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Hydropolitical-based fragility in the Free State Province: A case study for South Africa within social contract and actor - network theories.

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Abstract

The Free State Province is a text book case study for hydropolitical fragility in South Africa. The article investigates fragility in the province that is induced by the poor management of water resources within the framework of economic, environmental, political, security and societal dimensions. The study takes place within a theoretical background of the social contract and actor-network theories that are uniquely combined to complement each other since water related state societal relations are linked through a network of human and non-human actors. The article looks at the various factors that impact on hydropolitical fragility in the Free State Province that include a cadre – based administration, corruption, ageing and leaking infrastructure, poor financial administration and regional security issues. These aspects impact on the lives and livelihoods of residents in the province and contribute to increasing political unrest, disinvestment, unemployment, and poverty. Suggestions are made regarding the mitigation of the sources and impacts of hydropolitical fragility that threaten the current stability and political order in the province and country.

Keywords: *Hydropolitics; Fragility; Water; Free State Province; South Africa.*

1. Introduction

In 1994 South Africa held its first inclusive democratic elections that resulted in an African National Congress (ANC) government taking control of the country with the first black president Nelson Mandela at the helm. This was followed by the implementation of a negotiated Constitution (Act 106 of 1996). It was only from this point that the delivery of basic services to all communities on a more equitable basis began to unfold (Graham, 2015: 101). South Africa's Constitution (section 27) indicates that everyone: "has the right to have access to…sufficient food and water" (South Africa, 1996). While such rights are entrenched in the Constitution, the various spheres of government in South Africa lack the capacity to deliver on these rights.

South Africa's water challenges are compounded by a semi-arid geography, low rainfall, limited underwater aquifers and a reliance on water transfers from neighbours. These challenges are aggravated by an increasing demand for water that is linked to economic activities such as agriculture, mining and electricity supply as well as increasing demands for processed water caused by rapid urbanisation. These challenges are adding to the fragility of the country.

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South Africa does not face water related problems alone. It is estimated that 72% of people living in extreme poverty across the globe live in fragile settings, and this is expected to increase to 80% by 2030 which will impact on global efforts to achieve the United Nations Sustainable Development Goals (SDGs). Water remains a scarce resource with 2,2 billion people in the world without access to clean drinking water, 4.2 billion with no access to adequate sanitation and three billion who lack basic handwashing facilities. Most of these people live in fragile, conflict and conflict-affected situations in fragile countries and remain locked into poverty and vulnerable to infectious diseases. The various dimensions of fragility experienced include political, economic, environmental, security and societal (Muggah, 2018; Sara and Bousquet, 2020). These dimensions of fragility are used to explore the impacts of deteriorating water services in the Free State Province in South Africa. While the country's nine provinces share similar water - related issues that contribute to fragility, the research into hydropolitical-based fragility in the Free State Province is used as a case study for South Africa.

The Global Economy (2023) fragility index measures twelve conflict risk indicators that are used to measure the condition of a state at any given moment, These include the security apparatus, factionalized elites, group grievance, economic decline, uneven economic development, human flight and brain drain, state legitimacy, public services, human rights and rule of law, demographic pressures, refugees and internally displaced persons, and external intervention. The higher the value of the index, the more "fragile" the country is. Fragility data for South Africa during the period from 2007 to 2023 indicated an average value of 68.31 index points with a minimum of 57.4 index points in 2007 and a maximum of 72.9 index points in 2018. South Africa's latest fragility value from 2023 of 72 index points, which is higher than the world average of 65.53 index points among 177 countries. This article investigates the contributions of hydropolitics towards fragility in the Free State Province as a case study for South Africa.

Within a human rights context Dugard (2021) makes the important observation that water is the only right that is a "truly finite resource". It is also essential for human survival, unlike all other socio-economic rights. Humans can survive without food for varying lengths of time as with the deprivation of civil or political rights, but will die within a few days without water. It is for this reason that individuals will often revert to unsafe sources of water for survival. Ensuring the rights of individuals is the responsibility of a modern state that, according to Ault and Spicer (2021), has regulatory, security and social-welfare functions. All of these functions are applicable to the management and distribution of water resources in South African society. The management and distribution of water in society is the responsibility of government and remains a political issue. In this respect the term hydropolitics is used to describe the politics of water and is defined as: "attempts to mobilize support in order to consolidate a power base which can secure the equitable and sustainable supply, management and distribution of water resources to specific areas, communities and activities" (Jankielsohn, 2012: 126). Social scientific research requires a theoretical and conceptual basis. The impact of hydropolitics in the Free State Province is carried out within the context of the social contract and actor-network theories. These theories are explained in the article and applied in an ontological manner to the phenomenon of fragility within a hydropolitical context.

Being a water scarce country, South Africa relies heavily on support from neighbours regarding shared water resources such as rivers, but also through direct supply of water. The most prominent example of regional co-operation regarding water is the Lesotho Highlands Water Project (LHWP) that supplies South Africa with 25% of its water requirements (Boccaletti and van Olst, 2020: 1). The Kingdom of Lesotho (hereafter Lesotho) shares a large section of its border with South Africa along the Free State Province, and the pipeline linking Lesotho and the main end-user of this water (Gauteng Province) runs through the province.

The economic decline of South Africa has various sources, one of the most important being declining electricity and water infrastructure networks. According to Derby (2022), albeit that the country has reached economic junk status, South Africa is not yet a failed state in terms of the political and economic systems becoming so weak that government no longer has control, but the country is fragile. This is mainly due to nine wasted years of corruption and state capture under the Zuma-led presidential administration (2009-2018) that resulted economic downgrades, electricity load shedding crisis, bloated wage bill, high cost of doing business and rapidly declining basic service delivery. This has not improved under the Ramaphosa-led presidential administration (2018 to date) that has failed to curb this negative spiral which has devastated the ability of local governments to deliver reliable and safe sources of water and other services to residents. The Free State Province remains a microcosm of water-related issues in South Africa.

