



Understanding the factors constraining the implementation of watershed management in Nigeria

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Received: 2 September 2017 / Accepted: 12 August 2019 / Published online: 26 August 2019
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Abstract

This paper investigates the factors constraining the implementation of watershed management in Nigeria. A case study of two river basins was analysed using institutional theory as a lens. Findings revealed that regulative, normative and cognitive elements of institutions were responsible for the inability of the RBDAs to implement watershed management. To improve implementation, the paper suggests the need for legislative reform. The reform should define and illustrate how to operationalise watershed management. The findings of this paper offer useful lessons at both policy and practice domain to those other countries wishing to realise sustainable watershed management.

Keywords Watershed management · Institutional theory · Water resources · Nigeria

Introduction

Water is crucial to sustainable socio-economic development and has a direct impact on health, ecological functioning and the achievement of international development targets (Federal Ministry of Water Resources (FMWR) 2016). Nigeria's water resources potential is estimated at 333×10^9 cubic metres (m^3) of surface and $156 \times 10^9 m^3$ of groundwater, while the average precipitation is 1150 mm (FMWR 2014). In another estimate, Nigeria's total renewable water resources are estimated at $375 \times 10^9 m^3$ per annum. Out of this, 287×10^9 is captured in the Nigeria's watersheds. This indicates that roughly 24% of Nigeria's surface water resources come from neighbouring countries (FMWR 2014). Because of population pressure, internal renewable water availability per capita decreased from 2497 in 1991 to $1213 m^3$ in 2014 (Food and Agriculture Organisation of the United Nations (FAO) 2016). This is expected to decrease further to $1042 m^3$ by 2020 (Nigeria Integrated Water Resources Management Commission (NIWRMC) 2011). Increasing socio-economic development would further increase per capita water use and competition among water

uses and users. Another factor exerting pressure on freshwater availability is pollution from domestic and industrial waste and wastewater which to a large extent are still being discharged untreated into open spaces and drains, streams and other watercourses (FMWR 2016). In addition to this, in the low-lying and coastal areas of Nigeria, flood and salt water intrusion are also causing reduction to freshwater availability through quality degradation (FMWR 2016). As a result of seasonal and spatial rainfall variability, many streams and rivers dried up completely between December and March. The situation of inadequate freshwater availability is worse in the Northern part of Nigeria where people walk several kilometres in search of water. This situation is also growing in the southern part (except the riverine areas) of the country especially during the dry season. Change in diet, increased socio-economic development, rural–urban migration, and uncoordinated inter-sectoral planning are all exerting new pressures on Nigeria's water resources.

In Nigeria, roughly 52.7 million people, representing 31% of the population, lacked access to improved water sources in 2015 (Adamu 2016; FMWR 2016). Recent projection suggests that by 2025, it is expected that 100% of the population will have access to safe drinking water, 3.1 million hectares of farmland irrigated, and 10,000 megawatts (MW) of electricity will be obtained from hydro sources, while the population is expected to reach 225 million (FMWR 2011). Consumptive water demand (for water supply, irrigation, aquaculture, and livestock) is projected

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to increase from $5933 \times 10^6 \text{ m}^3$ in 2010 to $16,585 \times 10^6 \text{ m}^3$ in 2030 (FMWR 2014). Besides this, the Sahara desert is increasing southward at the rate of 0.6 square kilometres (km^2) per annum and urbanisation increasing at an estimated rate of 4% per year (FMWR 2011). Drawing on a-105 year temperature and rainfall data (from 1901 to 2005), Akpodiogaga and Odjugo (2010) found that temperature increased by 1.1 degree Celsius ($^{\circ}\text{C}$) for the period, while rainfall decreased by 81 mm. This suggests that Nigeria is expected to get warmer and drier. Generally, with an increase in temperature, water use in activities such as domestic, industrial, recreation/tourism, environment and agriculture will rise which will have negative impacts on freshwater resources (Adeoti et al. 2014). The combined impact of climate change and uncontrolled deforestation leading to increasing desertification, drought, and degraded land and water environments might be at the centre of the current Fulani herdsman–farmers' clashes in Nigeria (Odogwu 2018). Recent economic projection suggests that the real Gross Domestic Product (GDP) is to grow by 4.62% on the average over a plan period of 2017–2020 from a contraction of 1.54% in 2016 (Federal Republic of Nigeria 2017). Also, most industrial activities need water as a crucial input for production, and factories have been known to close down in some parts of Nigeria due to a lack of water, leading to job loss and increase in unemployment (FMWR 2016). Therefore, given the possible constraints of water on socio-economic growth and development, this suggests the need for an effective watershed management in Nigeria. However, a review of the literature reveals that the River Basin Development Authorities (RBDAs) have focussed on water resources development, especially on the construction of dams and the development of irrigation schemes (Carter 1995), neglecting watershed management (Sakwa 1998; Commission of the European Communities 2006; FMWR 2014, 2016).

The question addressed by this paper is: why are the RBDAs in Nigeria unable to implement watershed management despite pressures on water resources? Given the limited literature on this issue in Nigeria, this paper addressed this question using a case study approach and institutional theory as the analytical lens. A case study approach provides a useful entry point for exploring an area where little or no previous research has been done (Hu et al. 2007), while institutional theory is suitable for exposing the factors constraining the implementation of an action. Considering that the RBDAs exist within an open system, in addition to their internal environment, the activities of the RBDAs would also inescapably be influenced by its external environment (Hoffman 2001). Therefore, an understanding of the factors constraining the ability of the RBDAs to implement watershed management would be of value to governments/policy makers, river basin operators, practitioners and researchers

in the water sector in Nigeria and elsewhere. Next, this paper clarifies some terms.

Definition of terms

Watershed management is a term being affected by multiple meanings. Swallow et al. (2002) refers to watershed management as activities that focused on the protection of the upland areas that form the headwaters of streams and rivers, while the Federal Ministry of Water Resources and Rural Development (FMWRRD) (undated) defines watershed management as the coordinated use and integrated management of land, water, vegetation and other physical resources and activities within a watershed to ensure minimal degradation of these resources and other features of the environment. According to Khan (2005), watershed management is an approach which aims at natural resources planning to serve human socio-economic needs. FAO (2017) in turn refers to watershed management as any human action directed at ensuring the sustainable use of watershed resources. Although there seems to be a common focus in the various definitions, there is little agreement on specifics. This suggests that no universal definition exists. The various definitions are based upon different conceptions of the purpose and how a watershed is to be managed.

This paper therefore sees watershed management as an approach to ensure minimal degradation of watershed resources, minimal soil erosion, and minimal impact on water yield and quality for human and ecosystem use. It defines watershed management as protecting and improving the quality of soil, land and water and other natural resources (for example, vegetation, flora and fauna, wildlife habitat, wetlands, visual aesthetics, etc.) within the watershed for human welfare and ecosystem functioning. According to Swallow et al. (2002), the term “watershed management” is usually used to refer to both the management of both watersheds and catchments.

Another term that needs to be clarified for a better understanding is institution. Institutions are rules, and rules are defined within the context of this paper as assumptions-in-use enabling or constraining social actors and/or organisational behaviour and performance. While assumptions can be decreed into law, a law or a common practice becomes a rule or an institution if it guides social actors and/or organisational action and performance (Hodgson 2006).

The elements of institutions

The emergence and application of various institutional perspectives have been described by different authors (for example, Ananda et al. 2006; Ostrom 1991, 2011; Scott 1993, 2004). In short, there are two broad streams of institutional perspectives. The first is the political science and economic

perspective (or institutions-as-rules) and the second is the sociology and organisational perspective (or institutions-as-norms). The two streams, which are complimentary (Bruton and Ahlstrom 2002), share the notion that humans are limited in their cognitive and information processing abilities, hence the need for institutions (Bruton et al. 2010). Apart from this, they also have their differences. Building on the work of DiMaggio and Powell (1983, 1991), Meyer and Rowan (1991) and North (1990), Scott (1995, 2003) integrates these two streams into regulative, normative, and cognitive institutions, and asserts that they are capable of influencing the goals, performance, behaviours and actions of organisations. The Scott's model therefore serves as an umbrella concept which integrates various institutional perspectives and approaches from a wide variety of research disciplines such as economics, sociology and anthropology (Kshetri 2007; Scott 2004). In support, the literature also argues that the environment of an organisation comprises of all the three aspects, although in varying degrees (Boon et al. 2009; Hoffman 1999). Institutional theory therefore asserts that the ability of an organisation to implement an action is not immune from the forces prevalent in both the internal and the external environments in which the organisation functions. Despite the importance of institutional theory (Poirier and de Loe 2010; Cortner and Marsh 1987), its application to water resources management research is rather thin. Institutional theory has been used to expose the institutional elements influencing the implementation of social actions (Braunscheidel et al. 2011; Teo et al. 2003) and understand organisation–environment interactions (Bada et al. 2004). The following paragraphs discuss the three elements of institutions in more detail which has implications for the development of the conceptual framework, data collection, analysis and interpretation.

