ANNUAL PERFORMANCE PLAN

For the 2023/24 financial year

WATER RESEARCH COMMISSION

VISION

To have highly informed water decision-making through science and technology at all levels, in all stakeholder groups, and innovative water and sanitation solutions through research and development for South Africa, Africa and the world.

MISSION

To be a global water knowledge node and South Africa's premier water knowledge hub active across the innovation value chain that:

- informs policy and decision making
- creates new products, innovation and services for socio-economic development
- develops human capital in the water and sanitation science sector
- empowers communities and reduces poverty
- supports the national transformation and redress project
- develops sustainable solutions and deepens water and sanitation research and development in South Africa, Africa and the developing world

VALUES

- A culture of learning and sharing
- Innovation and creativity
- Integrity and fairness
- A spirit of professionalism and service orientation
- Facilitating empowerment and social change
- Good governance

OFFICIAL SIGN-OFF

It is hereby certified that this Annual Performance Plan:

1. Was developed by the management and the Governing Board of the Water Research Commission under the guidance of Mr S Mchunu MP, the Minister of Water and Sanitation
2. Takes into account all relevant policies, legislation and other mandates for which the Water Research Commission is responsible
3. Accurately reflects the outputs which the Water Research Commission will endeavour to achieve over the 2023/24 planning period

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LIST OF **ACRONYMS**

Agenda 2063	African Union, Agenda 2063
4IR	Fourth Industrial Revolution
AI	Artificial intelligence
CBOs	Community-based organizations
DSI	Department of Science and Innovation
DWS	Department of Water and Sanitation
ERRP	Economic Reconstruction and Recovery Plan
GDP	Gross domestic product
GERD	Gross domestic expenditure on research & development
HCD	Human capital development
HEIs	Higher education institutions
HLPW	High Level Panel on Water
ICT	Information and communication technology
IWRM	Integrated water resource management
MTSF:2024	Medium-Term Strategic Framework: 2019–2024
NDP	National Development Plan, 2030
NRF	National Research Foundation
NSI	National System of Innovation
NW&SM	National Water and Sanitation Masterplan
NWA	National Water Act, 1998 (Act 36 of 1998)
NWRS3	National Water Resource Strategy 3
PC4IR	Presidential Commission on the Fourth Industrial Revolution
PFMA	Public Finance Management Act, 1998 (Act 1 of 1998)
RDI	Research, development and innovation
SDG	Sustainable Development Goals
SMME	Small, medium and micro enterprise
Wader	Water Technologies Demonstration Programme
WMI	Water management institutions
WRC	Water Research Commission
WRL	Water Research Levy
WSA	Water Services Act, 1997 (Act 108 of 1997)
WSDP	Water services development plan

FOREWORD

BY THE MINISTER OF WATER AND SANITATION

The Water Research Commission (WRC) has continued to advance research in the water and sanitation realms to grow our economy and society. The research undertaken is also intended to provide national solutions to the national challenges of poverty, unemployment and inequality. The Annual Performance Plan is premised on and supports the intended long-term strategic impact of ensuring that a contribution is made towards water security through research, development and innovation.

The Annual Performance Plan 2024 of the WRC is prepared in alignment with the National Development Plan: Vision 2030, and the Medium-Term Strategic Framework: 2020 to 2024. The Annual Performance Plan 2024 is also developed to align with the 2019 White Paper on Science, Technology and Innovation, the Economic Reconstruction and Recovery Plan and the Presidential Commission on the Fourth Industrial Revolution. The Plan also takes into account elements of the third instalment of the National Water Resources Strategy and other policy pronouncements by the Department of Water and Sanitation.

The WRC creates new knowledge and provides technological solutions for the advancement of national water security. The organisation will thus assert its position in the National System of Innovation (NSI). The recipients of knowledge created by the WRC are either higher education institutions, science councils, or private sector or civil society organisations, as well as various tiers of government. Coherence in key policy areas and interactions with these recipients of knowledge are therefore crucial, so that the NSI is inclusive and the scientific knowledge base of the country can be expanded.

One of the key global trends is that the global population is expected to reach 7 billion by 2050, whereas cities' water needs will increase by 15–30%. The supply of freshwater resources, however, remains unchanged. Rapid urbanisation is taking place across the country and this leads to the concentration of people and economic assets, culminating in increasing competition for water. The WRC intends to produce high-impact knowledge products that will lead to integrated urban water management and assist cities to advance towards circular economies that can adapt to changing populations and circumstances.

Climate change is one of the powerful global forces, its impacts are local and, it may destabilise markets and curb economic growth. Weather patterns are increasingly becoming less favourable and the frequency or severity of extreme events is increasing as temperatures are projected to continue rising and rainfall patterns are expected to shift. High-impact knowledge products and journals by the WRC will lead to adaptation and resilience to the opportunities and adverse impacts of climate change.

A policy priority in South Africa will be to achieve food and nutrition security to address a deteriorating food security situation that is exacerbated by climate change. Production of food from irrigated land reduces the risk of crop failure and is an important element of enhancing food security in South Africa. This plan provides

certainty that the WRC will in the medium term, parlay its efforts towards achievement of its long term impact of contribution towards water security through research, development and innovation.

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Mr S Mchunu MP
Minister of Water and Sanitation

FOREWORD

BY THE CHAIRPERSON OF THE GOVERNING BOARD

The Annual Performance Plan is prepared with the strategic focus areas being the people, processes, finances, stakeholders and the research products by the WRC. The aforementioned strategic focus areas are aligned to the Strategic Plan and the outcomes contained therein. The Annual Performance Plan translates the outcomes into a set of outputs that gears the WRC into an effective organisation that will be able to deliver a set of outcomes for the benefit of the Water sector.

The plan is also prepared at a juncture when the global economy is growing at a very sluggish pace. The South African economy has remained constrained with the outlook remaining weaker over the medium term. The economy is expected to grow by 1% with the rising inflation expected to put an upward pressure on prices. The South African Reserve Bank responded through an aggressive monetary policy of increasing interest rates. The aforementioned factors mean that flows of money to government will decrease over time, having an adverse impact on financing of the research, development and innovation portfolio. This matter will also be addressed through the risk management process of the WRC.

Innovation and technology utilisation are factors that will continue to enable resilience of the water sector. The fourth industrial revolution is also occurring in the sector coupled with factors such as Artificial Intelligence, remote sensing and Big Data. This means that in order for the WRC to remain relevant, it should embark on a process of digital transformation. The Information Communication and Technology strategy will be implemented over the medium term so that a digital transformation journey can be embarked upon.

Ensuring water security and continuous access to water for socio-economic activities in South Africa will continue to be a key priority of the WRC. Focus will be placed on generation of new knowledge and innovations and mechanisms needed to support it such as continuously building human capital and the cohort of skills required to support sustainable water management. New or adapted technologies and innovations which the WRC provides to the water and related sectors to address specific needs, priorities, opportunities, and challenges will be produced for uptake along the innovation value chain for societal impact.

The path from research to policy formulation is no longer a casual linear process where research automatically results in a product which is passed from the researcher to the policymaker. The WRC thus bridge the knowledge gap between practitioners, the broader public and the scientific research community through knowledge dissemination. During the medium term, interactive processes of communicating knowledge to targeted stakeholders will be embarked upon so that research may ultimately lead to positive change. In order to reach a number of stakeholders, distribution of key messages will be done in multiple formats through multiple channels to reach and inform an array of stakeholders in accordance to their specific needs.

People within the WRC are a fundamental input towards implementation of this Annual Performance Plan and

the potential for excellence in delivery on the WRC mandate will be enhanced by how the organisation structures itself. While technology is accelerating, transformation of the workplace due to the COVID-19 pandemic and the Fourth Industrial Revolution and their consequences remain the reason the WRC will continue to be intentional in reinventing people, practices and processes in alignment with shifts in its environment. In the medium term, the WRC will be organised for its strategic-fit and alignment to its mandate, impact and outcomes.

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Dr N Mjoli
Chairperson of the Governing Board

PART A

OUR MANDATE

1 LEGISLATIVE AND POLICY MANDATES

1.1 LEGISLATIVE MANDATES

The legislative environment, policies and frameworks of Government, which among others provide developmental priorities for the country and the water sector in particular, are a strategic impetus for the WRC. Key legislation and policy mandates relevant to the functioning and delivery of the WRC mandate are as follows:

Constitutional mandate

The Constitution of the Republic of South Africa, 1996, as amended, encompasses the Bill of Rights which is a cornerstone of democracy and enshrines the rights of all people, including affirmation of democratic values of dignity, equality and freedom. The WRC, therefore, aligns with the following Constitutional imperatives:

- Everyone has the right to an environment that is not harmful to their health
- Everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of national resources while promoting justifiable economic and social development
- Everyone has the right to have access to sufficient food and water

The Constitution further provides a foundation to effect the individual rights of academic freedom and freedom of scientific research, which also aligns to the WRC mandate.

Water Research Act (Act 34 of 1971)

The primary aim of the Water Research Act (Act 34 of 1971) is to provide for the promotion of research in connection with water affairs. The objective of the WRC is provided as being to co-ordinate, to promote, to encourage or to cause to be undertaken, as determined by the Minister, research in respect of occurrence, preservation, conservation, utilisation, control, supply distribution, purification, pollution or reclamation of water supplies and water. Further, the objective of the WRC includes research on the use of water for agricultural, industrial or urban purposes.

The Water Research Act further stipulates the functions of the WRC to perform water research in collaboration with other research institutions, and to take any other such measures as the WRC considers conducive to attainment of its objectives.

Public Finance Management Act (Act 1 of 1999)

The Public Finance Management Act (Act 1 of 1999) (PFMA) regulates financial management in the national government and provincial governments in order to ensure that all revenue, expenditure, assets and liabilities of those governments are managed efficiently and effectively; to provide for the responsibilities of persons entrusted with financial management in those governments; and to provide for matters connected therewith. The WRC is listed in Schedule 3: Part A as a National Public Entity and the provisions of the PFMA and its Treasury Regulations apply to its operations.