The article is predominantly qualitative in nature and relies on a literature study of various sources relating to theoretical, conceptual and practical aspects of the research. In this respect the sources comprise published works such as books, articles and governmental and non-governmental reports. The article will take on the following format:

- A theoretical background that includes explanations of the social contract and actor - network theories as well as a conceptualisation of fragility.
- An investigation of the sources and impacts of water-based fragility in the Free State Province within economic, environmental, political, security and societal dimensions.
- Mitigating water-based fragility in the Free State Province.
- Concluding remarks.

2. Conceptual and theoretical clarifications

Academic research requires a sound theoretical and conceptual basis. In this respect Bryman (2012: 20) indicates that theory provides a "backcloth and rationale for the research that is being conducted", while Heywood (1997: 17) indicates that the construction of concepts supply social scientists with the necessary tools to make sense of the world. This research uses the social contract and actor-network theories as a basis while clarifying the key concept, namely fragility. Definitions of key concepts will be supplied as required by the various sections of the article.

2.1. Theoretical background

On a theoretical level the article is explained from both social contract and actor-network theory perspectives. Both of these are applicable to the responsibilities of governments to allocate

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resources to meet the basic needs of individuals and groups in society.

The social contract theory originates from the book written by Thomas Hobbes titled 'Leviathan', in which he advocated that the individual was autonomous and created the state through a social contract. An advanced version of the social contract was advanced by John Locke who emphasised limited government and the right to resist an unjust government. This was centred on government by consent of citizens within the framework of a constitution. The protection of natural rights and property of individuals was premised on the social contract. Governments that fail to protect these rights violate the trust placed in them and could therefore no longer depend on the trust of citizens. Jean-Jacques Rousseau was famous for his book titled 'The Social Contract' in which he advocates that individuals give up their natural freedom and in return are given the right to participate in in the 'general will' of the community (Winter & Bellows, 1992: 60-65). In the reprinted version of Leviathan, Hobbes (1966: 117) states that:

> Justice of actions, is by writers divided into communutative, and distributive: and the former they say consisteth in proportion arithmetical; the latter in proportion geometrical. Commutative therefore, they place in the equality of value of the things contracted for; and distributive, in the distribution of equal benefit, to men of equal merit.

Almond and Powel (1992: 108-113) indicate that within a modern context, the social contract demands that governments, through bureaucracies, have both commutative and distributive functions. The extractive functions of governments are to extract resources from society - natural, human and material (e.g. taxes), etc. The distributive function of governments relate to allocations of taxes for various services – water, housing, roads, security, education, health, etc. It may be argued that throughout history, both kings and governments have used the social contract to extort loyalty and taxes form citizens in exchange for protection. This arrangement could be regarded, outside of the state within a civil society context, as a legally and constitutionally sanctioned 'protection racket'. This article will explain how, within a hydroplitical context, the Free State Province is an example of how the government's failure to comply with its side of the contract is a major cause of fragility in society.

The classical social contract theory requires new theories that complement it, and ensure that services rendering by modern international and local state and non-state actors within a digitally and technologically-driven world are accommodated. In this respect the actor-network theory provides a sound modern theoretical partnership with the classical social contract theory.

Ontological research carried out within the field of hydropolitics extends into relationships between networks of human and non-human actors. Such networks include the expertise and political relationships of human actors, who may be the benefactors or beneficiaries of state resources, and their dependence on non-human actors such as legal frameworks, funding, technology, water as a natural resource, infrastructure, reticulation and waste water systems, and communication networks. Within this framework, the actor-network theory may be combined with the social contract theory to create a better understanding of the dynamics of a phenomenon under scientific scrutiny, the social contract theory in terms of the relationships between the state and citizens and the actor-network theory in terms of a variety of interdependent human and non-human relationships.

Actor-network theory was an attempt, initiated by studies conducted by Bruno Latour and Woolgar into laboratory life, to remove the idealism of traditional social science knowledge and theory and focus on what scientists do in order to produce knowledge. Other actor-network exponents include Michel Callon and John Law who join the others who were influenced by French post-structuralism and debates around the sociology of science. This theory connects the social and technical dimensions of research. There are thus regular human social relationships that are entangled with non-human natural objects, artificial objects, ideas and concepts in society. The actor network theory revolves around three concepts, namely actors, networks and translation. The actors are human and non-human actors, the network refers to the inseparable and dynamic actor-networks that are constructed by an interactive practice between humans and non-humans, and the actors are connected by a convergence that form channels with other domains through the translation of connections and networks of interests and problems into the language of the main actors. This theory aligns itself with rational ontological and material research (Couldry, 2008: 95-99; Latour, 1996: 4-6; Liu & Yao, 2022: 3-4).

On a practical administrative level, Human (1998: 27), perhaps unintentionally, makes an important point regarding actor-network theory with the comment:

> We must therefore bear in mind that institutions and organisations are not only collectives of people and the sum total of their ideas and beliefs. Organisations are also material realities. They have buildings, equipment, bureaucratic forms, systems, written procedures, files, and artefacts.

In terms of this comment, Human (1998: 186) explains an important human aspect of the actor-network theory indicating that the relationship in a social contract consists of clients and actors. The clients are those who experience a direct need, are most affected by societal problems, and should benefit from interventions. Actors are those who initiate and execute projects to alleviate societal needs. The non-human actors would be the natural and non-natural material resources required to execute the projects efficiently and effectively. This is supported by Turton (2002: 15-16) who confirms the relevance such theory as a basis for hydropolitical research with the observation that "…the study of hydropolitics is the systematic investigation of the interaction between states, non-state actors and a host of other participants, like individuals within and outside the state, regarding the authoritative allocation and/or use of international and national water resources".