The regulative elements represent frameworks provided by formal and informal institutions. The formal institutions include frameworks provided by laws, regulations, government policies, executive orders, court orders/rulings, guidelines and standards and other instruments (such as international treaties, conventions, etc.) which suggest organisational action and ultimately how they must behave. The informal institutions on the other hand consist of traditional laws, taboos, customs and traditions guiding social interactions which may not have been codified but are generally held by people to guide action and performance. The regulative process involves the setting of laws and regulations as well as their enforcement (Ahlstrom and Bruton 2002). Organisations accede to regulative frameworks for reasons of avoiding penalty for noncompliance (Hoffman 1999; Edelman and Suchman 1997). In the context of this paper, the regulative elements consist of extant legal and regulatory frameworks in Nigeria as well as informal frameworks that guide the operations of the RBDAs. Besides the

RBDAs, there are regulatory bodies (e.g., the Federal Ministry of Water Resources (FMWR)) and other water-related national and international organisations operating at the river basin level in Nigeria. The legal and regulatory instruments suggesting the involvement of these bodies in the water resources sector in Nigeria are also seen as part of the regulative elements that can influence these organisations to behave in certain ways and their direct or indirect effect on watershed management.

The normative elements are less formal or codified. They define the roles or actions that are expected of individuals (Scott 1995). Normative institutions are composed of values and norms (Bruton et al. 2010). Organisations often conform to these because they dictate social values, ethics and role expectations which organisations then internalise (Edelman and Suchman 1997). The basis of conformance is thus derived from social obligations, rooted in social necessity or in what an organisation should be doing (Bruton et al. 2010). A non-conformance can result in societal and professional sanctions (Kshetri and Dholakia 2005). The carriers of normative elements of institutions include the public, news media, customers, suppliers/contractors, labour unions, the governments, consultants, organisations within the same field, departments within the same organisation, trade and professional bodies, donor organisations, self-help groups, non-governmental organisations (NGOs), international organisations, and community-based organisations (CBOs). These bodies can use social requirements to induce certain organisational behaviour or curb the implementation of others. For the purpose of this paper, the normative component focuses on values and norms (which specify things that are acceptable, how things should be done, and appropriate ways to pursue them) including role expectations held by the RBDAs, other water-related organisations, users of basin water resources, and the society which can constrain the implementation of watershed management.

The cognitive elements are the most informal, and are most closely associated with, but not limited to, culturally supported habits that influence performance and actions. They consist of shared ideas that constitute social actors and actions as well as the nature of social reality and create the frame through which meaning is made (Hoffman 1999; Scott 1995). As a consequence, the internal interpretative processes of social actors are shaped by taken-for-granted perceptions, cultural frameworks, as well as beliefs (religion is also seen as a part of the belief systems) and conceptions that are established among individuals through social interactions (Scott 1995). Organisations conform to cognitive institution because it makes certain forms of action seem more sensible, natural, credible, and appropriate than others. Although carried by individual members of an organisation, conformance to cognitive elements of institutions is due to habits, and organisations and/or individuals may not even be

aware that they are conforming (Scott 1995; Hoffman 2001). In the context of this paper, the cognitive elements of institutions include widely held or shared beliefs, cognitive scripts and moral templates, as well as taken-for-granted assumptions and common logics/practices which may constrain the implementation of watershed management in Nigeria.

According to Bruton and Ahlstrom (2002), culture is a principal means through which the cognitive and the normative elements operate and influence behaviours. While the cognitive institution is resistant to change, the regulative and the normative elements of institutions are prone to change. The three elements of institutions form a continuum moving from the legally enforced or conscious conformity (regulative) to the taken-for-granted or unconscious conformity (cognitive) (Hoffman 2001). However, according to Edelman and Suchman (1997), organisations also look up to the extant legal and regulatory instruments for both normative and cognitive guidance.

Conceptual framework

In Nigeria, the RBDAs are parastatals. Parastatals are defined by the Public Service Rules of 2008 as government-owned organisations established by statute to render specified services to the public. This suggests that the RBDAs are formal organisations whose actions including their functional mandates are specified by relevant legal and regulatory instruments. Notwithstanding this, since organisations are embedded within an environment where they seek resources (for example, personnel, materials, energy, knowledge, technologies, etc.), support and legitimacy, it is expected that the RBDAs will also respond to other rule-like situations operating within their internal and external environments. Therefore, organisations actions are either enabled or constrained by (a) rules (formal and/or informal) (Scott 1995; Judge et al. 2008; Oskarsson et al. 2009) and/or (b) technical elements (Scott 1992). Rules or institutional elements may originate from within or from outside the organisation. An example of an institutional element that can originate from within an organisation is the organisational bylaw. Those that can originate from the outside of an organisation include the Constitution of the country, international treaties, conventions, national/international guidelines and standards, etc. Examples of technical (or non-institutional) elements can include raw materials, energy, water infrastructures. Similarly, technical elements can also have internal and external orientations. While both are always present, although in varying degrees (Hoffman 2001), scholars (Scott 1995; Kirby and Sebastian 1998) assert that both institutional and non-institutional elements can constrain organisations in the implementation of a particular action. Drawing on the above and the narrations in this section, the conceptual framework [for the theory about

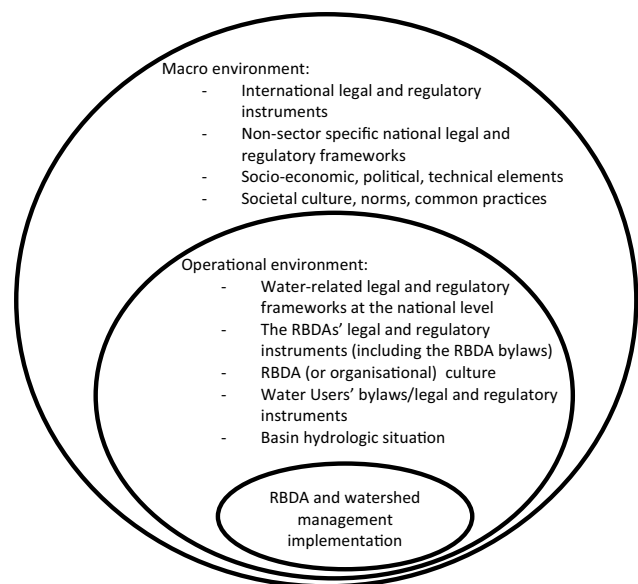


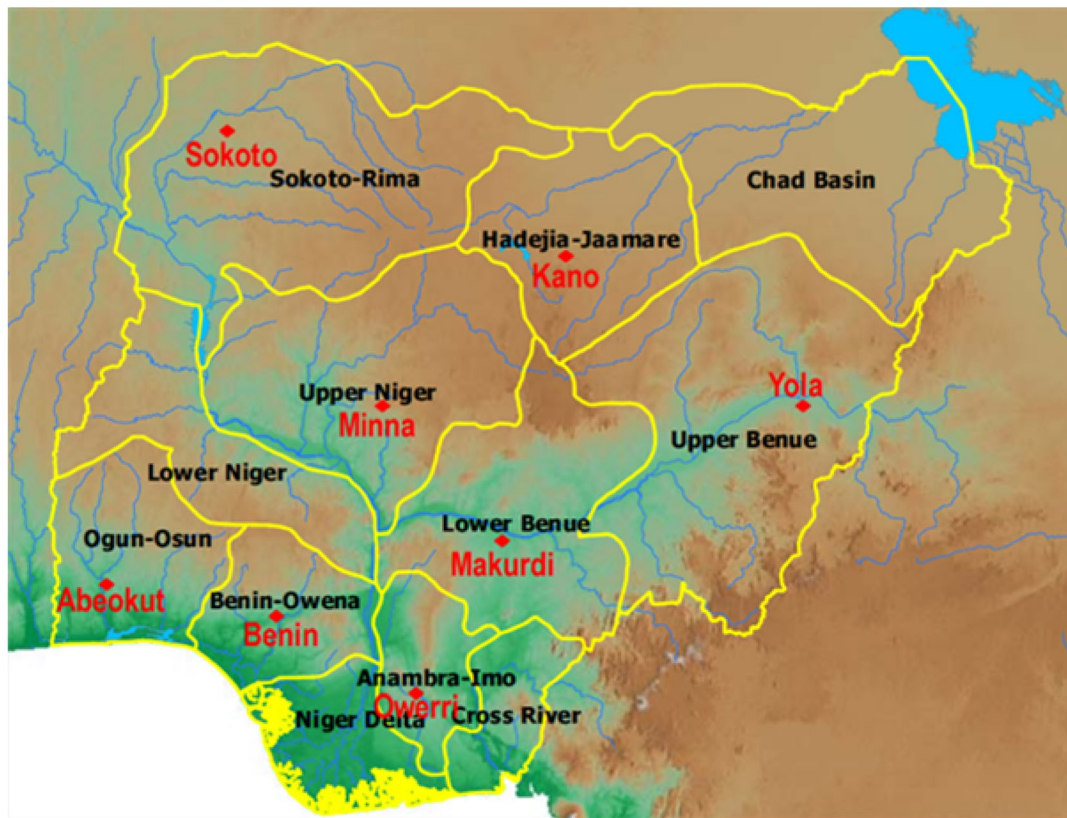
Fig. 1 The conceptual framework illustrating the environments within which the RBDAs are to implement watershed management

what could be happening (Robson 2002)] underpinning the basis of understanding the factors constraining the implementation of watershed management in Nigeria is illustrated in Fig. 1. This framework suggests that the ability of the RBDAs to implement watershed management is dependent on the rules and the technical elements operating within the macro (or external) and the operational environments of the RBDAs. Exposing these factors enables this paper to understand the underpinning elements of institutions and the environments within which they are embedded constraining watershed management in Nigeria. For this study, the conceptual framework has further helped to guide data collection, analysis and interpretation.

