeholders, particularly the municipality, meant that clear areas of responsibility, enforcement of agreed obligations, and sanctions for poor performance, were not in place. This greatly increased transactions costs associated with continual negotiation and led to conflict in which no one accepted responsibility for service delivery failure. This was highlighted in an interview with a representative of the WUA:

“One of the main challenges faced with the stakeholders in the Valley is ‘blame game’. Because there are so many institutions and people involved, it is very easy to play the blame game. That is why there is a lot of, ‘We didn’t do anything wrong, you are wrong and because of you we don’t have the water!’ in the Valley.”

As Ostrom (2007:15185) points out, “Self-organized monitoring and enforcement have repeatedly played important roles in explaining successful efforts at collective action”. With no formal contract in place, enforcement is much more difficult and costly. The long history of racial segregation has also meant that the community is still divided along racial lines, and has low levels of trust, or shared norms. This has exacerbated the problem further, and contributed significantly to the outbreaks of violent protest seen in 2014, and the mistaken conclusion that it is because some users have access to water that other users do not – quite untrue, in the sense that there is no shortage of untreated water.

## **Conclusions and Recommendations**

The challenges faced in sustainably managing South Africa’s water resources to the benefit of all is one of the most pressing research questions (Siebrits, 2014). Integrated Water Resource Management (IWRM), in which representatives of all water users, through Water Users Associations (WUAs) are envisaged as contributing to management decisions has been found to work well in some countries (Orne-Gliemann, 2008). However, many years after the adoption of the National Water Act (1998), some user groups, particularly black, small-scale farmers and even some municipal users, still have access problems (Molobela and Sinha, 2011; Kemerink et al. 2011). This research uses a case study approach to examine the way in which the Sunday’s River Valley WUA in a rural area of the Eastern Cape Province of South Africa, works.

As found in many other cases, existing institutions are long-lived and resilient to change (Pierson, 2000; Woerdman, 2004). While strong Irrigation Boards allowed water governance to be “up and running” faster than in areas without existing institutions - the “bricolage” theory (Sehring, 2009) - they also

resulted in a “business as usual” approach, with a focus on financial sustainability and in meeting the needs of existing stakeholders. For deeper change to occur, significant financial and human capital resources are needed to overcome reluctance to take risks and deal with uncertainty on one side, and the dynamic transactions costs of change on the other.

There need to be clear incentives (Saleth and Dinar, 2004) for existing stakeholders to “make space” for the emerging farmers to have a real say in water governance, and to counteract power differentials and path dependency (Helderman, 2007). A key principle of effective institutional governance is a clearly defined contract that (i) sets out the roles and responsibilities of each party, (ii) defines accountability mechanisms and monitoring methods, (iii) deals with conflict in a low-cost way, and (iv) applies appropriate sanctions for non-compliance (Dietz et al. 2003).

Leadership and change management may need to come, at least initially, from outside (provincial or national level). The current system allows significant flexibility, with WUA able to select and design their own range of functions and responsibilities (Orne-Gliemann, 2008). A variety of institutional types may need to be designed in order to take into account local needs and resources. Key elements of good water governance set out in the South African National Water Resource Strategy (2012) are “coherence”, “participation” and “equity”. There also needs to be greater coherence in the underlying values of policy at local and national level, especially related to financing. The current model entrenches existing power imbalances through the “user pays” system.

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