The social contract and actor-network theories are used to explain the role of the state in managing and distributing water resources in society in a manner that ensures equitable benefits for all citizens. While equitable distribution is done in terms of a social contract in which the state should, through its government, protect the civil, political and socio-economic rights of citizens; the management of such resources through various interdependent networks is evaluated in terms of the actor-network theory. Fragility is not only caused by water scarcity, but also by the poor management of water resources through weak networks involved in the management of this scarce resource. Within a Free State Provincial context, this includes aspects such as the lack of human capacity

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due to ideological policies and practices, infrastructure decay, pollution and the lack of end-user education that are all connected to each other.

2.2. A conceptualisation of fragility

Important to the conceptual clarification of fragility lies the theoretical basis of failing and failed states. In this respect, Derby (2022) makes an important observation regarding South Africa:

> We are not a failed state, defined as a country whose political or economic system has become so weak that the government is no longer in control. No matter our angst at the levels of service delivery, it would be unfair to categorically say that we are at this point. But fragile, we definitely are.

State collapse, that characterises failed states, is marked by the loss of control of political and economic space by governments that result in a downward spiral of increasing fragility. This is in many post-colonial instances the result of liberation movements' inability to transform into legitimate political parties and governments. Zartman (1995: 8-9) indicates that:

> …a regime – which is often ruled by the independence generation of civilians – after being in power for a long time wears out its ability to satisfy the demands of various groups of society. Resources dry up, either for exogenous reasons or through waste and corruption…causing an atmosphere of dissatisfaction and opposition, which in turn draws increased repression and use of police and military to keep order.

The African Union, which South Africa is a member of, sets out their governance agenda in the document "Agenda 2063 – The Africa We Want", which indicates that by 2063 Africa will be a continent where democratic values, culture, practices, universal principles of human rights, gender equality, justice and the rule of law are entrenched. The document ambitiously indicates that the continent must have capable institutions and transformative leadership in place at all levels. It also envisages Africa as a continent where the institutions are at the service of its people and citizens will actively participate in social, economic and political development and management. Competent, professional, rules and merit - based public institutions will serve the continent and deliver effective and efficient services. Institutions at all levels of government will be developmental, democratic and sustainable (cited in Pillay, 2001: 63). In an Organization for Economic Cooperation and Development (OECD) research paper, Desai and Forsberg (2020: 17) warn that natural resources can be a blessing and a curse. They become a curse when political, social and institutional factors incentivise corruption and rent-seeking among political elites in order to capture resource revenues.

Desai and Forsberg (2020:22, 25) support differentiated approaches to fragility that include economic, environmental, political, security and societal dimensions. They advocate a systems approach to fragility that incorporates a holistic view of fragility in terms of root causes, symptoms and policy responses. The importance of public policy in fragility mitigating governance is indicated by the World Bank who emphasise three distinct aspects of governance, namely the form of a political regime; the process by which authority is exercised in the management of a country's economic and social resources for development; and the capacity of governments to design, formulate, and implement policies and discharge functions (Weiss, 2000:797). This is supported by Roux (2002:418) who states:

> …if a public institution is to survive, grow productively and render services to the public, the ability to effectively formulate policies for change and on a continuous basis also assess or analyse such policy initiatives, is of paramount importance. In practice this implies that awareness, knowledge and skills are needed at all levels in order to implement sound policies and make change happen.

These aspects are all crucial ingredients for a water services network that is able to deliver sustainable and safe water to households, industries and businesses. The actor-network theory implies that networks that include infrastructure, communication and technology are crucial for the government to exercise authority. Infrastructure combined with human knowledge and experience are critical for the establishment of stable institutions, a functioning economic sector and service delivery such as electricity, running water and sewage systems that affect human development. Actor-network theory focuses on the underlying socio-material factors that impact on the fragility of state institutions and citizens' abilities to escape fragility (Sternehäll, 2015: 14-15). This is supported by Grävinholt, et al. (2017: 18) who indicate that discussions on fragility must take into account that the provision of security by a state is a capability that differs from the delivery of services such as water supply and sanitation through the sound management of public finances "since it is intimately related to the state's ability to protect its authority vis-à-vis competing actors". This is echoed by Dugard (2021) who emphasises that in modern societies, water is at an intersection between natural, cultural, political and economic systems within bureaucratic, legal and human rights frameworks.

Fragility is closely linked to what Connolly (2013) refers to as a state-society contract that is predicated on the expectations that society expects of its government, the ability of a state to provide services and the willingness of the elite to direct resources and its capacity to meet citizens' expectations. This implies that the inability of a governing elite to comply with the social contract to deliver on services and expectations of services will contribute to fragility within a state. Sources of hydropolitical fragility in the Free State Province are closely linked to an ideological approach by the government towards the role of the state in the delivery of basic services.

3. Sources and impacts of water-based fragility in the Free State Province

The conceptualisation of fragility within a theoretical context of combining the social contract and actor-network theories, as a theoretical background, lays the foundation for a hydropolitical evaluation of water as a source of fragility within the Free State Province in South Africa.

Both the Free State Province and South Africa's water related problems cannot be separated from a history of racial inequality dating back to previous colonial and Apartheid governments that included the unequal provision of basic services that included water, electricity, infrastructure and housing. The pre-1994 Apartheid system was characterised by separate development of different race groups, each within defined geographical areas across the country. Industrial labour were restricted to live in urban ghettos known as townships with limited access to basic services,

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while many others were marginalised in rural areas often referred to as the dumping grounds for redundant black population (Piccard and Mogale, 2015: 205). Historical water distribution in the country has been described by Turton and Meissner (2002: 37) as cultural Darwinism in which "a racially defined political elite gained hegemonic control over the balance of hydrological privilege in society".

Water-based insecurity is an important cause of fragility in the Free State Province. In this respect Sara and Bousquet (2020) correctly indicate that:

> Lack of access to water supply and sanitation is just one aspect of water insecurity. Other aspects of water insecurity are when there is too much, too little or water is too polluted to be used. Together, all these aspects of water insecurity can cause severe disruptions and compound fragilities in social, economic and environmental systems. Where water insecurity repeatedly affects populations, it can act as a risk multiplier, intensifying existing grievances, creating new risks, and deepening inequalities…Often it is not the scarcity of water itself that leads to tension, but the way in which it is administered – inefficient use and management of water, unequal distribution, outdated infrastructure, and inappropriate legal, political, and economic frameworks all exacerbate tensions.