Methodology

Case study areas description

To realise the aim of this study, two river basins, the Benin–Owena River Basin (B-ORB) and the Ogun–Oshun River Basin (O-ORB), were purposively selected (Fig. 2). The selection of these river basins was favoured by ease of access to information and familiarity with the dominant culture of the people in the basins. More importantly, the selected river basins have some important features which make implementing watershed management crucial: (a) human population in both river basins is the highest in Nigeria. This population, which still excludes that part of Delta State in the B-ORB, was estimated at 35.9 million in 2010 and expected to reach 57.8 million by 2030 (FMWR



S/No.	Item	O-ORB	B-ORB	Source(s)
1.	Basin area (km ²)	66,264	59,787.3 ¹	O-ORBDA (2011a)/ B-ORBDA (1981)
2.	Population (x 10 ³ , 2010 estimate)	24,526	10,201 ²	FMWR (2012a)
3.	Average annual rainfall (mm)	1,565		FMWR (2012a)
4.	Mean annual air temperature (°C)	26.4		FMWR (2012a)
5.	Mean annual potential evapotranspiration (mm)	1,314		FMWR (2012b)
6.	Total annual runoff (estimated, in km ³)	12.25 ³		FMWR (2012b)
7.	Surface water potential (internally generated, estimated, in km ³)	40.7 ³		FMWR (2012b)
8.	Groundwater potential, estimated, in km ³)	19.8 ³		FMWR (2012b)
9.	GDP per capita in Nigeria (in 2010 estimate)	185,400 Naira (or US\$1,250)		FMWR (2012b)
10.	Water availability (km ³)		n.a. ⁴	
11.	Arable land (ha)		n.a	

¹ When the B-ORB was for both old Ondo and Bendel States

² Excluding that part of Delta State in the B-ORB

³ For western littoral hydrological area

⁴ Not available

Fig. 2 A map of Nigeria showing the 12 river basins including O-ORB and B-ORB (source: FMWR 2012a). Some important features of the surveyed river basins are illustrated below

2014); (b) O-ORB coverage includes the industrial areas of Lagos, Ogun and Oyo States where effluent from industries are discharged into rivers (O-ORBDA 1991a); (c) In terms of asset base, level of development, size of operations, ecological and basin complexities, the O-ORB is more endowed

than the B-ORB (Akinkoye 1997); and (d) both O-ORB and B-ORB occupy the southwestern hydrological area, draining over 11% of the total land area of Nigeria. Other important features of the selected river basins are illustrated in Fig. 2. Both river basins, which are situated in the southwestern part

Table 1 Sample interview guide

Areas explored during the interviews
Watershed management experience of the RBDA
The legal, regulatory, and other instruments suggesting the functional aspects of the RBDAs
Those organisations the RBDAs related with in practice and the nature of their involvement in river basin activities
Cultural influences on the activities of the RBDA
The present activities of the RBDAs

of Nigeria, cover 7 States including part of Delta State, and both river basins were part of those created in 1976.

Approach to data collection and analysis

Using the conceptual framework as a guide (Fig. 1), two approaches were put in place to elicit the data needed for this study: (i) a literature and legal documents analysis, and (ii) a semi-structured interview survey. This approach enables data to be cross-checked where possible. The questionnaire survey was limited to the senior staff members of the selected RBDAs (see Table 1 for the interview guide). To corroborate some of the interview data obtained from the RBDAs, information was obtained from key respondents from the FMWR, the RBDAs' supervisory body. Also, to understand the nature of the involvement of the international organisations in the Nigeria water sector, information was obtained from the desk offices of some international organisations in the selected river basins. These offices include the World Bank-assisted Urban Water Supply Project Implementation Unit, the World Bank-assisted Fadama III Project State Coordinating Office, and the UNICEF-assisted Rural Water Supply and Sanitation Coordinating Office. Respondents were those that have the knowledge and experience about the study and willing to participate. To obtain these respondents, the Chief Executive Officer of each organisation was first contacted to gain approval and to suggest initial (or key) respondents that were most appropriate to answer the questions of the study (purposive sampling). The suggested persons were contacted and after interactions solicited for some other persons who he/she thought could shed more light on the issues under investigation (snowball sampling). The purposive sampling method offered the opportunity to reduce data contamination and to explore the issues in-depth (Law et al. 1998), while the snowball sampling method helped to increase the study's sample size (Ritchie et al. 2003) and to gain a full and balanced picture (Drever 1995). Generally, both sampling methods are suitable for case study research (Ritchie et al. 2003). The total number of those interviewed was 62, with 58% obtained from the RBDAs, 31% from the desk offices of the international organisations, and the balance from the FMWR. During interviews prompts and probes were used to enrich data collection. To ensure the validity of the data, where

possible, interviews were recorded, transcribed verbatim, and validated. In addition to this, the interview data were also compared with the documentary data.

Although the size of respondents for this study is not large, this is typical of qualitative research. As highlighted by Snape and Spencer (2003), qualitative research approach is based on a small scale sample and collects data in the form of words, as opposed to numbers (Neuman 2006; Snape and Spencer 2003).

In the data analysis, the paper took the RBDA as the unit of analysis. It based its findings on the analysis of the documentary data (obtained from legal and regulatory instruments, organisational handbooks, annual reports and other publications) and on primary data on the practical situation of watershed management implementation in the surveyed river basins in Nigeria. The primary data were elicited using the semi-structured interview script administered in person between 2012 and 2013. Since data were collected in the form of words, the textual data analytical approach was used. This approach, though an iterative process of moving between texts and theory (Gephart 1993), involves the systematic selection, retrieval, and processing of textual data for the purposes of classification, summarisation, interpretation and understanding (Mossholder et al. 1995, Gephart 1993). Specifically, the following steps were followed:

Step 1:

The text from documents (including legal and regulatory instruments) and interviews was read through and open coded. Open coding entails identifying and labelling useful statements conveyed in the raw data (Dilevko and Gottlieb 2009). The coded words, phrases, sentences or whole paragraphs in the raw data were those of interest to answer the question of this paper. According to Burnard (1996) and Dey (1993), reading textual data involves interpretation and making-sense of the data.

Step 2:

Related coded databits were sorted into the preselected analytic categories. Sorting was done using the comparative technique as described by Dilevko and Gottlieb (2009). The sorted evidence was cleaned of coding errors (Czaja and Blair 1996; Creswell and Clark

2007). Cleaning was done by reviewing the relevance and importance of the coded databits through logical and intuitive thinking as well as through making judgment about their meaning in relation to the question of this paper.

Step 3:

The cleaned evidence obtained from step 2 was clustered around the preselected analytical categories. For this paper, the areas explored during the interviews and the elements of institutions provided the sources of categories for analysis.

Results and discussion

How watershed management was interpreted

Similar to the B-ORBDA, watershed management was interpreted to mean the protection of the headwaters of Authority's dams and reservoirs by planting economic (or commercially productive) trees (Akinkoye 1997; O-ORBDA 1991a, 2005, 2008, 2011b). This interpretation reflects more of watershed development, although the interview data revealed that the RBDAs see development as synonymous with management. Watershed development could be referred to as purely technical activities, while watershed management is broader as it relates to both the technical and the non-technical aspects of resource management (Reddy et al. 2017). According to Sakthivadivel and Scott (2005) and as reflected in the case of the RBDAs, watershed development was deployed to increase water resources availability. The assumption is that forests and trees are natural sponges which soak up excess water during storms, slowly releasing it to the downstream areas, thereby increasing overall stream flow and reducing the possibility of floods (Swallow et al. 2002).

Impression from the data revealed that there was a weak understanding of what watershed management entails, and there was no evidence to suggest that watershed management was being implemented. The RBDAs were more of "development organisations" with major responsibility for water resources development for irrigated agriculture. According to the Federal Ministry of Agriculture and Water Resources (FMAWR) (2008, p. 6), "... the existing River Basin Development Authorities ... are more focussed on irrigation".