National Water Act (Act 36 of 1998)

The objective of the National Water Act (Act 36 of 1998) (NWA) is to ensure that South Africa's water resources are protected, used, developed, conserved, managed, and controlled in a sustainable and equitable manner for the benefit of all persons. The NWA also provides for the pricing strategy for water use charges, the primary mechanism for the calculation of a charge, payable by some or all raw water users, that is set for research purposes. The role of the WRC is to align its funding priorities with those key national water challenges articulated in the NWA, and to help solve water-related problems which are critical to South Africa's sustainable development and economic growth.

Water Services Act (Act 108 of 1997)

The Water Services Act (Act 108 of 1997) (WSA) provides for the right of access to basic water supply and basic sanitation by setting national standards and

norms. Section 156, read in conjunction with Part B of Schedule 4 of the Constitution of the Republic of South Africa, vests in the Executive Authority the responsibility to support and strengthen the capacity of municipalities to manage their own affairs, to exercise their powers and to perform their functions. Applicability of the WSA to the WRC rests in the WRC's duty to respond to water supply and sanitation needs with research and development that helps to address those needs.

Water Research Amendment Bill

Evolution of governance structures will address how the current and future water knowledge gaps and how they are currently prioritised in the South African context are structured. The Water Research Amendment Bill, 2013, seeks to enable that through:

- Amendment of the WRA so as to insert certain definitions and substitute others
- Effecting certain textual improvements and name changes
- Regulating the governance of the Water Research Council (Water Research Commission in the current Act)
- Aligning the Act with applicable legislation, such as the NWA, WSA and PFMA

The new clauses in the Amendment Bill do not signify a fundamental change in the current legislation. The WRC will thus embark on engagements with the DWS on this matter to ensure that this Bill is passed as an Act.

1.2 POLICY MANDATES

National Water Resource Strategy 3

The scope and purpose of the third instalment of the National Water Resource Strategy (NWRS-3) provides a vision for the protection and management of water resources to enable equitable and sustainable access to water and sanitation services in support of socio-economic growth and development for the well-being of current and future generations. NWRS-3 aims to enable achievement of this vision through the following overarching goals:

- Water and sanitation supporting development and elimination of poverty and inequality
- Water and sanitation contribution to the economy and job creation
- Water that must be protected, used, developed, conserved, managed and controlled sustainably and equitably

NWRS-3 considers research and innovation in the water sector as crucial elements in the achievement of both national and international imperatives of water conservation and demand management, water security and the public health benefits of sanitation. The key focus area will be on development of tools for skills development and the capacity required to address the current and future needs of the water and sanitation sector. The participation of all stakeholders, including the private sector, will be encouraged to increase the relevance and strengthen implementation of products and knowledge from research and innovation.

Emphasis is also placed on the desired future institutional landscape, with close ties between the WRC and the DWS to determine research needs; and between the WRC, Department of Science and Innovation (DSI) and National Research Foundation (NRF) to ensure consistency of approaches between water and sanitation research needs and South Africa's broad policy on science and innovation and the overall collaboration with various science councils. The research institutional landscape will also include other role-players, such as Eskom, Sasol, mining, agricultural companies, government departments, and the South African Local Government Association, for coordinated dissemination of new technologies, knowledge and skills.

National Development Plan, 2030

The National Development Plan, 2030 (NDP) provides an overarching policy framework for a trajectory to deal with the triple challenges of inequality, unemployment and poverty. The NDP further supports a new societal deal of increased cooperation between government, business, labour and other social partners for economic growth and development. The NDP further puts an emphasis on investment and development of bulk water, including water resource management infrastructure

for water conservation and demand management, integrated catchment management and resource protection, and human capital development, such that there is water security for development.

National Water and Sanitation Masterplan

The National Water and Sanitation Masterplan (NW&SM) intends to coalesce water users and all the water management institutions (WMIs) to resolve issues on water and sanitation service delivery. The NW&SM is a novel plan that guides the South African water sector, led by the DWS, and is implemented at the local government level and with other sector partners. The plan is directed towards implementation of tangible actions that have an impact on the management of South Africa's water resources and the supply and use of water and sanitation in the country.

The NW&SM proposes three pillars for research development and innovation: research activities, skills and deployment of innovation. The research activities pillar aims to address ongoing research gaps, deepen insights and outputs in areas where South Africa has a unique global contribution to make, and continue growing capabilities in areas that are key to South African water security. The pillar on skills focuses on high-end skills to ensure that there are suitably qualified individuals to drive the system of water for innovation, and to obtain an understanding of how universities are preparing their graduates for careers in the water sector. It further focuses on postgraduate, post-doctoral and research skills in alignment with international trends. The third pillar focuses on deployment of innovation into practice in a number of ways: firstly, to package research outputs in a way that supports decision making or policy making, with demonstration and validation of a range of technology and decision support tools.

African Union, Agenda 2063

Agenda 2063 of the African Union (Agenda 2063) provides a blueprint and master plan for transformation of Africa into a global powerhouse of the future. It is a strategic framework for the continent that aims to deliver on the goals for inclusive and sustainable development. It serves as a concrete manifestation of the pan-African drive for unity, self-determination, freedom, progress and collective prosperity. South Africa has prioritised its contribution to the development of the continent and in this regard the African Union Agenda 2063 is key. It provides the strategic framework for the socio-economic transformation of the continent and builds on the initiatives for growth and sustainable development. A prosperous Africa based on inclusive growth and sustainable development is one of Agenda 2063's aspirations and is significant to the WRC in particular, as it places an emphasis on Africa's unique natural endowments, health and protection of its environment and ecosystems, and climate-resilient economies and communities.

United Nations Sustainable Development Goals

The Sustainable Development Goals (SDGs) are designed to be a blueprint for the achievement of a sustainable future across the world. The SDGs seek to address key systematic barriers to sustainable development, such as inequality, unsustainable consumption patterns, weak institutional capacity and environmental degradation. The SDGs further seek to improve quality of water through pollution reduction, and to ensure sustainable withdrawals and supply of freshwater to address water scarcity. The United Nations further convened a High Level Panel on Water (HLPW) which made recommendations on how to accelerate progress in achievement of availability and sustainable management of water and sanitation for all, as well as achievement of multiple other SDGs. High-level recommendations by the HLPW included, among others: understanding, valuing and managing water so as to provide a foundation for broader integrated water management; an integrated approach at local, country and regional levels, including building partnerships and international collaboration at the global level.

Presidential Commission on the Fourth Industrial Revolution

- The Presidential Commission on the Fourth Industrial Revolution (PC4IR) outlined a vision for the development of South Africa to achieve prosperity, wealth creation, and inclusiveness, in being connected, digitally advanced and technologically

'smart'. Furthermore, development of 4IR systems can help to reach several goals articulated in the South Africa: Vision 2030, specifically those that relate to:

- Economy and unemployment
- Economic infrastructure
- Improving education, training and innovation
- Environmental sustainability and resilience
- South Africa's role in the region and the world
- Transforming human settlements

The PC4IR further identifies that South Africa's National System of Innovation (NSI) needs research and ideas for how it can be more effective, which is an element that the WRC will adequately respond to. Smart management and infrastructure are needed for South Africa to meet the needs of its growing population and those of its economic sectors.

Economic Reconstruction and Recovery Plan

The Economic Reconstruction and Recovery Plan (ERRP), published by the National Treasury in the midst of the COVID-19 pandemic, aims to stimulate equitable and inclusive growth. One of the nine priority interventions the ERRP has identified is 'green economy interventions', which can be linked to the water sector as they guarantee the security of water supply, and effective wastewater management, among others. The ERRP indicates that, as part of South Africa's green agenda, private and public buildings will be retrofitted with measures to improve water efficiency. The plan earmarks the creation of 1 560 new opportunities for facilities maintenance, water and energy efficiency, including the construction of rural bridges.

White Paper on Science, Technology and Innovation, 2019

The National System of Innovation (NSI) concept was introduced into the formal public discourse through the 1996 White Paper on Science and Technology. The NSI is conceptualised as a means by which a country seeks to create, acquire, diffuse and put new knowledge into practise so that the country and its people achieve their individual and collective goals. The 2019 White Paper on Science, Technology and Innovation advocates for a coherent, inclusive NSI. The NSI concept is thus retained as an organising framework for the institutional landscape, wherein interactions and partnerships are encouraged among business, research institutions, higher education institutions (HEIs) and civil society. Coherence in key policy areas is encouraged and should be strengthened through shared values, information and competencies. Further, the White Paper provides a reflection on expansion of the scientific knowledge base, the strengthening of institutions, and expansion and upgrading of the policy position, including monitoring and evaluation of the NSI.

1.3 RELEVANT COURT RULINGS

There are no relevant court rulings that may have an impact on implementation of this strategy over the 5-year planning period.

PART B

OUR STRATEGIC FOCUS

2 SITUATIONAL ANALYSIS

The WRC's performance environment is created on the premise that the crux of the water and sanitation challenge in South Africa is a capacity and capability challenge which requires evidence-based and scientific decision making. The three dimensions of this challenge addressed by the WRC are new knowledge, human capital, and technological solutions, through: funding and facilitation of water RDI; knowledge generation and dissemination; and the translation of research and innovation products for the advancement of national water security. The recipients of this knowledge may be HEIs, science councils, the private sector, as well as the various tiers of government.

There is convergence across the globe that increasing water scarcity, on the back of decreased availability, deteriorating quality and impacts of climate change, is a crowning global crisis. South Africa is not immune to this. As a response, the WRC has heightened its efforts to not only grow scientific and technological knowledge, but to translate this repository of knowledge into tangible, accessible and cost-effective products that provide options for use on the ground. While the Commission's increased efficiencies, innovation and partnerships will continue to maintain knowledge production levels, it is becoming increasingly difficult to meet two very basic challenges in the South African water value-chain: The first is the ability to address the increasingly complex nature of problems such as non-revenue water, water quality and quantity, food security and the burden of disease, which are inter-linked and water related. The second is the WRC's ability to both transform the South African RDI community through the development of researchers from the designated groups and to create further avenues for job creation and entrepreneurship development, which are all restricted by the limited availability of funds. At the same time, technological innovation, improvements in communication, increased collaboration and international partnerships have enhanced the ability of the South African water RDI community to contribute to global knowledge and communities of practice.

