



A review of formal institutions affecting water supply and access in Botswana



Patricia K. Mogomotsi^{a,*}, Goemeone E.J. Mogomotsi^b, Dimpho M. Matlhola^a

^a Okavango Research Institute, University of Botswana, P/Bag 285, Maun, Botswana

^b Department of Legal Services, Office of the Vice Chancellor, University of Botswana, P/Bag 0022, Gaborone, Botswana

ARTICLE INFO

Keywords:

Sustainable water management
Institutions
Formal institutions
New institutional economics
Efficiency
Effectiveness
Botswana

ABSTRACT

Over the years, many countries across the world have increasingly experienced the collapse of their ecosystems, leading to an elevated increase on the demand for freshwater resources. Botswana is not an exception. The problem of disrupted potable water supply is widespread across the country. However, the physical shortage of water in the country is arguably coupled by lack of effective and efficient water supply and management institutions and water infrastructure. Most of the research on water scarcity in Botswana is mostly inclined towards physical water scarcity, while little is investigated on how the design of institutions for water management in developing countries leads to water scarcity. Furthermore, the premises of most research is neoclassical economics ideas, thereby offering solutions as developing and/or reforming water markets and water pricing mechanisms, among other findings. This paper analyses potable water supply and access in Botswana within a new institutional economics paradigm. The study examines key features of water institutions in Botswana on how they affect water supply and access, applying new institutional economics fundamentals. The study extensively uses various secondary data sources including weather and climate reports, policy documents, maps and charts and survey data, among others. The paper argues that to achieve effective water allocation in Botswana, there is a need to balance social and environmental water resource needs through water policies and other statutory enactments, as well as the crafting of practical management strategies. The country, therefore, requires not only a swift institutional transformation in the water sector, but also needs practical governance structure necessary for implementing integrated water resources management and driving water resources towards sustainability.

1. Introduction

The fundamental roles played by water resources in human survival and economic activity, coupled with the resources' lack of substitutability define the incontestable position of water as one of the main integral drivers of socio-economic advancement. Notwithstanding, over the years, the capacity of water resources to generate socio-economic benefits has been compromised by such factors as institutional inefficiencies, population growth, governance failures, ineffective policies, climate change, industrialisation and unsustainable development pathways among other factors (Global Water Partnership (GWP), 2012). The scarcity of water resources consequently translates to disruptions in water supply.

Botswana is one of the countries faced with water scarcity (Alao, 2007). The key geographical features of low rainfalls and semi-arid conditions contribute to the scarcity of water resources in Botswana. The problem of water scarcity, and by extension disrupted potable water supply, is widespread across the country. According to

Botswana's draft National Water Policy (2012: 6), “the nation's water resources are characterized by wide spatial variability, extreme scarcity, and a high dependency on internationally shared and trans-boundary waters. Most of the water is located in the northwest, far from the population centre in the eastern corridor.” However, the physical shortage of water in Botswana is arguably complemented by lack of efficient and effective water supply and management institutions and water infrastructure.

The policies and legislative framework the country has adopted to manage, govern and distribute water resources play a vital role in directing water use and supply towards sustainability (Global Water Partnership (GWP), 2012). While the Government of Botswana, though rhetorically, embraces the general and international principles of integrated water resources management (IWRM), the country's water allocation decision-making process has moved from a decentralised and customary law basis to a centralised and common law basis (Colman, 2013). IWRM is defined as a “process which promotes the coordinated development and management of water, land and related resources in

* Corresponding author.

E-mail address: pmadigele@ori.ub.bw (P.K. Mogomotsi).

order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystem” (Global Water Partnership (GWP), 2000:22). This is in part due to the evident absence of institutional arrangements necessary for supporting the implementation of IWRM (Setlhogile and Harvey, 2015). For instance, Botswana's Water Act enacted in 1968 is yet to be revised and the Water Policy of 2012 is yet to be implemented.

Over the years, the field of institutional economics has focused on developing paradigms needed for evaluating problems of resource mismanagement, misallocation and scarcity from an institutional perspective (Saleth and Dinar, 2004; Rossiaud and Locatelli, 2010). This field of economics can be used to define the role of institutions in managing water scarcity as well as in creating a balance between diverse and multiple sectoral interests for water resources (Saravanan, 2008). The institutional analysis framework focuses on evaluating three main pillars of institutions, namely, laws, policies and administration (Bandaragoda, 2000). Institutions can be both formal and informal. Apart from written laws, rules and procedures, the institutional framework can be formed by informally established procedures, norms, practices and patterns of behaviour. According to Bandaragoda (2000), most water-related rules are designed to constrain the socially undesirable behaviour by individuals and groups in the distribution and use of water resources. How institutions contribute to, or affect, performance is crucial in identifying and assessing the needs for institutional change, depending on the current levels of performance. Water supply systems and access to water require effective institutional arrangements and governance to sustain services and guard against failures.