Factors constraining the implementation of watershed management

Looking at the RBDAs from inception

The result of the review of the legal and regulatory documents revealed that the functional aspects of the RBDAs

were specified by the legal instruments. As illustrated in Table 2, the functions of the pioneer RBDAs (the Sokoto–Rima River Basin Development Authority and the Chad Basin Development Authority) did not include watershed management as at the time of creation. In addition to their involvement in direct agricultural production, it was not until 1976 that both the pioneer and the newly created RBDAs were mandated to implement watershed management as part of their statutory functions, except the Niger Delta Basin Development Authority, which was created under a different Decree due to its special drainage problems. Prompted by the success (cognitive element) recorded by the pioneer RBDAs in the area of food production through irrigated agriculture, the newly created RBDAs moved into direct agricultural production and water resources development for irrigated agriculture (Akinkoye 1997; O-ORBDA 1978, 1982; Shaib 1985; Benin River Basin and Rural Development Authority (BRBRDA) 1984). Institutional theory argues that success can lead to a direct imitation of activities. According to Mills and Murgatroyd (1991), what mostly shapes the repetition of behaviour, making it rule-like, is success. This is consistent with the view of Samsonova and Turley (2006) and Zucker (1987) who assert that organisations will imitate the actions of successful organisations in their field. Although success may not be the only factor propelling imitative tendencies, scholars (for example, DiMaggio and Powell 1991; Samsonova and Turley 2006; Abrahamson 1991; Haveman 1993) point out that mimetic pressure can also arise in a situation of uncertainty or in newly constituted organisations, or when organisations want to appear legitimate (Abrahamson 1991). While some of these factors may not be ruled out, impression from the data revealed that success was the dominant factor. Irrigated agriculture was mimicked by the surveyed RBDAs and taken-for-granted as the proper way to organise, because doing so would enable them receive normative approval, and because it was seen as necessary in order to obtain resources as well as government and public support. Since the success of the pioneer RBDAs in the area of irrigated agriculture encouraged the creation of nine additional RBDAs (O-ORBDA 1978; Are 2003), following the line of thinking of Deephouse (1996), this means that organisations that conformed to the strategies being used by the pioneer RBDAs would be recognised by regulators/government and the general public as being more legitimate than those that deviated from these. Recognising this, and borrowing from Walters (2012), the newly created RBDAs therefore directed their efforts towards being legitimate, and hence the focus on irrigated agriculture thereby paying little attention to watershed management. That the newly created RBDAs followed a mimetic behaviour is illustrated as follows:

Table 2 The functional aspects of the RBDAs

Legal statute	Chad Basin Development Authority Decree 1973 ^a	Chad Basin Development Authority (Amendment) Decree 1975 ^b	River Basins Development Authorities Decree 1976	Niger Delta Basin Development Authority Decree 1976 ^c
Functions	<p>Section 2 of Chad Basin Development Authority Decree No. 32 of 1973:</p> <p>(a) The promotion of land and water development schemes in the Chad Basin for the purposes of increasing agricultural and fish production</p> <p>(b) The construction and maintenance of dams, polders, irrigation and drainage canals, and other works necessary for the purposes specified in paragraph (a) above</p> <p>(c) The resettlement of persons affected by the works specified in paragraph (b) above or under special resettlement schemes;</p> <p>(d) To develop land for the cultivation of crops and the supply of water for irrigation purposes to private farmers or any other recognised associations for a fee to be determined by the Authority</p> <p>(e) To regulate navigation and fishing on the Lake Chad</p> <p>(f) The development of plantations for the production of food crops which require to be processed before being consumed as well as ranches for cattle and other species of livestock; and</p> <p>(g) To undertake land and water conservation schemes including afforestation</p> <p>(h) The exploitation of underground water resources (including the sinking of wells and boreholes) for human and livestock consumption</p>	<p>Section 2 of Chad Basin Development Authority Decree No. 32 of 1973 amended as follows:</p> <p>(a) To promote land and water resources development schemes for the purposes of increasing agricultural and fish production</p> <p>(b) To undertake schemes for the control of floods and soil erosion including afforestation</p> <p>(c) To undertake schemes for the controlled exploitation of underground water resources</p> <p>(d) To construct and maintain dams, polders, wells, boreholes, irrigation and other works necessary for the achievement of the Authority's functions under this section</p> <p>(e) To develop land for the mechanised cultivation of crops including forestry and supply water for irrigation purposes to private farmers or recognised associations for a fee to be determined by the Authority</p> <p>(f) To develop plantations and ranches for the production of food and other crops and livestock and to lease such plantations and ranches to private farmers or recognised associations for a fee to be determined by the Authority</p> <p>(g) To process food and other crops and livestock products for consumption;</p> <p>(h) To resettle persons affected by the works and schemes specified in paragraphs (d), (e) and (f) above or under special resettlement schemes; and</p> <p>(i) To control pollution of the rivers and lakes in its area</p>	<p>Section 2 of RBDAs Decree No. 25 of 1976:</p> <p>(a) To undertake comprehensive development of both surface and underground water resources for multi-purpose use</p> <p>(b) To undertake schemes for the control of floods and erosion, and for water-shed management</p> <p>(c) To construct and maintain dams, dykes, polders, wells, boreholes, irrigation and drainage systems and other works necessary for the achievement of the Authority's functions under this section</p> <p>(d) To develop irrigation schemes for the production of crops and livestock and to lease the irrigated land to farmers or recognised associations in the locality of the area concerned, for a fee to be determined by the Authority concerned with the approval of the Commissioner (now Minister)</p> <p>(e) To provide water from reservoirs, wells and boreholes, under the control of the Authority concerned for urban and rural water supply services on request by the State Governments and when directed to do so by the Commissioner</p> <p>(f) The control of pollution in rivers and lakes in the Authority's area in accordance with nationally laid down standards; and</p> <p>(g) To resettle persons affected by the works and schemes specified in paragraphs (c) and (f) above or under special resettlement schemes.</p>	<p>Section 3 provides that:</p> <p>(a) To undertake schemes for the development of land, water, fisheries, livestock and forestry resources;</p> <p>(b) To develop land for the mechanised cultivation of crops including forestry;</p> <p>(c) To develop plantations of food and other crops, including forestry, and to process such food and other crops for consumption</p> <p>(d) To establish ranches for cattle and other species of livestock and process livestock products for consumption</p> <p>(e) To develop and improve the navigation of inland waterways</p> <p>(f) To undertake schemes for the control of floods and soil erosion, including afforestation</p> <p>(g) To undertake schemes for the controlled exploitation of underground water</p> <p>(h) To control pollution of the rivers, lakes and lagoons in the Authority's area in accordance with nationally laid down standards</p> <p>(i) To construct and maintain dams, polders, irrigation and drainage canals, wells, boreholes and other works necessary for the discharge of the Authority's responsibility under this Decree, and to supply water for irrigation and other uses to private persons and recognised associations for fees to be determined by the Authority;</p> <p>(j) To resettle persons affected by works or schemes carried out by the Authority, or under special resettlement schemes</p> <p>(k) To conduct or sponsor the conduct of research and feasibility studies into problems of any of the areas for which it has responsibility; and</p> <p>(l) To train managerial and technical staff for the purpose of the discharge of the functions of the Authority under this Decree</p>
Source	Chad Basin Development Authority Decree No. 32 of 1973	Chad Basin Development Authority (Amendment) Decree No. 25 of 1975	River Basins Development Authorities Decree No 25 of 1976	Niger Delta Basin Development Authority Decree No. 37 of 1976
Remarks	No provision on watershed management	No provision on watershed management	Empowered the RBDAs to undertake schemes for watershed management	No provision on watershed management

Table 2 (continued)

Legal statute	Chad Basin Development Authority Decree 1973 ^a	Chad Basin Development Authority (Amendment) Decree 1975 ^b	River Basins Development Authorities Decree 1976	Niger Delta Basin Development Authority Decree 1976 ^c
Status	Repealed	Repealed	Repealed	Repealed
Legal statute	River Basins Development Authorities (Amendment) Decree 1977 ^d	River Basins Development Authorities Decree 1979 ^e		River Basins Development Authorities Decree 1987 ^f
Functions	<p>Section 2 (1) of Decree No. 25 of 1976 was amended as follows:</p> <p>(a) immediately after paragraph (e) there shall be inserted the following new paragraphs:</p> <p>(f) do develop fisheries and improve navigation on rivers, lakes, reservoirs and lagoons in the Authority's area</p> <p>(g) to process crops and livestock produced under paragraph (d) above, and</p> <p>(b) the existing paragraphs (f) and (g) shall be renumbered as paragraphs (h) and (i), respectively</p> <p>(i) to undertake the mechanised clearing and cultivation of land for the production of crops and forestry in areas both inside and outside irrigation projects for a fee to be determined by the Authority concerned with the approval of the Commissioner (now Minister)</p> <p>(j) to undertake the large-scale multiplication of improved seeds, livestock and tree seedlings for distribution to farmers and for afforestation schemes</p> <p>(k) to process crops, livestock products and fish produced by farmers in the Authority's area in partnership with State agencies and any other person</p> <p>(l) to assist the State and Local Governments in the implementation of the following rural development work in the Authority's area:</p> <p>(i) the construction of small dams, wells and boreholes for rural water supply schemes and of feeder roads for the evacuation of farm produce</p> <p>(ii) the provision of power for rural electrification schemes from suitable irrigation dams and other types of power stations under the control of the Authority concerned</p> <p>(iii) the establishment of agro-service centres,</p> <p>(iv) the establishment of grazing reserves, and</p> <p>(v) the training of staff for the running and maintenance of rural development schemes and for general extension work at the village level</p>	<p>Section 4 of the River Basins Development Authorities Decree No. 87 of 1979:</p> <p>(a) to undertake comprehensive development of both surface and underground water resources for multi-purpose use</p> <p>(b) to undertake schemes for the control of floods and erosion, and for water-shed management including afforestation</p> <p>(c) to construct and maintain dams, dykes, polders, wells, boreholes, irrigation and drainage systems and other works necessary for the achievement of the Authority's functions under this section</p> <p>(d) to provide water from reservoirs and lakes under the control of the Authority for irrigation purposes to farmers and recognised associations as well as for urban water supply schemes for a fee to be determined by the Authority concerned, with the approval of the Commissioner (now Minister)</p> <p>(e) the control of pollution in rivers, lakes, lagoons and creeks in the Authority's area in accordance with nationally laid down standards</p> <p>(f) to resettle persons affected by the works and schemes specified in this section or under special resettlement schemes</p> <p>(g) to develop fisheries and improve navigation on the rivers, lakes, reservoirs, lagoons and creeks in the Authority's area;</p> <p>(h) to undertake the mechanised clearing and cultivation of land for the production of crops and forestry in areas both inside and outside irrigation projects for a fee to be determined by the Authority concerned with the approval of the Commissioner (now Minister)</p> <p>(i) to undertake the large-scale multiplication of improved seeds, livestock and tree seedlings for distribution to farmers and for afforestation schemes</p> <p>(j) to process crops, livestock products and fish produced by farmers in the Authority's area in partnership with State agencies and any other person</p> <p>(k) to assist the State and Local Governments in the implementation of the following rural development work in the Authority's area:</p> <p>(i) the construction of small dams, wells and boreholes for rural water supply schemes and of feeder roads for the evacuation of farm produce</p> <p>(ii) the provision of power for rural electrification schemes from suitable irrigation dams and other types of power stations under the control of the Authority concerned</p> <p>(iii) the establishment of agro-service centres,</p> <p>(iv) the establishment of grazing reserves, and</p> <p>(v) the training of staff for the running and maintenance of rural development schemes and for general extension work at the village level</p>	<p>Section 4 of the River Basins Development Authorities Decree No. 35 of 1987:</p> <p>(a) to undertake comprehensive development of both surface and underground water resources for multipurpose use with particular emphasis on the provision of irrigation infrastructure and the control of floods and erosion and for water-shed management</p> <p>(b) to construct, operate and maintain dams, dykes, polders, well, boreholes, irrigation and drainage systems, and other works necessary for the achievement of the Authority's functions and hand over all lands to be cultivated under the irrigation scheme to the farmers</p> <p>(c) to supply water from the Authority's completed storage schemes to all users for a fee to be determined by the Authority concerned, with the approval of the Minister</p> <p>(d) to construct, operate and maintain infrastructural services such as roads and bridges linking project sites provided that such infrastructural services are included and form an integral part of the list of approved projects; and to develop and keep up-to-date comprehensive water resources master plan, identifying all water resources requirements in the Authority's area of operation through adequate collection and collation of water resources, water use, socio-economic and environmental data of the river basin</p>	