With the aforesaid, pursuit and success in execution of the strategy of the WRC can be achieved when the required strategic resources and capabilities have been built and deployed. The WRC is thus considered to be a system, with an array of parts with their own distinct functions that can be affected by internal and external environmental factors.

The external and internal environmental factors are discussed below.

2.1 EXTERNAL ENVIRONMENT

The outcome of an external environmental analysis provides the identification of strategic capabilities and external considerations that may affect delivery on the WRC's mandate. The impact of these external factors on industry drivers and the sector is immense, and is disruptive to current business models. The water sector and the WRC are no exception.

The external environmental analysis was organised across the following key dimensions:

Climate change

Climate change is one of the most powerful global forces inspiring a new business narrative, as it may destabilise markets and curb economic growth. Weather patterns are increasingly becoming less favourable, and the frequency and severity of extreme events is increasing as temperatures are projected to continue rising and rainfall patterns are expected to shift.

Climate change is a global issue; however, its severe impacts are equally local, as it is expected to make agricultural development in Africa more challenging. This makes African economies acutely vulnerable as they are highly dependent on agriculture, which makes up one-fifth of Sub-Saharan Africa's economic output. The gross domestic product (GDP) exposure in African nations that are vulnerable to extreme climate patterns is projected to grow to approximately 1.4 trillion US dollars in 2023 from a baseline of 895 billion US dollars in 1998, showing the blistering economic impacts of climate change.

Potential impacts of climate change on the South African economy are projected in Table 1, which shows that if South Africa adopts the agreement as per the Paris Accord and temperature increases are kept at or below 1°C, the potential GDP losses could be minimized. If there are no countervailing actions to reduce emissions, temperatures could increase by 4°C by the year 2100 resulting in increased potential GDP losses of 3.4%.

Table 1: Potential South African GDP losses due to climate change by 2100

Increase in temperature	1°C	2°C	3°C	4°C
Impact on South African GDP	−0.74%	−1.57%	−2.46%	−3.43%

Source: Kompas, Ha & Che, 2018

Africa is one of the regions largely exposed to climate change, with most areas already disproportionately feeling the impacts. It is expected that the Southern and North Africa will be severely impacted as it is estimated that their 'share of decade spent in drought' will average 80% by the year 2050. With the current climate change trajectory, 100 million people could be forced into extreme poverty by 2030 globally, with devastating effects on approximately 3 million people in Southern Africa due to cyclones.

To the extent that climate change has adverse impacts, there are also opportunities that can be created. Research by the New Climate Economy project reflects that bold climate change action could in the year 2030 deliver at least 26 trillion US dollars in global economic benefits, generate 65 million new low-carbon jobs, avoid 700 000 premature deaths from air pollution and generate 2.8 trillion US dollars in government revenue through subsidy reform and carbon pricing alone.

Delivering the benefits of a new climate economy will require ambitious actions across key economic systems, for instance, creation of conditions for the phase-out of coal and scaling up of renewables in the energy sector, scaling up sustainable food and land use systems, forest landscape restoration, reduction of emissions from industrial value chains, and investment in resilient water infrastructure. Climate change challenges are also water security challenges. As a water-scarce country, South Africa has experienced severe droughts followed by episodic floods, which have left serious drinking water shortages or degraded water and wastewater infrastructure. The WRC's role in developing tools and knowledge for supporting early warning systems for weather-related disasters has become very critical at local and national levels.

With the abundance of solar, wind and geothermal resources, African countries have a comparative advantage with regard to renewable energy, providing an opportunity for delivery of the new energy revolution. Beyond the energy sector, food and land use are an integral component of the Sub-Saharan African economy. It is estimated that in 2030, opportunities in food and land use could deliver 320 billion US dollars, comprised of 120 billion in forest ecosystem services and restoration of degraded land, 100 billion in increased agricultural yields, and 100 billion in supply chain efficiency improvements.

A policy priority in Africa at large, and in South Africa particularly, is to achieve food and nutrition security by 2030 in order to address a deteriorating food security situation that is exacerbated by climate change. Production of food from irrigated land reduces the risk of crop failure and is an important element of enhancing food security in South Africa.

Given the aforesaid, there is a need to leverage science for innovation to improve climate change adaptation. Science offers enormous potential to provide sustainable solutions for food security, through science-based management of land, soil and water. Further, leveraging of science must lead to translation of scientific solutions into packages that can be disseminated to water users. Solutions should thus be co-generated between researchers and a wide range of users so that resilience challenges can be addressed in a demand-driven and knowledge-intensive manner. Digital technologies can be harnessed to monitor climate change risks to identify the onset of climatic shocks before they happen, in order to facilitate responses that build resilience.

Fourth Industrial Revolution in the water sector

The Fourth Industrial Revolution (4IR) involves a range of new technologies and new forms of connection between various economic actors, with information and communication technology (ICT) and digitisation being particularly critical to 4IR. Technologies related to 4IR are disruptive to traditional business models, resulting in 4IR being one of the global forces that is inspiring a new narrative in doing business. While traditional business models involve customer-to-business type relations, the 4IR technologies enhance development of new industries and online platforms that enable customer-to-customer exchange.

Notwithstanding its disruptive nature, 4IR can also provide opportunities to global and even national economies by creating the potential to influence and address complex societal challenges. The adoption of 4IR can thus be enhanced through adoption of innovation systems that enable diffusion and use of new and economically useful knowledge. Innovation systems can contribute towards national environmental outcomes, wherein 4IR technologies can bring change in the relationship between industry and the environment through technologies such as advanced agriculture, efficient factories that utilise less water and circular economic models.

In addition to 4IR, the water sector is undergoing its own revolution, which involves establishing water conservation strategies and transitioning toward closing water use loops. While the academic and industrial water sectors are advancing towards consolidation of 4IR, another revolution concerning big data and artificial intelligence (AI) has recently emerged in all societal sectors, the water sector included.

It is estimated that 80% and 50% of utilities in the developed and developing worlds, respectively, are expected to undergo digital transformation by 2025, meaning that fast advances in affordable sensors, high-resolution remote sensing, communication technologies, and social media are contributing to the proliferation of big data in the water sector and are likely transforming traditional decision-making strategies. Big data analytics together with AI are set to bring new opportunities and challenges into the water sector which may have policy and labour outcomes. The combination of AI with big data science, with new ways to analyse, organize, and extract information from large volumes of varying types of data, is bringing new opportunities for data-driven discoveries.

Progress in these revolutions in the water sector, intertwined with AI and big data, may be a catalyst for socio-economic changes that will cross sector boundaries (for instance, water and health sectors), as emergence of new needs and business models will influence research in the water sector, with new forms of research based on large amounts of data being possible. Research enabling new technological approaches and more effective management strategies will enable development of emergent frameworks for the water sector to meet future societal needs. New skills will therefore be required to prepare the next generation of water researchers to be more proficient in data science in order to design data products.

While technology will not be a panacea to address the current water-related challenges, technological advances are changing the resources equation in several ways; for instance, advances in analytics, robotics and other elements such as materials science are already reducing resource consumption. The Fourth Industrial Revolution in the water sector will thus lead to an acceleration of a water resources innovation cycle.

A new societal 'deal'

Cooperation among business, society in general and government is required for sustainable economic development' thus a new societal 'deal' is required. This new deal will spur advancement of research impact across the user community and the WRC stakeholders at large. The 2019 White Paper on Science, Technology and Innovation puts an emphasis on the contribution that research can make to national development and posits a policy intent to support a science-literate and science-aware society.

A society that is aware of the value and potential of

science can evaluate the products of science and utilize them in their daily lives. Greater awareness of science also enables stimulation of interest of young South Africans in science-related careers. The reach and effectiveness of science engagement and communication is therefore vital to ensure that users are empowered, can analyse data and results, and are able to participate in water-related projects.

State of the South African water research enterprise

The South African research enterprise has seen some growth in the past two decades as there has been a substantial amount of research collaboration in various fields culminating in an increased production of academic articles. In addition, there has been an improvement in the quality of articles produced and the citation impact of journals. There are, however, still weaknesses in the system that require attention, particularly that investments in research and development in South Africa has not increased substantially in comparison to the rest of the world, meaning that strategic research areas such as water, energy and food security still remain underfunded.

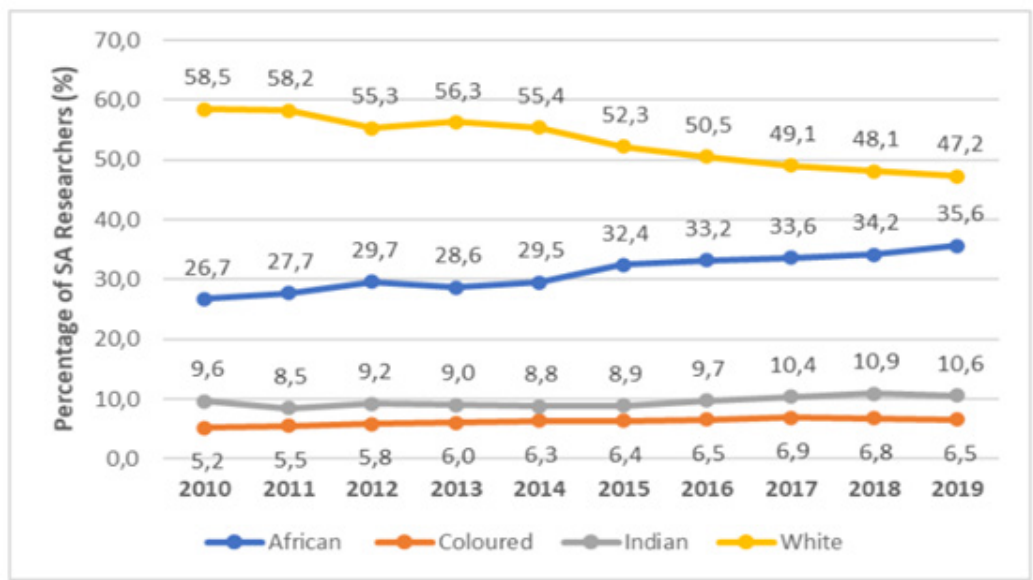
The minimum funding requirements to achieve all the aspects of water research in the three main crucibles, i.e., access to water and sanitation, water and sanitation services, and preservation of ecological water resources, have indicated a wide range of priorities indicative of the need for more resources. The 2015 Development and Innovation Masterplan indicates a minimum funding requirement estimated at 8.4 billion rand over a 10-year period to 2025. This is a reflection on the situation for funding for research in the water sector as being quite dire. The DWS, through the WRC and the National Research Foundation (NRF), are the biggest funders of water research in South Africa. The South African Gross Domestic Expenditure on Research and Development (GERD) averaged 0.6% compared to the global average of 2.6%. Across all science, technology and innovation sectors, South Africa is struggling to break through the 1% benchmark.

