OPEN CALL

Please note that the budget allocations listed below for Open Proposals are only for the first-year budget.

KSA 1&2: WATER RESOURCES AND ECOSYSTEMS

The first-year budget of all project proposals that are responding to the Open and Directed Call in this business Unit (BU) or Key Strategic Area (KSA) for 2023/24 is R15 000 000.

Please note that the following thrusts, programmes, and themes are available to accept project proposals in this KSA or BU. For more information, please contact the Executive Manager, Dr Shafick Adams (E-mail shaficka@wrc.org.za).

THRUSTS, PROGRAMMES AND THEMES	BUDGET 2023/24 (R)	TOTAL BUDGET (R)
Thrust 1: Governance and Institutional Arrangements		
Programme 1: Cooperative governance for water resource management No specific theme		
Programme 2: Policy, science, and implementation 1. Law reform - Enabling the incorporation of administrative penalties into the National Water Act, building on work done on administrative penalties in Specific Environmental Management Acts. This will include identifying minor offences under the NWA, and how to draw the distinction between minor and serious offences. 2. Quantification of the socio-economic benefits to the communities neighbouring coastal parks in SA: A guiding framework - Communities do not always understand basic principles critical in nature conservation, the benefits and roles they can play to sustain these estuarine iconic conservation areas that are already over 65% threatened in SA. - The proposal must attempt to address these issues within the context of influencing citizen science role in policy and natural resources management.	Open	Open
Programme 3: Water pricing and financing 1. Economic regulation - Developing a medium-term research and capacity development agenda to support intended reforms to economic regulation within the water sector	Open	Open
Programme 4: Gender and equity 1. Transformation in the water sector - Exploring the merit of developing a water sector transformation charter, drawing on the nature of the transformation challenges in the sector and the experience of other sectors that have gone this route. The research should attempt to answer the question of whether such a charter is an appropriate tool to achieve the desired transformation in the water sector	Open	Open
Programme 5: Operation & maintenance New models for improving O&M at the local level.		
THRUST 2: HYDROLOGICAL AND ECOSYSTEM PROCESSES		
Programme 1: Eco and socio-hydrology 1. An illustrated guidebook on the biophysical aspects of closed/open estuaries for the communities - The communities surrounding the protected areas by their proximity to these sites should be empowered to have a basic understanding of the eco and hydrological flow dynamics and how these shape their livelihood. This understanding is critical to inform societies and must lead to co-existence with	Open	Open

THRUSTS, PROGRAMMES AND THEMES	BUDGET 2023/24 (R)	TOTAL BUDGET (R)
nature without ignoring their local and indigenous knowledge.		
Programme 2: Data and hydroinformatics Quantifying the impact of air-water quality on population in the coal mining areas: Towards a Citizen Science tool development.	Open	Open
Programme 3: Catchment Processes 1. Revisiting groundwater recharge estimation methods and approaches in South Africa and its implications for water security.	Open	Open
Programme 4: Water Security Priority will be given to proposals that address: Development of water security indices at a variety of scales and users	Open	Open
THRUST 3: WATER RESOURCE AND ECOSYSTEM PROTECTION AND UTILIZATION		
Programme 1: Resource directed measures No specific themes		
Programme 2: Rehabilitation and conservation 1. Alternative livelihoods for marginalized communities bordering Ramsar wetlands and world heritage sites: A case of iSimangaliso, KZN. Agro-Ecosystem nexus: Transformation and viability of alternative livelihood on the uMfolozi/Msundizi floodplains. The marginalized communities tend to get used to one form of crop farming as a generational inheritance, often very difficult to change even though the climate demands a change. This call will attempt to provide adequate evidence critical to shift/transform communities farming on uMfolozi/uMsunduzi floodplains to alternative forms of livelihood in order to allow these floodplains to undergo self-restoration	Open	Open
Programme 3: Water system utilisation and augmentation No specific theme		
Programme 4: Environmental Economics and resource accounting 1. Nature-based solutions. The selected cases of the socio-economic impacts of degraded ecological infrastructure in SA. The research will quantify the costs to society and economy due to deteriorating landscape	Open	Open
THRUST 4: ENVIRONMENTAL CHANGE AND ADAPTATION THRUST		
Programme 1: Urbanization No specific theme		
Programme 2: Climate change and variability 1. Management of surface water drainage under the changing climate - Some of the probable effects of Climate change includes frequent floods and drought. It is therefore important that water resulting from the floods is well managed and conserved to maximise water yield in our water resources. Among other things, this may be achieved by ensuring that drainage to water sources is not impeded. Ensuring that storm water systems are not blocked, and that agricultural crop land are well drained, leads to increased water yield and enhanced groundwater recharge. It is therefore important to investigate challenges related to storm water drainage and poor drainage in agricultural land and subsequently recommend probable solutions. 2. Potential impacts of climate change on sanitation in South Africa - The business of planning for water resources management within DWS is now required to fully integrate the Sanitation component. While it is acknowledged that South Africa still faces a number of challenges regarding the delivery of appropriate Sanitation systems for all; the impacts of current and projected change in climate are expected to make	**Open** **Open**	**Open** **Open**