Table 2 (continued)

Legal statute	River Basins Development Authorities Decree 1979 ^e	River Basins Development Authorities Decree 1987 ^f
River Basins Development Authorities (Amendment) Decree 1977 ^d	River Basins Development Authorities Decree No. 87 of 1979	River Basins Development Authorities Decree No. 35 of 1987
Remarks	No provision on watershed management	Empowers the RBDAs to undertake schemes for watershed management
Status	Repealed	Active

^aSame for Sokoto–Rima Basin Development Authority 1973 (see Section 2 of Sokoto–Rima Basin Development Authority Decree No. 33 of 1973), except to regulate navigation and fishing (that is, Section. 2 (e)), which is limited to Chad Basin Development Authority

^bSame functions for Sokoto–Rima Basin Development Authority (see Sokoto–Rima Basin Development Authority (Amendment) Decree No. 26 of 1975)

^cNiger Delta Development Authority (Amendment) Decree No. 32 of 1977 amended the Schedule to the Niger Delta Basin Development Authority Decree No. 37 of 1976 on the composition of members of the Board

^d(a) Niger Delta Basin Development Authority (Amendment) Decree No. 32 of 1977 amends the Schedule to the Niger Delta Basin Development Authority Decree of 1976 to reduce from six to four the number of persons to be appointed as members of the Board by the Commissioner (now Minister) and increase from two to four the number of persons to be appointed by the Government of the Rivers State; and (b) River Basins Development Authorities (Amendment) Decree No. 33 of 1978 enlarges the membership of the Board of the Niger River Basin Development Authority by the inclusion of a representative of Sokoto State Government therein

^eRiver Basins Development Authorities (Amendment) Act No. 7 of 1981 amended the River Basins Development Authorities Decree No. 87 of 1979 by providing for the reconstitution of the membership of the 11 River Basin Development Authorities

^fThe River Basins Development Authorities Act 1990 increases the number of River Basin Development Authorities from 11 to 12 by splitting the Niger River Basin Development Authority into Upper Niger and Lower Niger without repealing its predecessor, Decree No. 35 of 1987. As a follow up, the Niger River Basin Development Authority was split into two in 1994 (FMWR 2005; Upper Niger River Basin and Rural Development Authority (UNRRDA) 1995; Akinoye 1997)

“Other major decisions taken at the inaugural meeting included the advice given to the General Manager, possibly accompanied by the Chairman, to visit other functioning River Basin Authorities like the ones at Kano, Sokoto and Maiduguri to acquaint themselves with the procedures adopted by these Authorities in performing the operations of the projects currently being handled by them” (O-ORBDA 1978, p. 7).

“The Federal Director of Water Resources ... led a 16-man Nigerian delegation to Sudan in March 1979 to study irrigation systems, and water resources of that country. [The General Manager] and [The Assistant General Manager (Agric) and Head of Department] were members of the delegation. From Sudan, both men visited Israel from March 27 to April 7, 1979 ... to study the Israeli water resources and irrigation systems” (O-ORBDA 1979, p. 7).

Documentary evidence also revealed that the newly created RBDAs accepted (normative element) and provided support (cognitive element) for the implementation of irrigated agriculture by concentrating on water resources development for irrigation. This claim is backed up by the following statements:

“We have therefore accepted the challenge to serve. With the co-operation of our various consultants, the contractors who will execute our projects and the State Governments in whose areas we operate and the support and encouragement of the members of the Authority, we believe that the efforts of the Authority will be translated into increased agricultural productivity and a more satisfying life for people in our areas of operation” (O-ORBDA 1978, p. 13).

“It is therefore correct to infer from the plethora of activities assigned by the respective laws establishing the RBDAs, that their major functions and by implication, the aims of River Basin Development are increasing food production, improving rural infrastructure and alleviation of poverty” (Ijisan 2009, p. 6).

Also in support of irrigated agriculture:

“The Authority, however, decided to take over the project from ... and to re-design the dam to incorporate its own needs for irrigation” (O-ORBDA 1978, p. 13).

“... the fact that Irrigated Agriculture is what the River Basin Development Authorities are expected to concentrate upon, the Authority has initiated plans to convert most of the 5092 hectares of land cleared and currently being used for rainfed farms to irrigated farms” (O-ORBDA 1982, p. 9).

Although less visible, since organisations conform to cognitive elements of institutions unconsciously (Hoffman 2001), irrigated agriculture was “imprinted” on the newly created RBDAs. Imprinting effect, as illustrated by Scott (1992, 1995) and Boeker (1989), represents conditions present at the time of founding which tend to imprint itself on an organisation and influence its actions and performance. In the case of the RBDAs created in 1976, these conditions include: (a) the severe drought that hit the country in 1972, causing widespread crop failure and famine and the acceptance of the various recommendations by the federal government to boost food production through irrigated agriculture, which led to the creation of the pioneer RBDAs in 1973 (Are 2003; Ogun–Oshun River Basin and Rural Development Authority (O-ORBRDA) 1998), and (b) the success recorded by the pioneer RBDAs in the area of food production through irrigated agriculture which impressed and made the federal government to create additional nine RBDAs in 1976 (O-ORBDA 1978; Are 2003; Akinkoye 1997). These activities imprinted themselves on the newly created RBDAs, since the operators of these newly created RBDAs were part of the society and were aware of the situations of the country at that time.

While subsequent legal instruments establishing and re-establishing the RBDAs (both the pioneer and the newly created) empower these organisations to undertake schemes for watershed management (Table 2), because water resources development for irrigated agriculture and food production had become habitual for the pioneer RBDAs, this contributed to their inability to implement watershed management. According to institutional theory, once certain organisational activities become habitual, the ability to make changes can become difficult (Leaptrott 2005). Viewed differently, impression from the data revealed that the continued implementation of water resources development for irrigated agriculture and food production was supported by some rewards. This viewpoint is consistent with the normative institutional perspective. This perspective argues that resistance to change can also be a function of internally generated or internalised motivations (Zucker 1987). This internal or internalised motivation is seen as deriving from activities that are more highly rewarded or acknowledged. For instance, if more rewards or acknowledgements are associated with one action than with another, the more highly rewarded action will be retained, exhibited, and promoted. Therefore, those actions that are more highly rewarded or acknowledged will be more resistant to change. This agrees with Hodgson (2006) who asserts that habitualised activities may over time acquire some normative content. In the case of the pioneer RBDAs, the acceptance of their actions (in the area of irrigated agriculture) by the federal government and the creation of additional RBDAs (based on their success) served as important rewards. In the case of the surveyed

RBDAs, the respondents pin-pointed that the development of hydraulic infrastructures for irrigated agriculture was valued and promoted as a result of the compliments they received from both the public and the government. As one respondent put it:

“So, what I am trying to say in essence is that if ... for instance [the ... RBDA] should site a project somewhere and the project is completed, ... the Community will show appreciations, the State Government will even stand openly to raise commendation words for the Authority. And ... if you look at all these things, it propels the Authority to do more”.

However, looking at watershed management in the context of this paper, it was argued that the provisions of the Decrees were less clear on watershed management and silent on how it should be operationalised, thereby providing support for its lack of implementation. Here is a comment from one of the respondents:

“...unlike the development aspect, which is a bit clear, at least, you know what to do. The provisions of the decrees do not go into details on watershed management”.

It could be deduced from the above that both cognitive and normative pressures as well as inadequacies in the legal instrument acted to constrain the ability of the RBDAs to implement watershed management in Nigeria. While the pressures acted in mutually supporting ways, the influence of cognitive institution seems to precede those of others and serves as the dominant pressure.