There is a need to explore other funding sources for water research and development, with the private sector being the most obvious partner. Countries that have business funding a major component of their research have recorded huge economic growth in comparison to those where funding is mostly from government.

The institutional landscape in water research is composed of a number of research groups located within the HEIs. The institutional landscape governing water research is sub-critical in comparison to the socio-economic importance of water in South Africa, with the additional challenge being that of data management, to the effect that datasets are incompatible and maintained in different databases.

The National Water and Sanitation Masterplan points to a need for recruitment of human resources at technical and managerial levels. The number of Masters and Doctoral graduates in the field is quite low, which is a concern. The water sector will not perform at its optimum level if the current proficiency levels are not enhanced to the required levels across the entire value chain. Human capital development (HCD) is therefore required to increase the amount of locally produced expertise throughout the researcher pipeline.

Figure 1: **Racial profile of South African researchers**



Therefore, support and funding of research and development by DWS and other government departments is important for South Africa to realise its socio-economic growth and development; otherwise water will remain the key limiting factor to the good endeavours of the state regarding development and growth.

State of South African water resources and services

Enormous pressure is mounting in terms of the demand for freshwater resources, due to an increase in demand for water and the prevalence of drought in Southern Africa. In South Africa's water sector and, more specifically, its water services sector, there are current dire and complex challenges linked to drought and associated management of water, as well as the critically concerning nature of the country's service delivery crisis. This has in turn put pressure on wastewater treatment infrastructure and sanitation systems as key contributors of pollution in the water value chain.

The roots of this crisis have been linked to multiple issues which have led to the failure by local authorities to deliver water and sanitation services, with commonly cited key issues being:

- Insufficient infrastructure capacity, coupled with poor maintenance of infrastructure
- A shortage of technical skills and overall human capacity shortages

The DWS leads and regulates the water sector in South Africa, develops policy and applicable sector strategies, and provides support to the sector. Thus, the value chain is accounted for by various tiers and spheres of government, making the regulation process complex – more so as entities of government cannot litigate each other as per the Intergovernmental Governance Relations (IGR) Framework Act.

To assist better planning and management in the water services sector, there has been a proliferation of technocratic tools, including spatial development frameworks, water services development plans (WSDPs), water safety plans, wastewater risk abatement plans and other such planning mechanisms. However, South Africa's forward-thinking water legislation (which has been internationally acclaimed for its ambition to align with the ideologies of integrated water resource management (IWRM), considered as a progressive step toward addressing the complexity of water governance) and technocratic tools have not succeeded in effecting any significant improvements in the sector.

South Africa is generally well-endowed with water

resources infrastructure and is highly dependent on it to maintain reliable water supplies. Most of South Africa's rivers have been dammed, with a storage capacity exceeding 100 million m^3 and approximately 20% provisioned for the ecological reserve. The biggest challenge affecting water resources is increasing pollution, mainly from industrial and domestic effluents, which is impacting the biotic diversity of freshwater ecosystems.

Notwithstanding the above, South Africa has made progress since the advent of democracy in providing water and sanitation services, which has contributed toward the SDG targets, with some of the key achievements as follows:

- 73.4% of households have access to piped water inside the yard and 17.9% to piped water outside the yard
- 79.5% of households have access to RDP-standard sanitation services

The South African economic environment

Global economic growth has slowed at a rate that is greater than anticipated, with global GDP having stagnated in the second quarter of 2022. High inflation is also persisting for longer than expected, exacerbated by the lingering impacts of the COVID-19 pandemic and the current conflict between Russia and Ukraine. These adverse effects have resulted in slowed global expansion, with the global economy expected to enter into a recession in 2023.

South Africa's GDP growth has remained constrained, and worsened in the second quarter of the 2022 year, albeit that economic growth started on a steady recovery path at the beginning of 2022. Adverse international developments contributed to the deterioration in economic growth with the outlook remaining weaker, with expected growth of approximately 1%.

Inflation has recently been at its highest in the past decade in most economies, with some of the developed economies announcing packages to countervail rising inflation. High inflation will continue to put upward pressure on prices, mainly of food and energy. It is expected that these inflationary pressures will ease in 2023 to about 5.3%, as some of the underlying factors seems to be subsiding, particularly the disruptions to global supply chains which precipitated an initial spike in price increases.

Interest rates have been on the rise globally as central banks across the world have tightened monetary policies in response to inflation levels that have risen more than the inflation targets. South Africa, as a participant in the globalised economy, has not been spared, with the South African Reserve Bank maintaining an aggressive monetary policy stance by raising interest rates. The interest rate outlook will continue to be dependent on international factors, the monetary policy stances of central banks in major economies, and inflation.

Most of the research and innovation projects in South Africa are funded through appropriations from the National Government. The rising inflation and increasing interest rates have had adverse implications for the value of money. Slowing economic growth has adverse implications for cash flows from Government to finance the research and innovation portfolio, meaning that funding will continue to decrease over time.

The WRC has in the past 5 years noted the challenges faced by the bulk water boards to recover monies owed by local municipalities, as these have been stretched to pay the water research levy. Owing to the major source of the water research revenue coming from the bulk water sales by the two major water boards, the risk to financial sustainability has increased.

2.2 INTERNAL ENVIRONMENT

The outcome of the internal environment analysis is the identification of core competencies and a focus on addressing critical internal vulnerabilities to build an effective water research institution. The internal environmental analysis is organised along the following dimensions:

Resourcing of the water research mandate

The funding model of the WRC is that income is derived

from two sources, the Water Research Levy (WRL) and leverage income. The WRL is the main source of revenue, derived as a result of the primary mandate of the WRC and receivable in terms of the Water Research Act (Act 34 of 1971). Rand Water, Umgeni Water and the DWS collect the WRL on behalf of the WRC from various water users, based on their water sales volumes, and pay it over to the WRC for dispensing into water research.

Leverage income arises when the WRC, in partnership with other organisations, undertakes research and innovation projects where it may or may not also be a co-funder. The leverage-funded component of WRC operations is an important funding mechanism that augments the WRL and enables the WRC to perform more research than it would otherwise have been able to. This is implemented by ensuring that the leverage-funded projects do not adversely impact on the primary mandate of the WRC but complement fulfilment of the mandate of the organisation.

The operating environment of the WRC is impacted by sluggish economic growth, reduced capacity of the fiscus and the ongoing uncertainty of undulating business cycles. Leveraged income is not guaranteed, and as the DWS has embarked on a process to realign the water services institutions and disestablish some, resourcing of the WRC mandate may be adversely impacted in the future.

While leverage funds may be attractive and useful to ensure there is visible research, development and innovation from the WRC, the associated overheads related to accommodation, HR and Finance resources is growing, making it necessary to grow the support structure at the rate at which the technical structure is growing. The high cost of doing business at the WRC is also exacerbated by the uncontrolled rates paid to researchers owing to the high cost of doing research.

Information and communication technology

The water sector continues to face increasing pressures due to the aforementioned external factors, such as the impacts of climate change, increasing water demand, declining quality, rapid urbanisation and increasing populations. Resilience and sustainability of the sector can be achieved through innovation and utilisation of technology which will result in resilience of the business models in the sector. The water sector in general is considered to be one of the sectors which is under-invested with regard to technology. The ICT environment within the WRC has been identified as an area that requires attention so that the organisation can digitally transform. A digitally transformed WRC will be well placed to harness the technological capabilities and enable the entire water sector.

Organisation and culture

In order to define and communicate a consistent message of the prevailing culture, multidisciplinary interventions matched to the requirements of the strategy delivery and execution effort are required. A healthy culture that embraces execution-supportive attitudes, behaviours and work practices, where a results-oriented work climate is encouraged, is espoused. This type of culture will enable alignment of rewards and incentives directly to achievement of strategic outcomes.

Organisational structure

The WRC structure (Figure 2) has been organised to enable it to be fit-for-purpose and comprises elements that enable its governance framework and are supportive towards effective strategy execution.