THRUSTS, PROGRAMMES AND THEMES	BUDGET 2023/24 (R)	TOTAL BUDGET (R)
the situation worse. The impacts of climate change on sanitation can either be attributed to the choice of sanitation technology that may not be possible in specific areas (areas projected to experience excessive wet climates) or it can be due to limited water available as a result of projected drying climate. 3. Water conveyance systems under changing climate - To undertake the study of the potential impacts of climate change on various canal systems of various water schemes in South Africa and recommend on what should be done to avoid the potential failure of the scheme as supply dwindles due to canal system inefficiencies caused by climate change. 4. Scenario Planning under altered Environmental Conditions of current and future climate The proposed research project aims to plan for more aggressive climate mitigation and adaptation strategies to prevent future "Day Zero" droughts in dry and populated areas in South Africa, through a scenario building for anticipated changes in water users and their requirement coupled with the availability of water resources under projected climate change conditions to can inform water managers on the plausible future challenges or pressures and health vulnerabilities likely to be experienced. Such strategies could contribute towards intentional transformative adaptation policies for the water sector, and also feed into present water resource management planning as impacts of climate change are already been experienced.	**Open** **Open**	**Open** **Open**
Programme 4: Environmental risk and disaster management 1. Develop tested monitoring tools for mining-impacted communities. - Citizen science-based tool. The communities neighbouring mines have long complained about deteriorating water and other environmental quality, its impact on their livelihood, including health. However, there is a serious lack of data to quantify these impacts for unknown reasons. This study will develop a CS tool for use by the impacted communities for their own benefit. 2. Projection of Risk and Distribution of Health Vulnerabilities across Municipalities as a result of Climate Change. The proposed research is to develop risk profiles for local municipalities with potential areas that might be prone to an increase or occurrence in water-linked diseases as a result of climate change.	***Open*** ***Open***	***Open*** ***Open***
THRUST 5: RESOURCE QUALITY AND MANAGEMENT		
Programme 1: Water pollution, depletion and human health Priority will be given to proposals that address: a one-health approach for early detection and prevention of waterborne disease outbreaks.	**Open**	**Open**
Programme 2: Emerging contaminants Priority will be given to proposals that address: risk, prediction and modelling of contaminants of emerging concern within transboundary river basins.	**Open**	**Open**
Programme 3: Source water protection 1. Best management practices including the use of 4IR technologies to		