The environment of any given organisation is also composed of other organisations, national and/or international. Hence, it follows that organisations within the same field can be a source of cognitive and/or normative pressures through the directions and/or instructions they provide especially

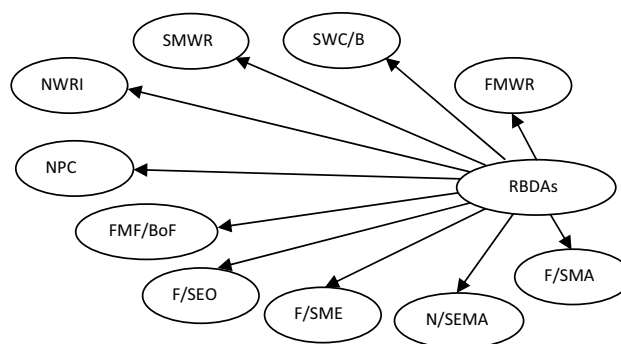


Fig. 3 Organisations that the surveyed RBDAs related with in practice

if one organisation is dependent on another for support, resources and/or legitimacy. Figure 3 lists those organisations that the surveyed RBDAs related with in practice in the discharge of their functions, while Table 3 illustrates the nature of involvement of these organisations in river basin activities. However, at the time of the survey there was no presence of international organisations [e.g., the World Bank, United Nations Children’s Fund (UNICEF), European Union (EU), United Nations Industrial Development Organisation (UNIDO), International Fund for Agricultural Development (IFAD), United Nations Development Programme (UNDP), FAO, Japan International Cooperation Agency (JICA), African Development Bank (ADB), World Meteorological Organisation (WMO), United Nations Educational, Scientific and Cultural Organisation (UNESCO), etc.] in the surveyed river basins and neither were there any on-going international organisations’ assisted RBDA projects. When involved in water-related projects, respondents stated that international organisations provide mostly financial and technical assistance. Other roles which they play depending on the project may include human capacity building,

Table 3 Organisations and nature of involvement in river basin activities

S/no.	Organisation	Nature of involvement
1	Federal/State Ministry of Agriculture (F/SMA)	Provision of agricultural land
2	National/State Emergency Management Agency (N/SEMA)	Provision of emergency reliefs
3	Federal/State Ministry of Environment (F/SME)	Soil erosion and flood control
4	Federal/State Ecological Office (F/SEO)	Implementation of flood control projects
5	Federal Ministry of Finance/Budget Office (FMF/BoF)	Financial advice, auditing and investigation
6	National Planning Commission (NPC)	Project monitoring and data collection on short, medium, and long-term plans
7	National Water Resources Institute (NWRI)	Provision of training needs
8	State Ministry of Water Resources (SMWR)	Regulates water activities at the State level, especially those not listed on the Exclusive Legislative List (ELL)
9	State Water Corporations/Boards (SWC/B)	Bulk raw water users
10	Federal Ministry of Water Resources (FMWR)	Monitors, supervises, and evaluates the programmes and performance of the RBDAs. Also involves in the direct execution of water projects

programme/project monitoring, procurement of materials, and project supervision. In specific terms, respondents stated that the World Bank usually provides assistance in the areas of dam construction, water sector reforms, and Fadama irrigation schemes, while UNICEF provides assistance towards the execution of rural water supply and sanitation programmes. When present, respondents asserted that international organisations are sources of directions through the conditions they attach to their assistance. In practice, according to the respondents, the involvement of the international organisations may suggest actors and the “rules of the game” in the words of North (1990). Impression from the interview data suggests that the activities of the international organisations in the Nigeria water sector are for specific periods. Some may be renewed, while some may not. And there may be new entrants. For the national organisations that the RBDAs related with in practice (Fig. 3), there was no evidence to suggest that a dependency relationship exists, except the FMWR.

In the case of the FMWR, there was a dependency relationship. Evidence revealed that some extant legal and regulatory instruments enabled and empowered the FMWR to provide both administrative and operational instructions to the RBDAs. For example, Section 4(2) of Decree No. 35 of 1987 subjects the execution of projects within the limits of the functions of the RBDAs to the approval of the Minister in charge of water resources. In addition to this, Section 7 of the River Basins Development Authorities Decree No. 35 of 1987 also empowers the Minister (responsible for water resources) to give any of the Authorities directions, and further stipulates that it shall be the duty of that Authority to comply with such directions. On the other hand, Section 6 of the Water Resources Decree No. 101 of 1993 empowers the Minister in charge of water resources to periodically review in light of prevailing economic, financial, or technological conditions, activities, plans and proposals of the RBDAs. Also, Chapter 16, Section 2 (c) of the Public Service Rules of 2008 and Section 13 of the Administrative guidelines regulating the relationship between Parastatals/Government-owned companies and the Government of 1999 empower the Minister to exercise policy control over the RBDAs. This arrangement is also amplified by Item ii of Circular Ref No. SGF/OP/I/S.3/T.1/142 dated 2nd August 1999, which empowers the Minister to exercise policy control over the RBDAs. In addition to the above, the Public Service Rules of 2008 maintains that government parastatals are subject to the policy directives of the government. Also, one of the core functions of the FMWR states that it is the duty of the FMWR to support, monitor and evaluate the programmes and performance of the RBDAs (FMWR 2004, 2011).

Besides the legal and regulatory instruments, documentary evidence also revealed that the RBDAs were dependent on the FMWR annually for their budget recommendations

for funding, release of funds, and awards of contracts (Akinkoye 2001), while interview evidence revealed that the RBDAs were dependent on the FMWR for support and resources, and that it was the FMWR that gives directions to the RBDAs on what to do and the RBDAs do not have the powers to take decisions outside the directives of the FMWR. Here are comments from some respondents:

“... the River Basin Development Authorities the way they are structured, you know, they are parastatals under the Federal Ministry of Water Resources. They don't have powers to take decisions outside the directions of the Ministry itself, which is our parent body. So what you get is that, most times, exactly the way the Ministry has said it should be done that is how it is done”.

“The Ministry gives the guidelines on what all the river basin development authorities will do”.

To corroborate the data obtained from the RBDAs, conversations with some officials of the FMWR revealed that the FMWR was empowered to provide support and resources, monitor, supervise and evaluate the programmes and performance of the RBDAs as well as have the final say on RBDAs' operational and administrative decisions. As noted by Greening and Gray (1994), organisational performance can also be shaped by response to pressures from other organisations within the field, which often seek voluntary and/or coerce compliance with standards for operation (Scott 1995; Leaptrott 2005). And in the case of regulatory or supervisory organisations (Samsonova and Turley 2006; Ashworth et al. 2007), they represent a core force that coercively influences organisations to adopt practices and strategies that they favour (DiMaggio and Powell 1983; Meyer and Rowan 1977; Mizruchi and Fein 1999). Organisations will thus comply with pressures exerted by support providers in order to gain legitimacy and access resources (Chizema and Buck 2006). Despite the dependency relationship, there was no evidence to suggest that the pressures from the FMWR were directed towards ensuring that the RBDAs give effect to the implementation of watershed management. Documentary evidence revealed that the FMWR sees the RBDAs as organisations established to implement the construction of hydraulic infrastructures for raw water supply and irrigated agriculture for food production (Shaib 1985; Mohammed 1995; Ochekepe 2012, 2013). According to Hanidu (1991, p. 2), “they were primarily established to develop water resources of the country”, or in the words of Mohammed (1995, p. 10) “the RBDAs we see as the most viable option for addressing our national quest for food security through irrigated agriculture”. With this in mind, it means the FMWR will hardly interrogate the RBDAs on the implementation of watershed management. To corroborating this,

impression from the interview data revealed that the prevalent activity of the RBDAs is the development of hydraulic infrastructures for irrigated agriculture and raw water supplies. This therefore suggests that the various directives and instructions from the FMWR have encouraged performance and resource allocation in favour of water resources development for irrigated agriculture and raw water supplies. This finding supports the argument of Abrahamson (1991), Rowan (1982) and Scott (1995) who maintain that organisational activities that are receiving external support are likely to be adopted and retained than those lacking such support. While the cognitive and the normative pressures from the FMWR can overlap in practice (Hu et al. 2007; Mizruchi and Fein 1999), that normative, alongside with cognitive, constrained the implementation of watershed management enabled by extant legal instruments is consistent with the argument of Scott (1995) who maintains that conformance to normative pressures may compel organisations to depart from the legal and regulatory-based requirements.

In addition to normative and cognitive elements of institutions pressing the RBDAs to implement water resources development for irrigated agriculture, government policies (regulative elements) also coerced the RBDAs into focusing on food production (Table 4); more importantly that the majority of these policies were enacted during the military era in Nigeria. As Connor et al. (2008) note, all policy instruments are designed to affect organisational behaviour either through enforcement or encouragement. The basic food policy objective of governments of the federation since independence has always been the attainment of self-sufficiency in food production for domestic consumption as well as import substitution (Fatokun and Ogunlana 1988). However, the strategies for the implementation of this objective have varied from one government to the other as illustrated in Table 4, and the RBDAs were seen as an essential part of the strategies to actualise the federal government’s goals; as Fatokun and Ogunlana (1988) comment:

“As part of the strategies to raise and stabilise food production, government has continued to accord high priority to irrigated agriculture since the 3rd National Development Plan (1975–1980). The establishment of eleven River Basin Development Authorities (RBDAs), including the Ogun–Oshun River Basin Development Authority (O-ORBDA), was part of government’s implementation strategy of the aforementioned policy objective” (p. 3).