Figure 2: **High-level organisational structure**

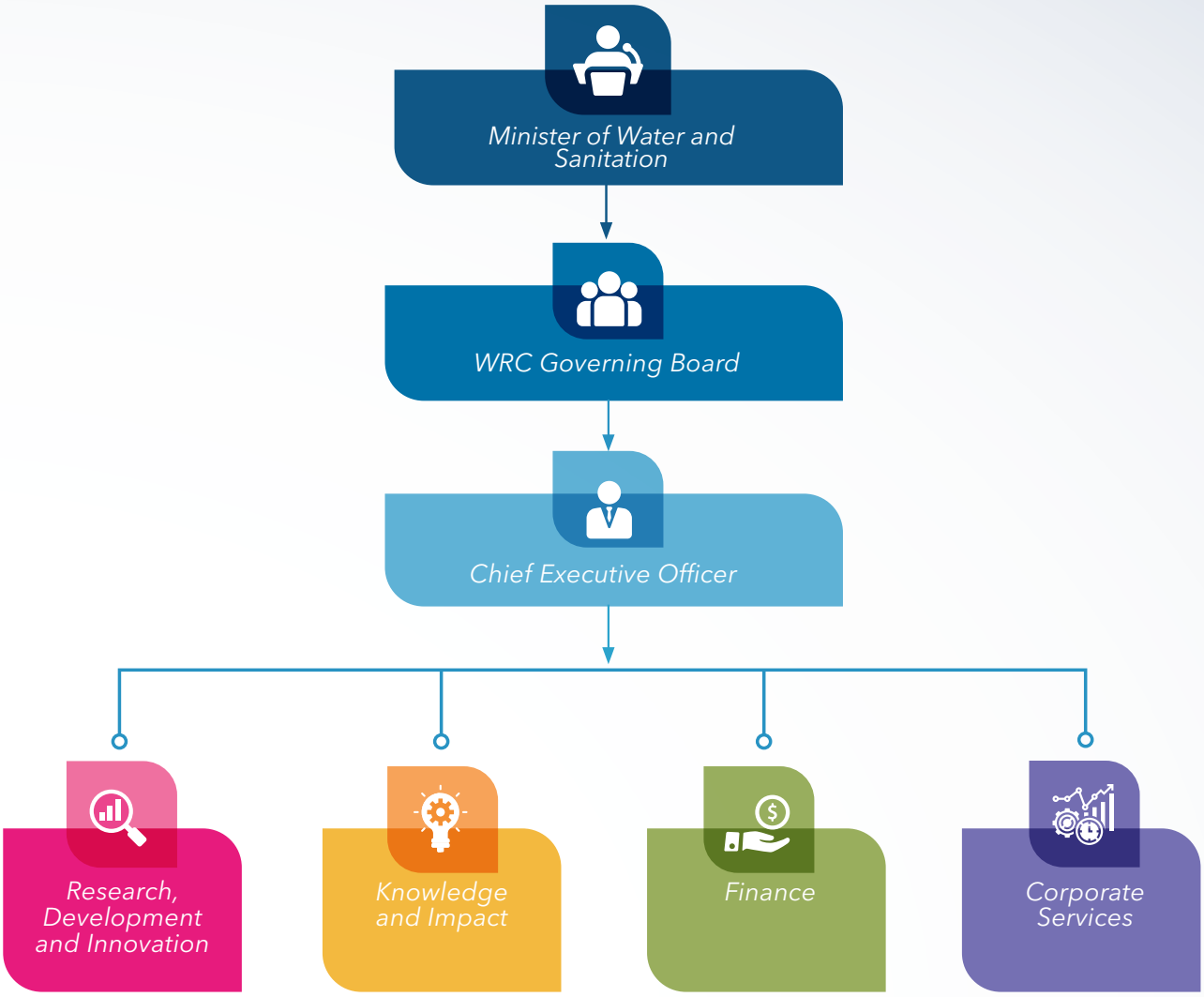


Figure 2 also depicts the relationship between the Governing Board and the Minister of Water and Sanitation as the Shareholder. Governance principles having implications for the Shareholder, Executive Management and the Governing Board apply.

PART C

MEASURING OUR PERFORMANCE

3 INSTITUTIONAL PROGRAMME PERFORMANCE INFORMATION

The optimal operating model design was utilized to arrange organizational capabilities into a programme structure to implement strategy as follows:

- Programme 1: Administration and Governance, aligned to Outcome 1
- Programme 2: Corporate Services, aligned to Outcome 1
- Programme 3: Finance, aligned to Outcome 2
- Programme 4: Research, Development and Innovation, aligned to Outcome 5
- Programme 5: Knowledge and Impact, aligned to Outcomes 3 and 4

3.1 PROGRAMME 1: ADMINISTRATION AND GOVERNANCE

The purpose of this programme is to support the business of the WRC in terms of planning, risk management, assurance services, governance structures and setting of appropriate parameters for organisational performance. The extent of the programme lies within the Office of the Chief Executive Officer within the areas of governance. Assurance services are provided through internal audit services and risk management activities and governance of performance information of the WRC so that the organisation can effectively communicate its value creation story. The corporate compliance cycle of the WRC is implemented through this programme to ensure that the accountability obligations, that is preparation of accountability documents, are met. Support to the Governing Board and its various committees is provided through this programme to ensure that their duties are fulfilled in conformance with the applicable laws and regulations

3.2 PROGRAMME 2: CORPORATE SERVICES

Through the functional areas of Information Technology, People and Culture, Legal and Compliance and Facilities and Corporate Social Responsibility, Corporate Services aims to create a workplace that is centred around meaning and impact in line with the WRC strategy. This aim is executed through the various strategies linked to these areas but is framed around an agility to respond to the opportunities provided in the external and internal environment.

The programme addresses organisational transformation and focuses on the enhancement of effective leadership, an improved level of staff performance, and empowerment of communities as active participants in research projects.

3.3 PROGRAMME 3: FINANCE

The current revenue trajectory of the organisation could be affected by external factors in the future, given the volatility within the water services sector around debt collection and the growing debt book of the Water Trading Entity and water boards. Levy income is the WRC's primary source of revenue (80%) and is dependent on the ability of water users to pay and also the rate of levy increases that are required to meet the WRC business plans. A plan to optimise the revenue and resource allocation cycles will be developed to have a positive impact on the financial trajectory of the WRC and support the creation of a sustainable entity. Further, key business processes will be identified to strengthen financial governance in all of the WRC's key business areas.

Key priorities over the medium term are as follows:
Enhanced controls over major expenditure categories

- Enhance Supply Chain Management to obtain cost-effective solutions
- Effective debt collections
- Management of partnerships for maximisation of leverage funding
- Frequent monitoring of key financial trends and taking corrective actions where necessary

3.4 PROGRAMME 4: RESEARCH, DEVELOPMENT AND INNOVATION

Ensuring water security and continuous access to water for socio-economic activities in South Africa and the region is a key priority. The Research, Development and Innovation (RDI) Programme focuses on the generation of new knowledge and innovations, as well as the mechanisms needed to support this, such as continuously building human capital and the cohort of skills required to support sustainable water management. The outputs from the RDI interventions generate results in new or adapted technologies and innovations which the WRC provides to the water and related sectors to address specific needs, priorities, opportunities, and challenges. It supports, ensures, and facilitates innovations and technologies that enable uptake along the innovation value chain and ultimately have greater impact.

The programme continues to support and encourage new research and development initiatives which adequately address these challenges and associated risks. Projects span the innovation value chain. This is achieved through informed stakeholder engagements that seek to balance current and future knowledge needs, often built through a programmatic approach. Co-funding and focused knowledge dissemination of research activities ensures faster uptake from users. The RDI Programme will continue to focus on consolidation of the corporate strategy of the WRC linked to national priorities and plans. Significant progress has been made in informing policy and decision-making, piloting of novel approaches and processes, new training and skills programmes, improved community involvement and empowerment and significant contributions to the global scientific endeavour. The programme continues to provide new tools and systems to enhance our ability to deal with environmental and economic shocks and to build the required resilience.

The programme executes its strategy through three sub-programmes:

Sub-programme 4.1: Water Resources and Ecosystems

The Water Resources and Ecosystems Sub-programme provides knowledge, experience, and innovations to meet society's demands for natural resources, environmental and human health and resilience to extreme events. A key strategy is to enhance decision-making for water, environmental and economic security, and societal and environmental resilience to natural and man-made impacts at the local level.

Sub-programme 4.2: Water Use, Wastewater and Sanitation Futures

Water Use, Wastewater and Sanitation Futures provides knowledge and innovation that ensures reliable, affordable, and efficient water use and waste management services in the domestic, industrial, and mining areas to enhance quality of life and contribute to economic growth and improved public and environmental health.

Sub-programme 4.3: Water Utilisation in Agriculture

The focus is on increasing the efficiency and productivity of water use for production of food, forage, fibre, and fuel crops; improving food security; reducing poverty and increasing the wealth of people dependent on water-based agriculture; and ensuring sustainable water resource use. The needs and requirements of present and future generations of subsistence, emergent and commercial farmers are addressed through creation and application of water-efficient production technologies, models, and information systems..

Sub-programme 4.4 Business Development and Innovation

This sub-programme's focus is on technology development programmes, including Business Development and Partnerships, to increase leverage funding and secure partnerships for technology application. The Technology Transfer Office within this programme supports innovators, especially those with limited funding to develop and protect their inventions,

with a focus on IP and IP protection, IP advisory, IP due diligence and IP market searches.

3.5 PROGRAMME 5: KNOWLEDGE AND IMPACT

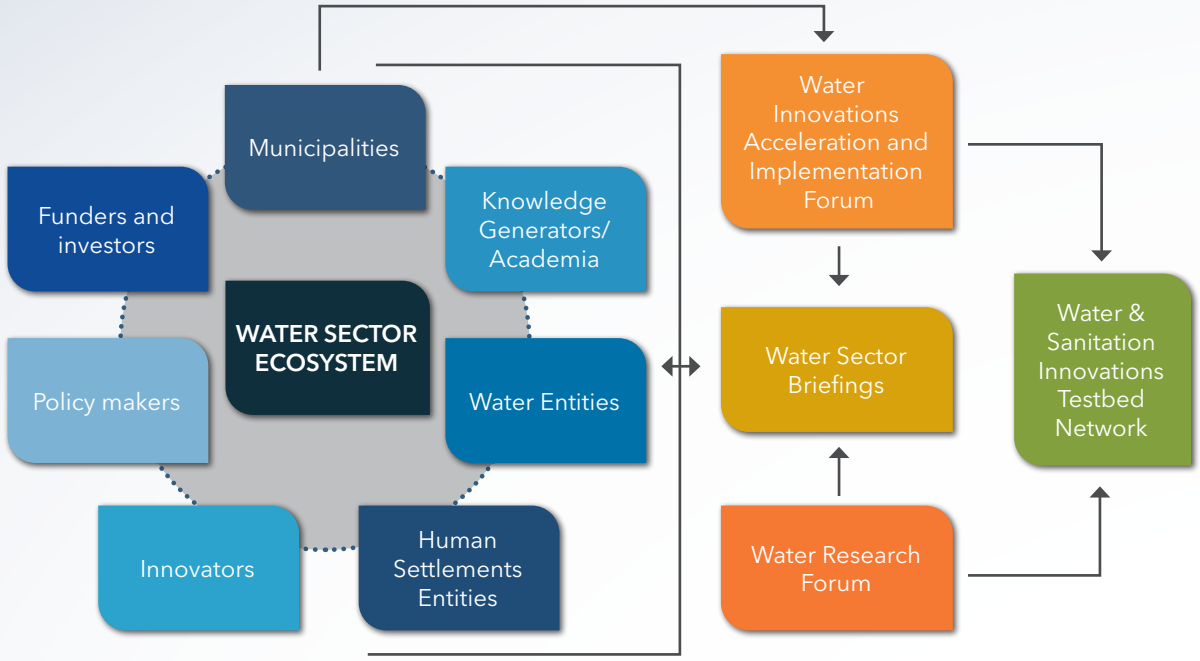
The WRC's focus on innovation and impact takes into consideration that, as a public entity, the Commission contributes meaningfully to national initiatives designed to improve the lives of South African communities.