Most of these aspects are applicable to the Free State Province, especially since some communities residing alongside major national rivers suffer from serious water insecurity.

The World Bank's twenty years of experience in mitigating fragility identifies three key priorities, namely strengthening institutional capacity, building resilient societies, and catalysing private investment (African Development Bank Group, 2022: 1, 17). In addition to this, he OECD identify important dimensions that may be used as instruments to measure fragility that include economic, environmental, political, security and societal (Desai and Forsberg, 2020: 41-46). These dimensions will be used as an actor-network framework for the evaluation of fragility within the hydropolitical provincial context of the Free State Province, while the priorities can be used to mitigate the fragility.

3.1. Economic dimension

The economic dimension measures vulnerabilities stemming from weak economic fundamentals and the coping capacities to mitigate their impacts on the wellbeing and prosperity of individual people, households and the whole society (Desai and Forsberg, 2020: 41). The economy of the Free State Province is experiencing similar pressures as South Africa's national economy. The Free State Provincial economy contracted two persent in 2022 contrasting the 3.6% growth rate recorded in 2021, and provincial economic growth in 2023 is expected to be a mere 0.1% (Brown, 2023; Meeko, 2023a).

Economic activities in the country and provinces take place within municipal boundaries. Municipalities are also responsible for ensuring services such as water, sewage, electricity and roads networks that are required for businesses and households to prosper. The state of municipalities is therefore important in determining fragility within the economic dimension. National Government reports indicate that growing numbers of the 275 municipalities across the country are rendered fragile and economically unviable by growing debt, the inability to pay for bulk water and electricity, and worsening audit outcomes. Free State municipalities are some of the worst performers in terms of debt collection rates, which makes bulk services and infrastructure unaffordable (Murray, 2022: 108-109). A National Treasury report (2022: 5-9) for Free State Provincial municipalities indicated that on 28 February 2022 the debt owed to municipalities by residents, in many instances due to collapsed billing systems, was R28,37 billion rand of which 35% was for water services and 13% for waste water services. Creditors (debt owed by municipalities) was R20,72 billion of which R18,26 billion (88,1%) was for bulk services to local water boards and the national electricity provider (Eskom). A further indicator of economic decline of Free State Provincial municipalities is that the report indicates that seven of the municipalities were unable to submit their creditors' data, in all probability due to their financial dysfunctionality.

The poor management of water and sanitation have serious economic consequences. The realistic approach by the World Bank indicates that since most forms of production create pollution as a by-product, it can be extrapolated that economic growth and water pollution are linked. It is generally understood that water is a requirement for both life and economic production, and that upstream pollution affects downstream users. Most authorities agree that the elimination of all pollution in water is unfeasible and costly and appropriate levels of pollution must be determined. This refers to weighting of economic benefits against costs of pollution. Research by the World Bank indicates that where rivers are moderately polluted, the downstream GDP growth is reduced by 1,4%, and when they become heavily polluted the cost is two percent. However, in middle income countries (such as South Africa) this could be 1,76% and 2,5% respectively (Desbureaux *et al*, 2019: 1, 9). This research is based on pollution caused by economic activities which weights against negative impacts, and does not take large scale sewage spills as a result of local governments failures into account. Such pollution affects local and downstream inhabitants and deters economic investments and development.

In the Free State Province, the economic impact of poor water management is not only through the pollution of freshwater resources, but also through losses of treated water through ageing infrastructure, burst pipes and unmetered connections. It is estimated that 56% of treated water in Matjhabeng Local Municipality, the second largest in the Free State, is lost as a result of leaking water pipes costing residents R323 million per year. The largest municipality in the province, the Manguang Metropolitan Municipality (MMM), experiences water losses of R406,6 million per year which is about 46% of all treated water (Schrieber, 2023; Koteli, 2023; Mkuyane, 2022). Water shortages in the MMM are expected to be mitigated by a long term water supply project that will involve pumping water through a 200 kilometre pipeline from the downstream Gariep Dam at a cost of R10 billion with a completion date of 2029 (Mchunu, 2022: 10).

Poorly managed and ageing infrastructure, which refers to the technical services provided by the state, contribute significantly to the lack of economic investment in most municipalities. Such services include access to electricity networks, sewage and water systems, roads, machines and technology that impact on the quality of life that a state is able to provide for its citizens. Water infrastructure and sustainable water supply also plays a part in the ability of important economic industries such as mining and production to function effectively (Sternehäll, 2015: 9). This is

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apparent in the Free State Province that is experiencing serious economic water services network-based decline that contributes significantly to the fragility of residents.

The Free State Province has only one Special Economic Zone (SEZ) which provides tax incentives for investors in the Maluti-a-Phofung Municipality near the town of Harrismith. This SEZ is in the poorest region of the province that includes a large cluster of rural villages in a vast mountainous area named QwaQwa. This SEZ and the whole industrial area of QwaQwa, that used to house many incentivised factories prior to 1994, is now the poorest region of the Free State Province with many factories closed and vandalised. The main reason for this is this economic decay is a result of collapsed municipal services such as roads infrastructure and water and electricity provision. The decline of water services is also linked to sabotage and monopolies by so-called water mafias who grow rich from state sponsored private water services (Schoeman, 2023).

3.2. Environmental dimension

The environmental dimension evaluates vulnerability using climatic and health risks that affect livelihoods as well as the social and legal institutions in place to counterbalance such risks. In this respect the effectiveness of governments and impacts on food security are important. Aspects that may aggravate such risks of vulnerability include urbanisation, socio-economic factors, risks of infectious diseases and environmental performance (Desai and Forsberg (2020: 42).