And according to Atanu (1983, p. 15),

“In order to achieve the objectives of the Green Revolution Programme all the eleven River Basin Development Authorities have been directed to embark

Table 4 Federal government policies on food production in Nigeria (sources: Shaib 1985; Fatokun and Ogunlana 1988; O-ORBDA 1991b; Cross River Basin and Rural Development Authority (CRBRDA) 1984)

S/no.	Type of government	Trigger/government policy thrust	Follow up activity/strategy
1.	Military	Drought in the Northern region in 1972	Created two RBDAs in 1973, became operational in 1974
2.	Military	Operation Feed the Nation (OFN) launched in 1976 to boost food production through irrigated agriculture (in agreement with the 3rd National Development Plan of 1975–1980)	Created 11 (or additional nine) RBDAs in 1976, became operational in 1977
3.	Second Civilian Government (1979–1983)	Green Revolution launched in 1980, a major agricultural policy of the Shagari administration and the Fourth National Development Plan of 1981–1985, to ensure self-sufficiency in food production	Eleven RBDAs were still in place, but made to implement some of the Green Revolution Programmes
4.	Military (1984–1985)	High priority accorded to agriculture and rural development as part of the strategies to raise and stabilise food production	The 11 RBDAs were increased to 18 in 1984 and re-designated as River Basin and Rural Development Authorities. The Decree to back this up was still being prepared by the Federal Ministry of Justice at the time the Government was overthrown. Decree No. 35 of 1987 re-establishes the 11 Authorities as RBDAs



on massive food production project in their areas of operation”.

As evidence of internalising (normative element) the federal government policies on food production in Nigeria, the O-ORBDA (1982) states:

“In order to execute this Programme of the Federal Government, the Authority planned to open up and develop 4000 ha of land ...; grow rice 3000 ha, maize 600 ha, cassava 200 ha, yam 400 ha” (p. 1).

It could be distilled from the above that both normative and cognitive pressures from the FMWR as well as the implementation of federal government policies (regulative pressures) on food production acted to shift the attention of the RBDAs away from the implementation of watershed management. While it became normatively accepted by the RBDAs to implement federal government policy directives, it should be noted that decisions imposed by authority meet with less resistance and are associated with higher levels of compliance.

The present focus of the RBDAs

As a result of reduced revenue to the federal government (Ijasan 2009) coupled with the need to address watershed degradation, the Federal Government of Nigeria revised its policies. Investments in irrigation infrastructure along with general public expenditure programmes were drastically reduced, and the functions of the RBDAs were revised. Therefore, arising primarily from economic pressure a shock was introduced in 1987 (commencing in 1986) by the promulgation of River Basins Development Authorities Decree No. 35 of 1987. The provisions of this Decree modified the original functions of the RBDA and limited their activities to water resources development and management. The growing socio-economic problems in Nigeria, chronic budget deficit, serious internal and external indebtedness, and undesirable economic decline led the federal government to adopt the commercialisation and privatisation policy in 1986 as fallout of the Structural Adjustment Programme (Obadan and Ayodele 1998; Akinkoye 1997). The policy aims at handing over public enterprises to private sector management (Pradhan et al. 1994). Following the adoption of the commercialisation and privatisation policy and to insulate the RBDAs from bureaucratic ministerial controls and reduce their dependency on the federation account (O-ORBRDA 1998), the federal government partially commercialised the RBDAs in 1988 by the promulgation of Privatisation and Commercialisation Decree No. 25 of 1988. The promulgation of this Decree, which serves as another shock, led to the sale of non-water assets of the RBDAs (for example, land preparation, planting and harvesting equipment, poultry and piggery

farms, feed mills, etc.) and all the RBDAs were instructed to layoff agricultural extension staff and other agricultural specialists (Akinkoye 2001). As a consequence, the activities of the RBDAs were restricted to water resources. According to Akinkoye (1997):

“With the commencement of the partial commercialisation programme, however, the Authority’s economic activities were restricted to water resources. The main economic focus of the Authority, therefore, is the construction of dams to store and release water for downstream uses such as irrigation and treatment by the Water Corporations for domestic consumption” (p. 87).

The Privatisation and Commercialisation Decree of 1988 granted partial financial and bureaucratic autonomy to the RBDAs. It empowers the RBDAs to generate their recurrent expenditure or recover their operating cost from the raw water services they provide (National Council on Privatisation 2000). The new policy aims at making the RBDAs economic service providers rather than social service providers (O-ORBDA 1998) and calls for the transfer of the operation and maintenance of the irrigation schemes to users (Pradhan et al. 1994), which is consistent with the National Irrigation and Drainage Policy and Strategy of 2016. The essence of the shock introduced in 1988 is to insulate the RBDAs from external interference and make them a revenue generating entity. To support its implementation, a tripartite Performance Agreement—involving the RBDAs, the Ministry of Agriculture, Water Resources and Rural Development (representing the federal government) and the Technical Committee on Privatisation and Commercialisation (TCPC)—was signed in 1992 (Mohammed 1995; O-ORBDA 1993; O-ORBRDA 1998; River Niger Basin Development Authority (RNBDA) 1993). The Agreement symbolises that the RBDAs have agreed to the terms and conditions and accepted their new status as a partially commercialised enterprise. However, a clause in the Performance Agreement specifies that government recurrent subventions will end by December 1995 for the O-ORBDA (Akinkoye 1997) and 1997 for the B-ORBDA. Consistent with the Privatisation and Commercialisation Policy, the Performance Agreement also hinted that the RBDAs are to generate funds to meet their recurrent expenditure, while the federal government continues to provide funds for all the capital intensive projects (O-ORBRDA 1998). Generally, based on the tripartite Performance Agreement, there will be no recurrent allocation from the federal government to all the RBDAs as from the end 1997. However, under the Corporate Plan for the implementation of the partial commercialisation programme, watershed management was classified as a non-commercial service, requiring financial interventions from the federal government for its implementation

(O-ORBDA 1991a). The partial commercialisation programme could not be carried to its logical conclusion due to federal government's failure to implement its own side of the Agreement (O-ORBRDA 1998; O-ORBDA 1993; Mohammed 1995). This entails the provisions of project completion and rehabilitation funds and an initial working capital grant to kick-start the implementation of the partial commercialisation policy (O-ORBDA 1993; O-ORBRDA 1998; Akinkoye 1997; Mohammed 1995). That the funds and take-off grant were not made available by the federal government, interview evidence which is consistent with the documentary data (O-ORBRDA 1998; O-ORBDA 2007, 2008, 2009, 2010, 2011b; Anambra-Imo River Basin Development Authority (A-IRBDA) 2004, 2005, 2006; RNBDA 1993; FMWR 2016) revealed that the federal government is still responsible for the release of recurrent grants to the RBDAs. As one respondent puts it:

“Yes, on river basin financing, we still get our budgetary allocations for both capital and recurrent expenditures directly from the Federal Government”.

Therefore, following failure to implement the partial commercialisation programme at the river basin level, an analysis of the interview data revealed that instead of incorporating watershed management into their operational activities, the RBDAs have started implementing a new script under the cover of revenue generation and the need to support federal government policies on food production. The script entails the reacquisition of their non-water assets that were placed on lease and those that could not have buyers (such as feed mills, poultry and piggery farms, etc.) and a gradual return to direct agricultural production in addition to the development of water resources for irrigated agriculture and raw water supplies. While the gradual return to direct agricultural production contravenes the provision of Decree No. 35 of 1987, it is important to add that the reacquisition of these non-water assets was approved by the Federal Government, with some financial assistance (FMWR 2004; B-ORBDA 2002). This indicates that the new script seems to be normatively sanctioned by the federal government.

Apart from the above, the present federal government has also introduced an economic diversification policy (regulative element) in 2016. The policy aims to diversify the nation's economy from oil to non-oil as foreign exchange earners. To ensure its implementation in the water sector, the FMWR, on behalf the Federal Government of Nigeria, signed a contract agreement between the RBDAs and the Songhai Nigeria Partnership Limited in June 2016 on the establishment of Songhai Model Initiatives Integrated Agricultural Scheme (Adamu 2017a, b). The scheme tagged “Graduate/Youth Empowerment Scheme” mirrors the Songhai Integrated Farm model and aims to achieve self-sufficiency in food production and employment generation

through irrigated agriculture. The success recorded in the Kampe Irrigation Scheme in the Lower Niger Basin Development Authority which served as a pilot scheme made the FMWR to direct other RBDAs to take a cue (Adamu 2017b). Under the scheme, the RBDAs are to train participants in various agricultural activities including crop farming, aquaculture, dairy farming, animal husbandry, food processing and other sustainable agricultural activities (Adamu 2017a). Also, the National Water Resources Policy adopted in 2016 (regulative element) has expanded the functions of the RBDAs to include land reclamation, conservation and preparation for agricultural production. This aspect of the Policy seems to contradict the provision of Decree No. 35 of 1987, which limits the functions of the RBDAs to water resources development and management. Nonetheless, it could be distilled from the above that both cognitive and regulative elements of institutions are supporting the present focus of the RBDAs on direct agricultural production, neglecting watershed management. Figure 4 summarises the historical development of the RBDAs. An important finding of this study is that the three elements of institutions acted to constrain the implementation of watershed management in Nigeria. While the situation of regulative elements inhibiting the implementation of watershed management may not be limited to Nigeria, in the case of Nepal, the absence of implementation strategies in relevant policy documents constrained the implementation of watershed management in that country (Poudel 2003). Also, Reddy et al. (2017) found that the absence of watershed policies and guidelines (regulative elements) in Afghanistan, Bangladesh, Bhutan, and Pakistan was responsible for the low adoption of initiatives aimed at watershed management.