Most of the research on water scarcity in Botswana, as in other developing countries, is mostly inclined towards physical water scarcity, while little has been investigated on how the design of institutions for water management in developing countries leads to water scarcity (Swatuk and Rahm, 2004). Research indicates that to address the emerging crisis in water resource management, water institutions must address major challenges of scarcity, efficiency, equity, environment, and financial viability in water resource management (Gandhi and Namboodiri, 2002). Furthermore, in Botswana, research is mostly premised on neoclassical economics ideas, thereby offering solutions as developing and/or reforming water markets and water pricing mechanisms, among other findings. However, as argued by Rockstrom et al. (2010: 4), the Integrated Water Resources Management (IWRM) principle “limits the applicability of neoclassical economic principles”. This paper, therefore, analyses potable water supply and access in Botswana within a new institutional economics (NIE) paradigm.

1.1. An overview of institutions and new institutional economics (NIE)

Institutions are conceptualised as ‘rules of the game’ that direct the governance and/or management of common pool resources in order to avoid tragedy of the commons (Hardin, 1968; North, 1991). Institutions are designed to influence human behaviour by either restraining or enabling human choices. There two main types of institutions, namely, formal institutions - which have their foundation in the laws and structures of organised society, and informal institutions - which often spontaneously develop to address specific issues and problems in the society (Williamson, 2000; Picciotto, 1995). These institutions can either operate at macro level or micro level.

Formal institutions are conceptualised as all principles, procedures, agencies and actions that are involved in controlling the instrument of the state in an organised manner (Lauth, 2000). They are often codified against clauses and laws that are endorsed at multiple levels largely by state agencies (Lauth, 2000). In the context of water resources, formal institutions can be understood as national statutes, directives and laws that are designed to regulate the use and management of water resources. The success of these institutions in ensuring sustainable water resource use and management is argued to be dependent on the

effectiveness of their enforcement mechanisms (Yeboah-Assiamah et al., 2017). Formal water resource institutions serve as a compass for directing the actions and inactions of both individuals and groups within the jurisdiction by defining the extent of access, the permissible range as well as the cost of deviation.

NIE is a field of economics which seeks to demonstrate how formal and informal institutions such as contracts, property rights, firms and other social arrangements may lead to positive economic growth (Williamson, 1998). The core distinction between the Old Institutional Economics (OIE) and NIE is that OIE fails to embrace the concept of self-interest, thereby earning itself a label of “anti-theoretical” (Castle, 1999: 297). Rationality and the self-interest hypothesis from the neo-classical economics framework are applied in the public choice field as well as in NIE (Castle, 1999; North, 1990, 1991; Rutherford, 1995, 2001).

Efficient economic and resource management forms the foundation of NIE (Brousseau and Glachant, 2002; Lieberherr, 2009). According to new institutionalism, the institutional environment should set a foundation that allows for the attainment of efficiency in institutional arrangements through the provision of structures that enable collaboration and cooperation (Brousseau and Glachant, 2002; Ostrom, 2005; Menard and Shirley, 2014)..

1.2. Water issues in Botswana

Botswana is a semi-arid landlocked country (Department of Meteorological Services, 2009), with most of the population concentrated on the eastern part of the country. Setlhogile and Harvey (2015) noted that the eastern part of the country has higher levels of rainfall than the western part. The mean annual rainfall varies from a maximum of over 650 mm in the extreme northeast area of the Chobe District to a minimum of less than 250 mm in the extreme southwest part of Kgalagadi District (Fig. 1). However, due to the persistent El Niño conditions, the highest rainfall recorded in the 2014/15 period was that of Francistown at 398.3 mm (Statistics Botswana, 2016). Botswana's water sources consist primarily of surface water (in rivers, pans and dams of various sizes) and underground water in aquifers some of which are of a fossil nature with no recharge.

Furthermore, groundwater resources are not only unevenly distributed over the country, but are also limited, both in quantity and quality (National Water Policy (NWP), 2012). Overall, the country's water resources are highly dependent on *trans*-boundary water and are widely spatially variable. The shared river-basins are Okavango, Zambezi, Orange-Senqu and Shashe-Limpopo. Because of its flat topography, Botswana's storage capacity is one of the lowest in the region (United Nations Development Programme (UNDP), 2017). The total dam capacity in the country is 800 cubic megametres (Mm³), while the capacity of developed underground resources is at 131 290m³/day (UNDP, 2017). It is therefore imperative for the populace to embrace sustainable water use.

In Botswana, surface water is sourced from nine (9) dams, namely; Bokaa, Dikgathong, Gaborone, Lotsane, Nnywane, Ntibale, Shashe and Thune dams. However, these dams do not meet the local demand for water resources. In the year 2000, the demand for water resources was estimated to be 193 Mm³ per annum (Department of Water Affairs (DWA), 2013). The demand is forecast to exceed 280 Mm³ by 2030 (DWA, 2013). In order to narrow the supply-demand gap for water resources, Botswana is importing water from Molatedi Dam in South Africa (Statistics Botswana, 2016). In 2009, the Government of Botswana implemented the following reforms in the water sector to address water challenges: 1) dismantling and re-arrangement of water management institutions; and 2) Water Utilities Corporation (WUC) awarded the responsibility to supply water to all settlements.

The WUC is the main supplier of potable water resources in Botswana. WUC is a parastatal organisation wholly owned by the Botswana Government. The corporation was established in 1970 in

Download English Version:

<https://daneshyari.com/en/article/8912372>

Download Persian Version:

<https://daneshyari.com/article/8912372>

[Daneshyari.com](https://daneshyari.com)