The environmental dimension is one of the most informative regarding the risks relating to fragility in the Free State Province as indicated in Blue and Green Drop Reports issued by the National Government's Department of Water and Sanitation. Residents of the province are subjected to extreme pollution with raw sewage running through yards and into rivers and streams. National government reports indicate that the Free State Province is least compliant with 64 out of 96 waste water systems in a critical condition, while 80% have no plans in place to mitigate this. The Green Drop Report measures wastewater treatment plants that are tasked with purifying wastewater (including sewage) and releasing back into rivers so that it can be reused by residents in their homes and businesses. This report states that, across the Free State Province, there is a "dreadful state of negligence, lack of management commitment, effort or duty to maintain public assets". Only three out of 19 municipalities in the province have drinking water that comply with minimum microbiological and chemical compliance standards, with 16% good, 10% poor and 74% classified as bad. The result of this is that strategic rivers such as the Caledon, Vaal and Orange Rivers are polluted by raw sewage that also flows into natural reserves. This pollution also poses serious health risks for humans and animals who consume food contaminated by polluted water, as well as directly polluted water from many contaminated dams, rivers and streams (Karim and Gonzales, 2023; Kretzmann, 2022).

The Blue Drop Report measures the technical aspects relating to infrastructure (pipes, pumps, reservoirs as well as processes regarding water distribution and quality). In this respect the Free State Province's technical site assessments that evaluate the abstraction, pumps and distribution networks gave the province 63% in terms of overall conditions with the highest being Tshelopele Local Municipality with 82% and the lowest being Masilonyana Local Municipality with 30%. Of the 21 water treatment plants measured in terms of michrobiological water quality status; seven were in excellent condition, five were good, one poor and eight bad. The report indicates that "the water in these systems poses a serious acute health risk to residents". The report further indicates that in terms of chemical compliance only two have excellent, six good, two poor and 11 bad systems which is indicative of poor resource management and lack of technical skills (Department of Water and Sanitation, 2023: 66-73).

In June 2023 the Free State Department of Health confirmed nine cases of cholera that resulted in two deaths in the Ngwathe Local Municipality (Motloung, 2023). This is a municipality that has access to the Vaal River but is failing to deliver access to regular and clean water to residents due to administrative and financial mismanagement and sabotage. The Ngwathe Mayor, Victoria De Beer-Mthombeni, blamed sabotage and electricity load shedding for the inability of the municipality to ensure functional water reticulation and sewerage systems. Water tested by Non-Governmental Organisation (NGO), Afriforum, confirmed the existence of cholera and E. coli. in samples taken in the Vaal River at different locations within the municipality (Seleka, 2023).

In a statement, a Democratic Alliance Party Councillor in the Mangaung Metropolitan Municipality, David Masoeu, indicated that there are 9000 pit latrines in the Metro that are sporadically serviced which is often months apart. Residents complain about worms, skin disorders and other health hazards. Metro authorities indicate that they do not have adequate resources to deal with the problem (Gericke, 2024). This impacts significantly on people's right to dignity that is enshrined in Section 10 of South Africa's Constitution.

Another significant example of the extent of pollution by municipalities is the destruction of the Seekoeivlei Nature Reserve that was declared a Ramsar Convention Wetland Site in 1997 at the town of Memel in the Phumelela Local Municipality. In reply to questions in the Free State Legislature the Member of the Executive Council responsible for Environmental Affairs in the Free State Provincial Government, Mr Thabo Meeko, indicated that investigations found that the Memel sewage plant does not have the capacity to handle the increasing volumes of raw sewerage from the community which has resulted in the large scale pollution of the reserve (Meeko, 2023b). The environmental impact of neglected sewerage management across the province is that rivers, streams and dams are subjected to pollution by raw sewerage. This has significant environmental and health impacts for communities and poses serious economic risks, especially to tourism and agriculture.

3.3. Political dimension

Political processes and coping mechanisms to strengthen accountability and transparency are important instruments to measure political fragility. Other factors include government capacity, political stability and legislative and judicial constraints. A lack of political integrity, corruption and clientalism can also be used as risk-related indicators (Desai and Forsberg, 2020: 44).

State capacity is determined by state-society relationships in which the state has to supply basic services to citizens. Such services are assumed to include education, health care and an administration that has the capacity to regulate social and economic activities through networks of actors that who are able to improve collective gains and avoid risks. The delivery of basic services by a network of state and non-state actors can be regarded as an important part of the modern social contract. Within this paradigm it would be

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reasonable to presume that the provision of reliable and water and protection from diseases, among many other services, can be used as indicators to measure state capacity (Grävinholt, et al. 2017: 19, 22-23).

Seekings and Nattras (2015:186-186, 190) explain that the ANC-led government after 1994 inherited a state that was not designed to develop opportunities or deliver services to the poor and marginalised. This implied that policies and legislation guiding the civil service and state institutions had to be transformed at political and administrative levels. The transformation saw the expansion of basic services to more people, but also became starved of capacity as many experienced and skilled civil servants left, or were forced to leave, the government for the private sector or retirement. While the delivery of services is less unequal than in the past, many people in South Africa still live in informal dwellings with limited access to basic services.

The cadre deployment strategy of government, also referred to in communist terms as democratic centralism, is regarded as a significant cause of water-based fragility. This strategy is part of the governing ANC's communist styled National Democratic Revolution (NDR) (Jeffery, 2023: 62-63). This strategy must, in the words of a former ANC strategist Joel Nietshitenzhe, transform government and society by: "…extending the power of the national liberation movement over all levers of power: the army, the police, the bureaucracy, intelligence structures, the judiciary, parastatals and agencies such as regulatory bodies, the public broadcaster, the central bank and so on" (Davis, 2010).

One of the most infamous quotes on the attitude of cadres towards state resources came from a former ANC Spokesperson Smuts Ngonyama in 2004 with the words: "I did not join the struggle to be poor" (Mkhabela, 2011). This is supported by former ANC Member of Parliament, Ben Turok (2018), who describes the NDR as having become a source of large scale corruption driven by an "it's our turn to eat" motivation by cadres in government. The implementation of the NDR and its cadre deployment strategy has become the greatest driver of corruption and political instability.