Back to the conceptual framework (Fig. 1), it is important to highlight that there was no evidence to suggest that socio-economic factors or technical elements curbed the implementation of watershed management. For the western littoral hydrological area where both river basins are located (see Fig. 2), the average annual rainfall is 1565 mm (FMWR 2012a) and the total annual runoff estimated at 12.25 km³ (FMWR 2012b), which suggests that both river basins are rich in water. Although it was conceptualised in Fig. 1 that the legal and regulatory instruments guiding the activities of the Water Users' Association (WUAs) could constrain the implementation of watershed management, interview evidence revealed that there were no WUAs in both river basins, hence no WUAs bylaws. More importantly, the main water laws (that is, the Water Resources Decree No. 101 of 1993 and the River Basins Development Authorities Decree No. 35 of 1987) do not have provisions enabling, or empowering the RBDAs to institute, WUAs. Also, there was no evidence to suggest that organisational or societal culture constrained the implementation of watershed management. Evidence from the interview data revealed that the

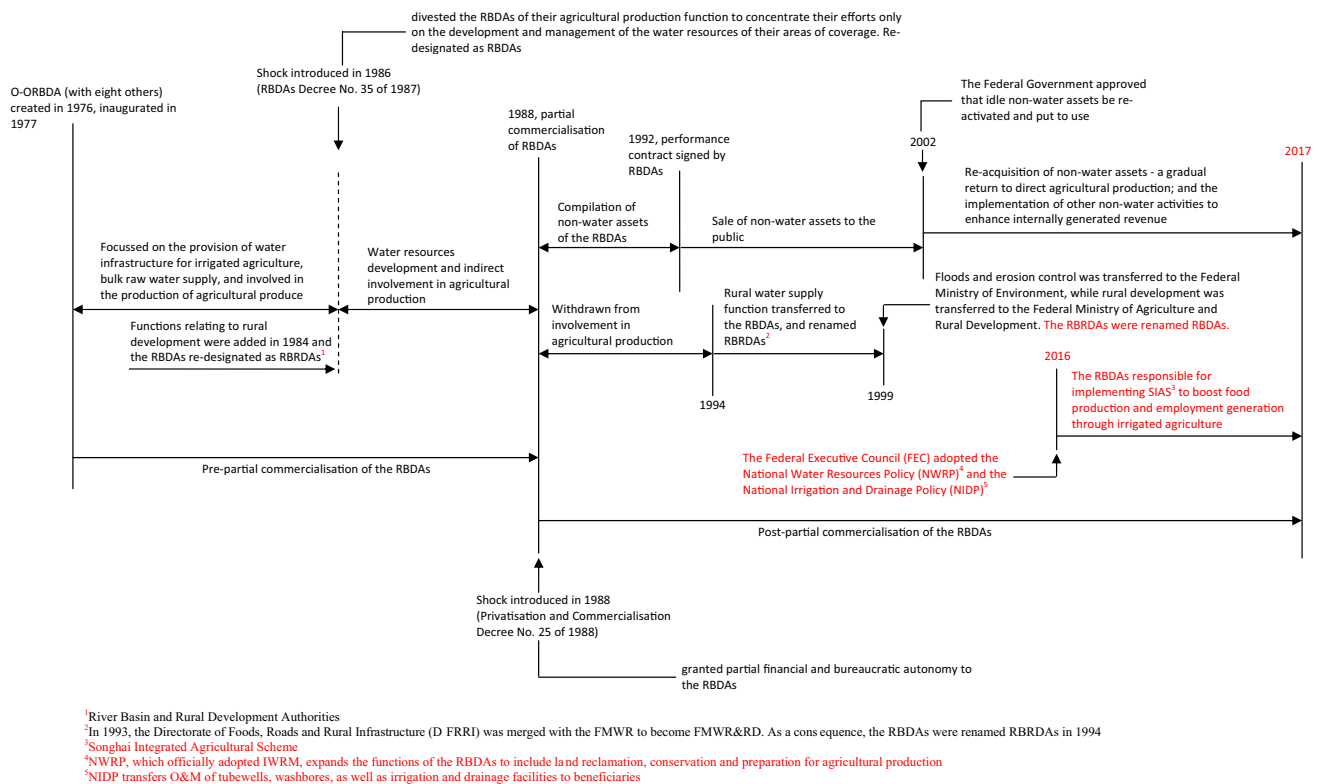


Fig. 4 Historical development of RBDAs (sources: Kaliei 2000; Fatokun and Falana 1988; O-ORBDA 1991b, 1993, 1998; UNRBRDA 1995; FMWR 2005; Adamu 2017a, b)

customary laws and practices of the people in the surveyed river basins and the culture of the RBDAs do not forbid the implementation of watershed management. It should be noted that using the RBDAs to realise the present federal government policy directives on economic diversification is a sort of political interference in river basin activities. This is because implementing economic diversification schemes is not part of the functions of the RBDAs as provided in the River Basins Development Authorities Decree No. 35 of 1987 (section 4).

In summary, the factors constraining the implementation of watershed management are located within the macro and the operational environments of the RBDAs. For example, the success of the pioneer RBDAs, imprinting effect (cognitive elements) and government policies on food production and economic diversification (regulative elements) are all located within the macro environment. On the other hand, accepting to implement government policies on food production (normative element), the directions and instructions (normative and cognitive elements) from the FMWR and the new script (cognitive element) being implemented by the RBDAs are all located within the operational environment. While the pressures within the operation environment are accessible to the RBDAs to manipulate, those within the macro environment are beyond the ability of the RBDAs

to alter directly. The macro environment has a dominant influence on the operational environment. Also, the relationship between the actors within the macro and the operational environments should not be seen as a one-way affair, because organisations are not passive receivers of pressures from their environments (Suddaby 2010), and can respond to pressures from their environments with different levels of attention (Hoffman 2001). For example, the RBDAs, as actors in the water sector, interacting directly with the FMWR, may lobby the FMWR for favourable instructions and directions. How this happens and the strategies being used by the RBDAs to influence their environments are open to future research. It should be noted that activities within both macro and operational environments are complex and dynamic. A change in government, war, socio-economic conditions/crises, and natural disasters can usher in new rules and lead to the death of others.

Conclusion and recommendations

This paper, which demonstrates the utility of institutional theory in water resources management research, makes an important contribution to both water resources management and institutional theory literature. To understand the factors

constraining the implementation of watershed management in Nigeria, a case study of two RBDAs was analysed using institutional theory as an analytical lens. The paper found that there was a weak understanding of what watershed management entails and not implemented. Those pressures that acted to constrain the ability of the RBDAs to implement watershed management include: (a) the success of the pioneer RBDAs in the area of irrigated agriculture, (b) imprinting effect resulting from the conditions present at the time of founding the newly created RBDAs, (c) the various directives and instructions from the FMWR which were not oriented towards implementing watershed management, (d) the gradual return to direct agricultural production under the cover of revenue generation and support for food production programmes normatively endorsed by the federal government, and (e) the various federal government policy directives on food production and economic diversification as well as the acceptance of these by the RBDAs. Therefore, the underpinning factors constraining the implementation of watershed management are the regulative, normative and cognitive elements of institutions. The findings of this paper may be extended to other RBDAs in Nigeria. This is because the RBDAs in Nigeria share the same regulatory body and work under uniform mandates and objectives and fall under the same policy and legislative directives of the federal government.

Being formal organisations, to improve implementation will require reforming the extant legal instruments the RBDAs comply with in practice on their functional mandates. The idea is that: when rules change, behaviour changes. In light of this, the following measures are recommended:

- (a) amend the River Basins Development Authorities Decree No. 35 of 1987 to include provisions that define and suggest a step-by-step approach to watershed management.
- (b) insulate the RBDAs from interference from the FMWR and the federal government by granting some bureaucratic autonomy to the RBDAs. To implement this will require amending the River Basins Development Authorities Decree No. 35 of 1987, the Water Resources Decree No. 101 of 1993, the Public Service Rules of 2008, and the Administrative guidelines regulating the relationship between Parastatals/Government-owned companies and the Government of 1999.
- (c) revise the National Water Resources Policy of 2016 to be consistent with the River Basins Development Authorities Decree No. 35 of 1987, which divested the RBDAs of involvement in direct agricultural production, and
- (d) for the suggested improvements to be effective, there is a need for further training for the RBDAs on watershed management, and to bring to the awareness of the RBDAs the revised aspects of the extant legislation.

It should be noted that implementing watershed management is vital for the sustainable development and management of Nigeria water resources in order to meet both present and future water uses and users. Therefore, the findings of this paper offer useful lessons at both policy and practice domain to those other countries wishing to realise sustainable watershed management.

Acknowledgements This work was supported by Tertiary Education Trust Fund (TETFund) Nigeria under the Academic Staff Training and Development (AST&D) programme.

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