With the path from research to policy formulation no longer being a casual linear process where research automatically results in a product which is passed from the researcher to the policymaker, it has become important for the WRC to bridge the 'knowledge chasm' between practitioners, the broader public and the scientific research community. One way in which this can be achieved is through focused and deliberate knowledge dissemination. There is thus a need to enhance the link between knowledge services activities and the research, development and innovation activities of the WRC. In this context, knowledge service in a broader sense is seen as an 'interactive process of communicating knowledge to targeted stakeholders so that it may lead to positive change'.

As such, knowledge dissemination needs to be seen as a process which is orientated towards action and is a crucial part of knowledge services because it ensures knowledge is available to those who need it. An unremitting challenge for the WRC is to improve the accessibility of WRC-generated knowledge to the stakeholders it is intended to reach. This requires not only ensuring physical availability of the product to as large a proportion of intended stakeholders as possible, but also making the product comprehensible to those who receive it. Effective knowledge dissemination often requires the distribution of the same key messages in multiple formats and via multiple channels to reach and inform different stakeholders. The WRC will work towards creating specific knowledge dissemination methods and strengthen existing tools to cater for the knowledge and information needs of its specific stakeholders.

Collaborative partnerships and stakeholder engagement (both local and international) are not only aimed at extending the WRC footprint and profile, but also to enhance the impact of WRC knowledge and innovation products through the multiplier effect. Awareness and access to credible research and innovation products and solutions relevant to the world's water challenges will lead to improved decision-making and uptake within the water sector. Stakeholder engagement is guided through the Stakeholder Management Framework (Figure 3), and collaborations provide a platform to share existing research products and innovations.

Figure 3: **The Stakeholder Management Framework of the WRC**



The main objectives of the KPAs under this portfolio are to develop innovative products and services for economic growth; to drive sustainable development solutions; to inform policy- and decision-making; and to promote transformation and redress in the water and sanitation sector.

4 OUTCOMES, OUTPUTS, PERFORMANCE INDICATORS AND TARGETS

The programme outputs, performance indicators and targets aligned to outcomes are as follows (Table 2):

Table 2: Outcomes, outputs, performance indicators and targets

Outcome	Output	Output indicators	Annual targets		
			Estimated performance		
			2023/24	2024/25	2025/26
Outcome 1: Efficient and engaged organisation	Employee development	Percent implementation of employee development programmes	5% of development plans implemented	20% of development plans implemented	40% of development plans implemented
	Optimal technology capabilities	Implemented enterprise architecture	Enterprise architecture assessment and roadmap development	Enterprise architecture roadmap implementation	Enterprise architecture roadmap implementation
	Effective ICT governance	Implemented ICT governance architecture	ICT governance assessment and roadmap development	ICT governance roadmap implementation	ICT governance roadmap implementation
	Broad-based black economic empowerment	WRC empowerment position assessed	Assessment of the WRC empowerment position	Assessment and rating of the WRC empowerment position	Implementation of BBBEE scorecard targets and reporting
Outcome 2: A financially sustainable organisation	Cost control	HR cost to total income ratio	39%	37%	35%
		RDI cost to income ratio	58%	60%	60%
	Liquidity	Current ratio	2:1	2:1	2:1
	Partnerships/ collaboration	Number of new partnership agreements with associated leverage funding	4	5	5
Outcome 3: Innovation driven water sector	Water research data observatory	Water research data observatory implemented	Data observatory plan and table of contents completed	Data portal in test mode	Data portal approved for launching
	Technologies demonstration	Percent of the listed innovations demonstrated	0% (listing of produced innovations)	30% of listed innovations demonstrated	70% of listed innovations demonstrated
	Technology transfer	Percent of produced innovations transferred to stakeholders	5% of produced innovations transferred	10% of produced innovations transferred	20% of produced innovations transferred
	Stakeholder engagement	Percent implementation of the annual stakeholder engagement plan	70% of the plan implemented	80% of the plan implemented	90% of the plan implemented

Outcome	Output	Output indicators	Annual targets		
			Estimated performance		
			2023/24	2024/25	2025/26
Outcome 4: Empowered and influenced stakeholders	Science communication	Number of new water science publications disseminated to the public	3	4	5
	Human Capacity Development	Number of candidates supported for capacity enhancement (bursaries and other financial support)	200	250	250
		Number of new co-hosted training programmes	3	3	3
	Knowledge dissemination	Number of special publications based on topical water themes	5	5	5
Outcome 5: Adaptation and resilience	High impact publications and knowledge products	Percent of Resilience products produced to total number of completed projects	50% of products identified	50% of products identified and listed	50% of the RDI products available for use by the sector
	High impact publications and knowledge products	Percent of Adaptation products produced per total number of completed projects	30% of products identified	30% products identified and listed	30% of the RDI products available for use by the sector

Table 3: **Outcomes, outputs, performance indicators and targets**

Output indicators	Annual Target 2023/24	Quarterly Targets			
		Quarter 1	Quarter 2	Quarter 3	Quarter 4
Percent implementation of employee development programmes	5% of development plans implemented	Development of plans	Development of plans	Implementation of plans	5% of development plans implemented
Implemented enterprise architecture	Enterprise architecture assessment and roadmap development	Enterprise architecture assessment	Enterprise architecture assessment	Enterprise architecture assessment	Development of architecture roadmap
Implemented ICT governance architecture	ICT governance assessment and roadmap development	ICT governance assessment	ICT governance assessment	ICT governance assessment	Development of architecture roadmap
Broad-based black economic empowerment	WRC empowerment position assessed	-	Assessment of the WRC empowerment position	Assessment of the WRC empowerment position	Assessment of the WRC empowerment position
HR cost to total income ratio	39%	40%	40%	40%	39%
RDI cost to total income ratio	58%	56%	56%	57%	58%%
Current ratio	2:1	2:1	2:1	2:1	2:1
Number of new partnership agreements with associated leverage funding	4	Partnership negotiations	Partnership negotiations	4	4
Water research data observatory implemented	Data observatory plan and table of contents completed	Development of data observatory plan and contents table	Development of data observatory plan and contents table	Development of data observatory plan and contents table	Completed data observatory plan and contents table
Percent of the listed innovations demonstrated	(0%) Percent of the listed innovations demonstrated	Development of listed demonstrated innovations	Development of listed demonstrated innovations	Development of listed demonstrated innovations	(0%) Listing of demonstrated innovations
Percent of produced innovations transferred to stakeholders	5% of produced innovations transferred	Engagement with stakeholders on technology transfers	Engagement with stakeholders on technology transfers	Engagement with stakeholders on technology transfers	5% of produced innovations transferred
Satisfaction index from annual survey of prioritized stakeholders	60% satisfaction index	Carry out stakeholder engagement activities	Carry out stakeholder engagement activities	Perform a stakeholder satisfaction survey	60% satisfaction index
Number of new water science publications disseminated to the public	3	-	1 publication	-	2 publications

Output indicators	Annual Target 2023/24	Quarterly Targets			
		Quarter 1	Quarter 2	Quarter 3	Quarter 4
Number of candidates supported for capacity enhancement (bursaries and other financial support)	200	-	100	-	200
Number of new co-hosted training programmes	3	-	1 co-hosted programme	-	3 co-hosted programmes
Number of special publications based on topical water themes	5	-	2 special publications	-	3 special publications
Percent of Resilience products produced per total number of completed projects	50% of products identified	Implementation and identification of projects	Implementation and identification of projects	Implementation and identification of projects	50% of products identified
Percent of Adaptation products produced per total number of completed projects	50% of products identified	Implementation and identification of projects	Implementation and identification of projects	Implementation and identification of projects	30% of products identified

5 EXPLANATION OF PLANNED PERFORMANCE OVER THE MEDIUM-TERM PERIOD

In order to provide an outline of planned performance over the 3-year period, strategic intents were organised per programme for effective strategy execution. Key priorities over the medium term are as follows:

5.1 PROGRAMME 1: ADMINISTRATION AND GOVERNANCE

The programme seeks to ensure that the corporate compliance cycle and the governance framework of the WRC is implemented. This programme also gives effect to the assurance services of the WRC, which will be carried out through a combined assurance framework to ensure that performance and risk are linked and that management also provides assurance in the key controls that they effect.

Implementation of a risk-based strategic internal audit and a rolling 3-year operational plan is also a key deliverable of this programme. This includes implementation of a risk management strategy that includes strategic risk and operational risk management processes, and risk appetite and tolerance levels, including business continuity management.

5.2 PROGRAMME 2: CORPORATE SERVICES

The potential for excellence in delivery on the WRC mandate will be enhanced by how the organisation structures itself. The transformation of the workplace due to the COVID-19 pandemic and the Fourth Industrial Revolution and their consequences remain the reason the WRC has continued to be intentional in reinventing people, practices and processes in alignment with shifts in infrastructure technology and spaces within the WRC. The hybrid work modality has become and continues to be a new way of working. Technology has accelerated the implementation of remote working and digital enablers that encourage an agile environment. Our purpose is to facilitate a positive employee life experience by enabling personal and professional growth through inspirational leadership. The employee value proposition is entrenched to influence a meaningful working environment that enables the evolution and integration of technology, innovation, and people through strategic partnerships, leading to the WRC becoming a preferred employer. The People and Culture approach focuses on re-organising how work is performed with the intention to build human capital

capability, build strategic business partnerships, and improve service delivery and operational efficiencies.