Within a hydropolitical context, Muller (2020: 17) states that:

> …the problems of corruption go well beyond just a few individuals. They are clearly systematic, involving many people at all levels, from plumbers and tanker drivers to mayors and ministers. Many businesses joined in too, benefitting richly from corruption and in some cases, actively organising and encouraging it. A wide range of cases have been identified across many areas of activity. They range from corruption in the supply of water by road tankers and the provision of temporary toilets, to the systematic looting of large scale construction contracts intended to develop water resources and keep the country water secure.

Cadre-based corruption has a profound impact on government's capacity to deliver basic services such as water to communities in South Africa. Cadre Deployment is regarded as being at the centre of state collapse. The strategy of cadre deployment has had the effect of ensuring that bureaucrats who are responsible for the management, quality and distribution of water; and the maintenance of water-related infrastructure are party loyalists. Loyalty to the party has taken precedence over qualifications. A joint report by Corruption Watch and the Water Integrity Project have identified a number of reasons for the decline in South Africa's water sector that include:

- The decline in the reliability of water services supply.
- A decrease in the resilience of services to problems such as droughts that lead to regular supply failures for millions of residents across the country.
- The non-payment for water by residents that is affecting operations and maintenance of water supply infrastructure.
- Pollution of rivers due to failed municipal wastewater management and poorly regulated economic activities.
- The collapse of the management of the national Department of Water and Sanitation, with billions of rand of irregular expenditure, huge debts and failed projects (Muller, 2020: 12).

Homer-Dixon (1994: 6) summarises this accurately with the following comment:

> A fall in the quality and quantity of renewable resources can combine with population growth to encourage powerful groups within society to shift resource distribution in their favour. This can produce dire environmental scarcity for poorer and weaker groups whose claims to resources are opposed by these powerful elites. I call this type of interaction 'resource capture'.

Resource capture weakens the state, which according to Migdal (1988: 6) develops because those in government start off by attempting to transform society and eventually become absorbed into that which they want to transform. Meaningful change relies on the capability of the state to penetrate society, regulate social relationships, exact resources and use (appropriate) resources to implement plans of action. Strong states are able to transform societies in this manner, while weak states are unable to achieve these important tasks in society.

An important factor mentioned by Palmer (1989: 299) is that government control over a state is not a sufficient condition for economic development. Growth will only happen when the resources of the state are successfully mobilised to support development processes. This process is easily obstructed by a lethargic and inflated bureaucracy who have lost their vision of mobilising resources for development and poverty alleviation purposes. The provision of water and sanitation services in South Africa are mainly regulated by the Constitution (Act 108 of 1996 as amended), the Water Services Act (Act 108 of 1997), the National Water Act (Act 36 of 1998), Water Research Act (Act 34 of 1971) and the National Environmental Management Act (Act 107 of 1998) that are meant to ensure equitable, sustainable and efficient water management (Mchunu, 2022: 18).

Being a member of the Southern African Development Community (SADC), the country has political responsibilities to protect water resources shared with neighbouring states such as Lesotho that borders on the Free State Province. The SADC manages water resources through the Revised Protocol on Shared Water Resources 2000, the Regional Water Strategy 2006 and Regional Strategic Action Plans for the Water Sector. These agreements emphasise the equitable use of water resources that take into account the guiding principles of integrated water management, geographic and climatic factors and the socio-economic demands of member states (SADC, 2020). The pollution of water resources by Free State Provincial municipalities along the Caledon River, which is the

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border between Lesotho and the Free State Province, is in violation of these international agreements and has regional hydropolitical implications.

The Free State has been at the centre of state capture as a result of the ANC's cadre deployment policy which has entrenched corruption and devastated the capacity of the provincial and local governments to deliver basic services that are crucial for economic growth and the welfare and health of residents (Steyn, 2023). The hydropolitical phenomena that contribute to fragility are not due to the lack of local or international legal frameworks, but rather to poor implementation of legislative frameworks and protocols by cadre deployed officials and politicians.

3.4. Security

Vulnerability to violence and crime as well as institutions that mitigate these risks are important measurement tools for the security dimension of vulnerability. Coping capacity regarding the rule of law and government control over territory are further measurement instruments within this dimension (Desai and Forsberg, 2020: 45).

Various factors relating to regional hydropolitics affect the security and contribute to fragility in the Free State Province. The Lesotho Highlands Water Project (LHWP), that included the building of the Katse and Mohale dams in the Lesotho Highlands was that were completed in 1997 and 2002 respectively. These dams supply half of all water for industrial and urban use, through a network of 500 kilometres of pipelines and rivers, to South Africa's economic heartland the Gauteng Province. The Gauteng Province is responsible for 40% of South Africa's Gross Domestic Product (GDP) and 80% of the country's extractive outputs which comprise 16% of economic activities in Sub - Saharan Africa. The construction of these dams dislodged 15,000 inhabitants who were forced to abandon their lands and villages in Lesotho. Compensation for this was secured for 50 years and is not generationally transferable. These inhabitants of Lesotho have requested parts of the Eastern Free State border region that they regard as colonial 'conquered' territories as compensation from what many regard as South Africa's water looting economy. These cultural and historical claims were strengthened by ignored developmental promises made by authorities at the time of construction (Rousselot, 2015: 1, 5, 8-9).

The border region between the Free State Province in South Africa and Lesotho remains a serious source of conflict and cross-border crimes such as stock theft, land invasions and looting that has serious economic implications for the Free State Province's agricultural sector. This highlighted by Free State Agriculture, an organisation representing Free State farmers, who indicate that as many as 35% of farm attacks take place in 13 town districts along the Lesotho border. Stock theft in the Free State Province amounts to three billion rand and illegal hunting R10 million per annum. The South African National Defence Force (SANDF) find this border area difficult to patrol due to poor roads and the lack of security fences (Gericke, 2023; Coleman, 2022). In replies to parliamentary questions, South Africa's former Minister of Defence and Military Veterans, Nsiviwe Mapisa-Nqakula, indicated that the SANDF spends R88 million to deploy about 370 soldiers to patrol Lesotho's 900 kilometre long border with South Africa. She further indicated that 11 of the 17 stock theft hotspots were along the border with the Free State Province (Michalakis, 2020).

The displacement of people as part of the LHWP that resulted in losses of livelihoods and poor compensatory measures, together with cultural and historical factors, can be regarded as contributing factors to the ongoing border territorial crimes. Besides secondary hydropolitical issues, the porous borders due to a lack of border policing by South African authorities is an indication of a weak state, and another cause of the escalation of cross border crimes and conflicts along this border.

Another serious internal security issue is protest action, in the form of service delivery protests, that often become violent and result of damage to state and private property. These protests have become a regular feature of the Free State Province's political landscape. The dysfunctionality of local governments is the main reason for service delivery protests in South Africa and specifically the Free State Province. Dugard (2021) indicates that:

> Typically related to failures of local government basic services including water (in South Africa, the reticulation of water services is a local government mandate), as well as corrupt municipal administration, these protests have equally surfaced deepening frustrations about socio-economic inequality and exclusion and political unresponsiveness to this situation.

Desai and Forsberg (2020:17, 21) make the important observation that, while violent protests do not automatically imply fragile contexts, violence and fragility do complement and reinforce each other. Violence remains a combination of exposure to risk and insufficient coping capacities of the state, communities and/or the system to manage, absorb or mitigate such risks.

As far back as a decade ago, social scientists such as Connolly (2013) warned that:

> It is not argued that the (South African) government has not attempted to improve life for the people. In some aspects, it has indeed been successful, but it appears increasingly unable to meet the growing demands and expectations of the poor masses in the society. Whether it is because the government has given people false expectations or whether their expectations have increased over time is largely immaterial. The fact is that the state-society contract of 1994 is fraying and weakening, large sections of the poor appear to have lost some faith in the government's ability to meet their needs, and destabilising conflict between state and society has become prevalent. South Africa, it seems, is developing more pockets of fragility potentially leading the country towards long sequence of violent protests….

In replies to questions in the Free State Provincial Legislature, the Member of the Executive Council responsible for Community Safety, Roads and Transport, Maqueen Letsoha-Matai (2023), indicated that between March 2021 and June 2023 there were 205 service delivery protests in the province, of which 69 were related to the lack of water and sanitation services. A total of 70 of these protests were violent resulting in 8 injuries and damage to property valued at R51,426 million.

On another level, the actions of what have been dubbed "water mafias" in the province have also seen the erosion of the state in favour of private water suppliers across the province. The most prominent example of these is in the Maluti-a-Phofung Municipality where private suppliers supply water to people

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through water tankers paid for by the state. Taps in households and businesses are regularly empty even though the municipality houses three large dams, namely Fika-patso, Metsimatsho and Sterkfontein dams. At best, when water is available in taps it is erratic and unsafe. Mafias are accused of sabotaging water infrastructure to force local governments to utilise their services. Reports in Maluti-a-Phofung indicated that five million rand was paid for 5000 water tanks, but only 1500 were delivered, even though the full amount was paid. These tanks are meant to supply water to communities, while being replenished by privately operated water tank trucks paid per delivery by the municipality (Schoeman, 2023). Sabotage was also cited as a reason for the inability to provide water and poor water quality in Ngwathe Municipality (Seleka, 2023). These water tank mafias operate in an environment of a cadre deployment induced weak and corrupt state, as explained under the political dimension of fragility.

The above hydropolitical phenomena in the Free State contribute significantly to security-based fragility of the province.

3.5. Societal dimension

The societal dimension of fragility is measured in terms of vulnerability affecting social capital and social cohesion and the ability of institutions in society to counteract potential risks in this regard. The risks may increase in societies with young populations who live in conditions of inequality and depravation that limit their potential to develop human capital (Desai and Forsberg, 2020: 45). The hydropolitical aspects of this dimension are stressed by the World Bank who warn that: “stressed water supplies exacerbate food insecurity, biodiversity loss and challenge human development” (Jha, 2023).

The economic impact of water-based fragility, among others, has contributed to declining employment figures. The Free State Province recorded losses of 70,000 employment opportunities from July 2022 to September 2023 with agriculture being the hardest hit sector with 28,000 job losses (StatsSA, 2023. 8, 54). Over 60% of people in the province are living in poverty, and one million people rely on social grants out of a provincial population of 2,964,412 (Meeko, 2023a; StatsSA, 2002: 20).

The 2022 census indicates that the Free State Province has 845,250 households of which 81,693 still live in informal and 10,497 in traditional dwellings. Only 49% of these Free State households have piped water inside their dwellings. The census also indicates that the Free State Province has lost 10,067 people since 2011, who have left the province to seek better living conditions and jobs in other provinces, a poor reflection on the provincial economy (StatsSA, 2022: 20-23).

Water insecurity have also impacted on the ability of schools, clinics and hospitals to function effectively. Many victims of the water-related fragility are young people. Mosala (2018: 6) indicates that many of the unemployed youth in the Free State Province experience social impacts of fragility that include severe financial difficulties, poverty, debt, homelessness, family tensions and breakdown, alienation and stigma, increased social isolation, crime, lack of confidence and self-esteem, the inability to attain skills and education, and ill-health which increase with the duration of unemployment.

4. Mitigating water-based fragility in the Free State Province

Some important recommendations to ensure sound water management, as advocated by the Water Integrity Network, include fighting corruption in this sector by the designation of the water sector as an island of integrity, ending impunity by instilling a culture of consequences for poor water management, ensuring skilled, honest and ethical people within the sector to manage water and wastewater treatment plants and ensuring that procurement is carried out within the required time frames, at the right quality and correct prices. This revolves back to the principles of transparency, accountability and responsiveness at all levels of the public service.