The People and Culture approach is underpinned by a game-changer's mentality to unlearn, relearn and upskill while driving and implementing the 'employee value proposition' with the approach focusing on the following:

- Efficiency
- Innovation
- Connecting people

Further, an independent institutional assessment and an organisational review exercise will be finalised. These assignments seek to review the structure of the WRC, for its strategic-fit and alignment to the WRC mandate. Key positions may be created, wherein recruitment may take place to align with the mandate, impact and outcomes of the WRC.

5.3 PROGRAMME 3: FINANCE

The current revenue trajectory of the organisation could be affected by external factors in the future, especially the water services sector that is currently not stable. The instability of water services could lead to high debtor levels coupled with the fact that leveraged income is cyclic in nature. A plan to optimise the revenue and resource allocation cycles will be developed to achieve a financial trajectory that will create a sustainable future capital base. Further, key business processes will be identified to strengthen financial governance in each of these key process areas.

Key priorities over the medium term are as follows:

- Enhanced controls over expenditure
- Enhance Supply Chain Management to effectively carry out 'procure to pay' services
- Effective debt collection
- Management of partnerships for maximisation of leverage funding
- Frequent monitoring of key financial trends and taking corrective actions where necessary

5.4 PROGRAMME 4: RESEARCH, DEVELOPMENT AND INNOVATION

Opportunities to create value in all its RDI programmes, projects, and activities will continue to be sought. Global trends and a futuristic view will be incorporated to benefit the water and science, technology and innovation (STI) sectors in South Africa, Africa, and beyond. The monitoring and evaluation outcomes will provide intelligence without bias with regard to what should be discarded and what should continue, based on identified gaps.

The RDI programmes and approaches will address the water and sanitation sector needs and other knowledge users. Greenfields research areas will be introduced, especially those supporting the current and future water industry which, among others, will include the following:

- Hydrogen science & technology (to support the hydrogen economy)
- Artificial intelligence and robotics for water and sanitation management
- Water and sanitation outreach/extension
- Water and sanitation training and reskilling
- The economics and finance of water and sanitation

Every existing programme should plot a new direction that benefits the users and the sector. As a result, the identified RDI greenfield projects will be resourced internally and with funds from partners.

Further, the following initiatives will be implemented over the medium term:

- Establishment of impactful projects in a needy community or municipality to provide solutions and products required; these change-making programmes will be funded internally and by the private sector
- Strengthen collaboration with users and in knowledge dissemination and demonstration programmes
- Facilitate transformation of research and innovation community of practice by increasing participation of rural and semi-urban communities in water and sanitation knowledge creation

- Improve capacity building for continuation of impacts and outcomes of leverage projects and build institutional capacity to continue with some of the projects after they are handed over to funders

5.5 PROGRAMME 5: KNOWLEDGE AND IMPACT

The key priorities for this programme over the medium term are as follows:

Knowledge services

- Strengthening knowledge editing and improvement of initiatives supporting public understanding of water science
- Development of state-of-the-art knowledge systems, providing superior web access, web services, interactive access, hosting of various services, apps and mobile access
- Improved writing and sharing of our impact story
- Superior content development and content amplification
- Developing knowledge products supporting learning and capacity building for various stakeholders

Promotion of research outputs

- Promotion and marketing of WRC research outputs for uptake and application
- Water conversations through strategic engagements on an impact-focused theme
- Positioning and profiling the WRC as a premier knowledge and solutions partner

Stakeholder engagement

- Development and finalization of a new stakeholder management strategy to include the entire WRC stakeholder ecosystem which included, among others, the shareholder, researchers, research funders, beneficiaries and internal stakeholders
- International stakeholder engagement and partnerships for knowledge sharing, joint programmes and activities
- National stakeholder engagement coordination; partnerships for engagements, uptake and implementation
- Internal stakeholders; internal staff act as ambassadors of WRC knowledge and innovations

International cooperation and partnerships

- Coordinates establishment and management of collaborative partnerships with partners beyond South Africa's borders
- Implements joint learning activities (implementation of knowledge-sharing activities and dissemination through partner communication platforms)
- Contribute to launch of joint R&I calls for multilateral projects and management of successful South African projects arising from joint calls
- Establish and manage capacity building programmes targeting the African continent and developing countries
- Establish technological and innovation cooperative partnerships to facilitate scaling up and uptake of WRC products

Capacity building and policy impact

- Improved policy engagements at the inter-governmental level in bi-lateral meetings and annual policy dialogues
- Capacity building through Young Water Professionals, graduates
- Re-establishment of Water Information Network and establishment of the Youth in Water, development and support initiative

6 PROGRAMME RESOURCE CONSIDERATIONS

6.1 REVENUE

Levy income

The WRC derives its primary income from the WRL payable by the Department of Water and Sanitation (DWS). The WRL is governed by a signed Memorandum of Agreement in which the DWS undertakes to pay a monthly amount for water research levies. A new Memorandum of Agreement came into effect in April 2022 and provided for a nominal increase in the levy income compared to what was previously included in the approved budget.

The levy income budget includes a 5% proposed levy increase for the 2023/24 financial year and then further includes an increase of 4.48% over the medium term. The inflation rate as per National Treasury was considered in determination of this increase.

Leverage income

Leverage income is a secondary source of revenue for the WRC and is earned on the basis of deliverables achieved in line with business plans and agreements entered into with funders. It is expected that leverage income amounting to 104 million rand will be earned during the 2023/24 financial year with an estimated leverage amount of 75 million rand in the 2024/25 financial year, increasing to an amount of 94 million rand in the 2027/28 financial year. There is some unpredictability in the nature of leveraged income, as forecasts for the 2024/25 financial year and beyond are less certain as there are no guaranteed funds from research partners and other research institutions. Leverage income remains important for the WRC as it provides an opportunity for the WRC to demonstrate impact and enable mandate delivery by complementing the WRL.

Investment income

Investment income is earned on the cash holdings of the WRC and is secondary income. This income is expected to increase in line with the amount of cash on hand throughout the medium term.

The total revenue budget for the planning cycle is presented in Table 4:

Table 4: **Budget estimates for the period 2023/2024 to 2027/2028**

Description	Budget -2023/2024	Budget -2024/2025	Budget -2025/2026	Budget -2026/2027	Budget -2027/2028
Levy income	301,393,359	316,463,027	331,037,103	345,867,565	361,362,432
Leverage income	104,370,267	74,706,759	82,177,435	90,395,179	94,444,883
Interest received	7,407,886	7,737,537	8,084,179	8,446,350	8,824,747
Other income	290,159	303,071	316,649	330,834	345,656
Total income	**413,461,671**	**399,210,395**	**421,615,366**	**445,039,928**	**464,977,717**

6.2 EXPENDITURE

The expenditure over the medium term is expected to increase in line with the inflation rate outlook as per National Treasury. The human resources budget has taken into account the cost of living adjustment which is linked to the inflation outlook. It is expected that the organisational design assignment that the WRC will carry out will lead to a strategy-fit structure that takes the mandate and size of the WRC into account. Funding allocated to the research, development and innovation portfolio is allocated to cover research commitments already entered into by the WRC, including funding for new projects. Research, development and innovation costs are a greater cost component of the WRC and are expected to increase to 231 million rand in the 2027/28 financial year from the 222 million rand in the 2023/24 financial year.

The total WRC expenditure over the medium term is presented in Table 5.

Table 5: Budget estimates for the period 2023/2024 to 2027/2028

Description	Budget estimates -2023/2024	Budget estimates-2024/2025	Budget estimates -2025/2026	Budget estimates-2026/2027	Budget estimates-2027/2028
Fixed costs	13,408,583	14,393,093	15,451,441	16,589,196	17,862,350
Running costs	26,265,194	16,936,034	17,371,020	18,402,968	18,906,581
Human resource costs	140,261,169	149,599,638	161,649,235	175,031,857	189,599,475
Research, development and innovation costs	222,445,780	211,104,998	219,596,911	224,891,415	230,994,654
Corporate expenses	3,160,191	3,300,819	3,461,414	3,623,331	3,792,969
Capital expenditure	7,920,754	3,875,813	4,085,345	6,501,162	3,821,688
Total expenditure	**413,461,671**	**399,210,395**	**421,615,366**	**445,039,928**	**464,977,717**

7 KEY RISKS AND MITIGATION

The approach to risk management assumed an integrated enterprise-wide risk management which incorporates internal controls into the entire risk management process. The risk management process is premised on a notion that the WRC provides value to its stakeholders. Risks identified will enable the WRC to effectively mitigate against any matters that may impede achievement of the WRC strategy, effectively deal with uncertainty, and take advantage of emergent opportunities.

A risk assessment process was carried out, where material matters were identified, and assessment made at inherent and residual level, with identification of current controls. An assessment was also made as to whether, for each matter, the WRC is impacted over the long, medium or short term. Further, an assessment was made as to how the strategic outcomes are impacted by each matter that was identified.