The management of what can be referred to as a hydropolitical crisis in the Free State Province will require interventions that include:

- The abandonment of the ideologically - based cadre deployment policy and the appointment of technically qualified and skilled individuals to manage scarce water resources and operational systems.
- Investment in water reticulation and sanitation infrastructure renewal to mitigate water losses and ageing infrastructure.
- Ensuring visible and expanded oversight by legislative bodies with consequence management over government’s use of funds that are meant to ensure greater equity of water resources in the country.
- Implement environmental and anti - corruption legislation to ensure that individuals responsible for water and environmental pollution due to negligence and malfeasance are prosecuted.
- Educating end - users on the sustainable use of water as a scarce resource (Muller, 2020: 69-7; Jankielsohn and Haj-Younes, 2020: 302).

The above measures are medium to long term interventions for the many hydropolitical aspects that contribute to fragility in the Free State. There are, however, no short term fixes for many years of wasted time, opportunities and money that have stripped local governments in the Free State of capacity and resources and left the province fragile and its people in poverty. The key to mitigating the hydropolitical fragility of the province and the country lies in an admission of the seriousness of hydropolitical fragility and the creation of a sense of urgency by implementing solutions immediately, in other words less historical explanations and more action.

Various NGO’s are assisting communities who experience water shortages. Such NGO’s include Water Shortage South Africa, Afriforum and Gift of the Givers who intervene when vacuums exist as a result of the failures of local governments in the Free State Province. Such NGO’s and other local community organisations have tested water samples to determine safety of water and been instrumental in ensuring that individuals and households have access to drinking water during water-related crises. The crises regarding water in the Free State Province extends to all towns and municipalities and it is not within the financial or human capacity for these organisations to fill the infrastructure and capacity vacuums created by dysfunctional municipal administrations. They do, however, help with temporary

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measures such as bottled water when the situations become life threatening (Afriforim, 2016; Ngcobo, 2023).

5. Concluding remarks

The social contract and actor-network theories supply a combined theoretical basis for the study of hydropolitical-based fragility in the Free State Province. While the social contract theory supplies a sound basis for such a study within a framework of state and non-state actors within a country context, the hydropolitical interactions between state human and non-human, as well as non-state human and non-human actors requires the extension of this theory to local levels. There are a variety of institutions involved in hydropolitics that include government officials, non-governmental organisations, citizens, legislative frameworks, the environment and infrastructure that require inclusion within a scientific study of water-related fragility.

Water-related issues (hydropolitics) are significant sources of economic, environmental, political, security and societal fragility in the Free State Province. This fragility, as conceptualised, can only be reduced if ecological resources such as water are managed in a manner that ensures equitable and sustainable access for household and economic use by local communities.

Much of the hydropolitical fragility and tension is government (human) and policy related. Some important recommendations to ensure sound water management as advocated by the Water Integrity Network include fighting corruption in this sector by the designation of the water sector as an island of integrity, ending impunity by instilling a culture of consequences for poor water management, ensuring skilled, honest and ethical people within the sector to manage water and wastewater treatment plants and ensuring that procurement is carried out within the required time frames, at the right quality and correct prices. This involves back to the principles of transparency, accountability and responsiveness at all levels of the public service (Muller, 2020: 69-71). The discontinuation of the ideologically - based cadre deployment policy, as part of a NDR, by the ANC-run government that has entrenched mediocrity and corruption will be a significant step in the right direction, but only if excellence and skills are brought back into the dysfunctional civil service.

The hydropolitical fragility in the Free State Province will cause a further escalation in service delivery protests that threaten the democratic constitutional order. The main reason for this is because impoverished citizens have not yet made the correlation between their personal household fragility and the need to use the democratic system to bring about changes in government, and thus government policies. While politicians in government continue to blame colonialism and the historical pre-1994 Apartheid system for their failures, the ability of municipalities in the Free State Province to extricate themselves from the web of fragility by investing in modern infrastructure and improving their administrations and technical capacities is hampered by ideological cadre - based factional deployment policies and the resulting networks of corruption.

The table below summarises the networks of actors in the hydropolitical space in the Free State Province that indicates those networks involved within a social contract and actor-network theories. If the interactions between networks of actors deliver positive outcomes for beneficiaries there will be hydropolitical stability, but conversely if the outcomes are negative there will be varying degrees of hydroplitical instability. The stability and instability will impact on the economic, environmental, political, security and societal fragility of the province. In the case of the Free State Province, which is a case study for South Africa, the collapse of water related services due to state incapacity has eroded the social contract and allowed for a number of non-state actors to fill the vacuum left by failing and dysfunctional state actors.

NETWORKS OF ACTORS IN THE HYDROPOLITICAL SECTOR			
	SOCIAL CONTRACT ACTORS		
HUMAN NON-STATE ACTORS	**BENEFICIARIES OF WATER**	**NON-HUMAN STATE ACTORS**	**HUMAN STATE ACTORS**
NGO's **Community organisations** **Criminal syndicates** **Beneficiaries of water**	**Businesses** (agriculture, mining, retail, manufacturing, industry, etc.) **Individuals** **Households** **Clinics** **Hospitals** **Schools**	**Natural water sources** **Water infrastructure** (water pump stations, pipelines, water treatment plants, waste water treatment plants, etc.) **Communication networks** **Financial networks** (finances, billing systems, etc.) **Legal frameworks**	**Local governments (municipalities)** **Provincial government** **National government** **Bureaucracies**
HYDROPOLITICAL FRAGILITY / HYDROPOLITICAL STABILITY (economic, environmental, political, security, and societal)			

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As a case study for South Africa, the Free State Province faces serious hydropolitcal threats that require the necessary political will to implement immediate policy and funding reforms that focus on the basics of service delivery that require a culture of integrity and accountability in all spheres of government. In this respect there is nothing more basic for survival of all living beings and most economic activities on the planet than water. Politics cannot get more local than water – which is what hydropolitics is all about.

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