The strategic risk profile of the WRC per outcome is as follows:

Table 6: **Outcomes, risks and mitigation actions**

Outcome	Risk name	Impacts	Key mitigating plans
Outcome 1: Efficient and engaged organisation	Misalignment between organizational strategy and people, processes and systems	Loss of productivity Non-compliance to legislation Low staff morale Loss of skills in key mandate areas	1. Review, update and optimize the organizational structure to match the skills and competencies required. 2. Review, refine or re-design the policies, processes and procedures for relevance, and monitoring of adherence thereto. 3. Conduct organizational ethics risk assessments. 4. Introduce change management programmes to make employees aware of the revived strategy. 5. Implement a communication strategy in collaboration with other branches. 6. Review and update the reporting system and processes across the organization and align them with stakeholders. 7. Conduct relevant training and capacity building programmes. 8. Development of the information, communication and technology (ICT) strategy. 9.Finalise the WRC strategy, APP and , monitor, report on quarterly basis. 10. Development and implement a of central document management system. 11. Develop and implement the WRC compliance universe.
Outcome 2: A financially sustainable organization	Possible reduction in revenue base and increase in operating costs	Limitations in resourcing the research and innovation portfolio. Negative Stakeholder reputational impacts	1. Determine the feasibility of engagement with National Treasury for funding prospects. 2. Regular interaction with the DWS and leverage stakeholders on the appropriate funding model and legislative framework. 3. Develop robust communication strategy to get the WRC value proposition known in the sector. 4. Develop and implement the cost containment strategy.
Outcome 3: Innovation-driven water Sector	Uncertainty and variability on the uptake of knowledge and innovative solutions	Reputational implications for the WRC Financial losses - decreased return on investment on technology to market due to incompleteness). 4. Water security efforts not realized. 5. Set economic and social benefits not met in South Africa.	1. Implement the dual strategy on current and future sector needs. 2. Review and update the research and innovation strategy to include other measures in closing the value chain gaps. 3. Develop the intellectual property (IP) policy to advance WRC strategy and to forge good workable relationships with IP owners to easy innovation use/uptake. 4. Implement the WRC communication strategy to target wider range of stakeholders and align to partners who need to adopt the WRC products.

Outcome	Risk name	Impacts	Key mitigating plans
Outcome 4: Empowered and influenced stakeholder	Failure to meet stakeholders' expectations	1. Reputational damage 2. Minimum returns/ impact on investment 4. Inability to effect sustainable knowledge transfer 5. Loss of influence to advance major shifts towards resilience and adaptation	1. Review and finalise the stakeholder management strategy. 2. Develop the stakeholder management implementation plan. 3. Conduct a WRC independent stakeholder satisfaction assessment. 4. Perform regular media monitoring. 5. Develop and/or repackage material targeting specific stakeholder clusters based on their identified needs. 6. Develop robust and digital communication platforms to improve the image of WRC. 7. Review and implement the communication and media strategy. 8. Develop educational materials and programmes to increase public understanding of water science. 9. Enhancement of knowledge dissemination in collaboration with various stakeholders.
Outcome 5: Adaptation and resilience	Failure of the portfolio to respond to adaptive and resilient knowledge solutions	2. Financial loss (or limited return on investment) 3. WRC not fulfilling its strategic mandate. 4,. Water security efforts not realized. 5. Stakeholder expectation not met. 6. Economic and social benefits not met in South Africa. 7. Lack of recognition of relevance by each group of stakeholders	1.Analyze the needs and align them to the current and future challenges relating to water security. 2.Tailor research, development, and innovation to respond to current and future climate change impacts. Fund demonstration and scale up until a decision can be made on appropriateness. 3. Develop smart internal processes for decision-making. 4.Strengthen collaboration with national system of innovation partners, other stakeholders (sector enablers) and sector uptake partners. 5.Transform and retain staff to drive strategy. 6. Increase participation of local stakeholders for research, development and innovation programmes that meet their needs. 7. Source additional funds to support key segments of the knowledge/innovation value chain. 8. Review and finalise the fit-for- purpose research, development and innovation (RDI) structure.

PART D

TECHNICAL INDICATOR DESCRIPTIONS

Programme 2: **Corporate Services**

INDICATOR TITLE	Percent implementation of employee development programmes
Definition	To measure improvements in proficiency levels of employees
Source of data	Employee survey reports
Method of calculation or assessment	Quantitative
Means of verification	Records showing implementation of employee development programmes
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Corporate Services

INDICATOR TITLE	Implemented enterprise architecture
Definition	To measure implementation of the ICT strategy
Source of data	Architecture assessment reports
Method of calculation or assessment	Qualitative
Means of verification	Approved reports showing implementation of enterprise architecture
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Corporate Services

INDICATOR TITLE	Implemented ICT governance architecture
Definition	To measure implementation of the ICT governance architecture
Source of data	ICT architecture assessment reports
Method of calculation or assessment	Qualitative
Means of verification	Approved reports showing implementation of ICT governance architecture
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Corporate Services

INDICATOR TITLE	WRC empowerment position assessed
Definition	To measure progress towards assessment of the B-BBEE position of the WRC to ultimately derive empowerment targets as per the scorecard
Source of data	B-BBEE assessment reports
Method of calculation or assessment	Qualitative
Means of verification	Approved reports showing implementation of assessment of the B-BBEE position of the WRC
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Office of the Chief Executive Officer

Programme 3: Finance

INDICATOR TITLE	Percent of total revenue spent on Human Resources costs
Definition	The indicator measures the total research and innovation costs in relation to the total revenue generated by the organisation
Source of data	Financial records
Method of calculation or assessment	The indicator will be measured quantitively as follows: Human Resources costs / Water Research Levy
Assumptions	Reliable records available for measuring financial performance
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Desired performance	Performance higher than expectations is desirable
Indicator responsibility	Chief Financial Officer

INDICATOR TITLE	Percent of total revenue spent on research and innovation costs
Definition	The indicator measures the total research and innovation costs in relation to the total revenue generated by the organisation
Source of data	Financial records
Method of calculation or assessment	The indicator will be measured quantitively as follows: total research and innovation costs incurred / total revenue generated
Assumptions	Reliable records available for measuring financial performance
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Desired performance	Performance higher than expectations is desirable
Indicator responsibility	Chief Financial Officer

INDICATOR TITLE	Current ratio
Definition	To measure ability of the organisation to meet its short-term obligations
Source of data	Finance reports from the accounting system
Method of calculation or assessment	Quantitative Current ratio = current assets / current liabilities
Means of verification	Approved finance reports
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Chief Financial Officer

Programme 4: **Research, Development and Innovation**

INDICATOR TITLE	Percent of Resilience products produced per total number of completed projects
Definition	To measure progress on production of knowledge products on resilience to climate change
Source of data	Catalogue of products produced
Method of calculation or assessment	Quantitative A percentage count of knowledge products produced per completed products Resilience products produced / total number of completed projects
Means of verification	Proof of knowledge products produced and those of completed knowledge
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Research, Development and Innovation

INDICATOR TITLE	Percent of Adaptation products produced per total number of completed projects
Definition	To measure progress on production of adaptation products on resilience to climate change
Source of data	Catalogue of products produced
Method of calculation or assessment	Quantitative A percentage count of knowledge products produced per completed products Adaptation products produced / total number of completed projects
Means of verification	Proof of knowledge products produced and those of completed projects
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable

INDICATOR TITLE	Percent of Adaptation products produced per total number of completed projects
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Research, Development and Innovation

Programme 5: **Knowledge and Impact**

INDICATOR TITLE	Number of partnership agreements with associated leverage funding
Definition	To measure augmentation of the water research levy for financial sustainability
Source of data	Catalogue of leverage agreements
Method of calculation or assessment	Quantitative A simple count of leverage agreements entered into in the financial year
Means of verification	Signed partnership agreements
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Knowledge and Impact

INDICATOR TITLE	Water research data observatory implemented
Definition	To measure implementation of the water research data observatory
Source of data	Records showing implementation of the water research data observatory
Method of calculation or assessment	Qualitative
Means of verification	Approved reports showing progress on implementation of the water research data observatory
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Knowledge and Impact

INDICATOR TITLE	Percent of listed innovations demonstrated
Definition	To measure utilisation of demonstration platforms
Source of data	Records showing that demonstration platforms are utilised by the stakeholders
Method of calculation or assessment	Qualitative
Means of verification	Approved demonstration platform reports. Demonstration platforms should be on the basis of agreements with stakeholders.
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Knowledge and Impact

INDICATOR TITLE	Percent of innovations transferred to stakeholders
Definition	To measure transfer of water and sanitation innovations to stakeholders
Source of data	Records showing that innovations by the WRC are being transferred to stakeholders
Method of calculation or assessment	Qualitative
Means of verification	Approved innovation transfer reports showing uptake by the stakeholders. The innovations must be ready for use and uptake.
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Knowledge and Impact

INDICATOR TITLE	Percent implementation of the stakeholder engagement plan
Definition	To measure progress towards implementation of the stakeholder engagement plan of the WRC
Source of data	Stakeholder engagement reports
Method of calculation or assessment	Quantitative
Means of verification	Records that serve as proof that stakeholder engagement activities took place
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Knowledge and Impact

INDICATOR TITLE	Number of new water science publications disseminated to the public
Definition	To measure the science communication to the public for public engagement with water science
Source of data	Catalogue of science publications
Method of calculation or assessment	Simple count, quantitative
Means of verification	Records of science publications
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Knowledge and Impact

INDICATOR TITLE	Number of candidates supported for capacity enhancement (bursaries and other financial support)
Definition	To measure support and human capital development in water science and related fields
Source of data	Records showing support to candidates
Method of calculation or assessment	Simple count, quantitative
Means of verification	Record of payment showing that support has been provided to the candidates, including ID copy and proof of registration
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Knowledge and Impact

INDICATOR TITLE	Number of new co-hosted training programmes
Definition	To measure programmes hosted with WRC partners for capacity building in the sector
Source of data	Catalogue of co-hosted training programmes that have occurred
Method of calculation or assessment	Simple count, quantitative
Means of verification	Record showing that co-hosted training programmes have taken place
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Knowledge and Impact

INDICATOR TITLE	Number of special publications based on topical water themes
Definition	To measure issue of special publications based on identified thematic areas
Source of data	Catalogue of special publications
Method of calculation or assessment	Simple count, quantitative
Means of verification	Record showing that special publications based on thematic water areas were issued
Assumptions	Availability of reliable records
Disaggregation of beneficiaries (where applicable)	Not applicable
Spatial transformation (where applicable)	Not applicable
Calculation type	Cumulative
Reporting cycle	Quarterly
Desired performance	Performance more than the set target
Indicator responsibility	Group Executive: Knowledge and Impact

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