THRUSTS, PROGRAMMES AND THEMES	BUDGET 2023/24 (R)	TOTAL BUDGET (R)
identify, prevent and reduce diffuse pollution of various source water. See directed call(s).	**Open**	**Open**
THRUST 6: WATER RESOURCES INNOVATION AND TECHNOLOGIES		
Programme 1: Apps, online. No specific theme		
Programme 2: Remote sensing and telemetry No specific themes		
Programme 3: Environmental Sensors & Detectors 1. CBA on transforming water resource quality monitoring. Understanding the costs implications to engaging (or not) technology in future water resource quality monitoring. COVID:19 is the major game changer which led to collapse of traditional monthly grab samples in favor of real time data acquisition, analysis and reporting, all online. This will still be accompanied by limited ground-truth until adequate confidence on technological approach is built. WRC has produced a number of these tools, but hardly any uptake so far is happening at a scale	**Open**	**Open**
Programme 4: Models and Early warning systems Early warning systems based on quality assured tools are required and derived from citizen-based data and information. Tools that will help forecast risks and raise awareness at the community or settlement level.	**Open**	**Open**
Programme 5: Treatment Technologies Closed		
Programme 6: Blue-Green technologies and infrastructure No specific themes		

KSA 3: WATER USE, WASTEWATER RESOURCES AND SANITATION FUTURES

The first-year budget of all project proposals that are responding to the Open and Directed Call in this business Unit (BU) or Key Strategic Area (KSA) for 2023/24 is R15 000 000.

Please note that the following thrusts, programmes and themes are available to accept project proposals in this KSA or BU. For more information, please contact the Executive Manager, Mr Jayant Bhagwan (E-mail jayb@wrc.org.za).

THRUSTS, PROGRAMMES AND THEMES	BUDGET 2023/24 (R)	TOTAL BUDGET (R)
THRUST 1: WATER SENSITIVE AND RESILIENT SETTLEMENTS		
The scope of this thrust is to influence the planning and design of smart human settlements and environments that is sensitive to the issues of water sustainability and environmental protection, while ensuring the efficient functioning of water service institutions and their viability are key to sustaining water services in rural and urban areas. The thrust need to promote a holistic management of sewerage, stormwater and drinking water to achieve the goal Integrated Water Management (IWM) and a water supply mix.	**Open**	**Open**
Programme 1: *Smart water supply management*	**Open**	**Open**
Theme : The scope of this programme will focus on introducing new techniques and process, such as ICT, smart grids etc. in improving the technology for supplying water. It will give attention to better infrastructure asset management, energy management and generation, water loss minimisation, smart metering and all elements that will ensure secure and safe supply of water of good quantity and quality. Aligned to this will be improving management arrangements in achieving these outcomes		

THRUSTS, PROGRAMMES AND THEMES	BUDGET 2023/24 (R)	TOTAL BUDGET (R)
Programme 2: *Sustainable drainage futures*	**Open**	**Open**
Theme : Currently the coordination of greywater, rainwater, sewerage and stormwater as an important resource mix in settlements is not well understood. Thus, the scope of this thrust will contribute to ensuring that the collection of water management practices align to modern drainage systems with natural water processes. Focus will be given to SuDS efforts make urban drainage systems more compatible with components of the natural water cycle and catchments, while modernizing monitoring and asset management systems towards development of a resource mix . *Theme 1 : Understanding the impact of land use on water services in tribal, trust and private land.*		
Programme 3: *Water efficiency and behaviour change*	**Open**	**Open**
Theme : A fully-informed and empowered community or individual plays a vital role in the sustainable use of water services, which contributes to water efficiency and improved environmental health. This programme will address education and awareness aspects which contribute to efficient water use, improved behaviour and sustainable services. It will support the development of innovative tools, technologies and systems which contribute to water efficiency and behaviour change.		
Programme 4: *Water services Institutional and management programme*	**Open**	**Open**
Theme : Relationships and partnerships between service providers, both external and internal, are important prerequisites to sustainable water service delivery. This programme's objective is to generate knowledge and processes that would support this new form of service delivery. Innovative management techniques are a necessity for viable and sustainable water service provision. This programme intends to find innovative solutions to critical problems with the financing, cost recovery, regulation and management of essential services such as water supply and sanitation		
THRUST 2: WATER QUALITY FUTURES		
The research focus of this thrust is on improving understanding of the influence of major drivers (i.e. climate change, industrialisation, land use/cover, etc), as well as anthropogenic activities on water quality changes in raw water and treated water sources for different uses including; drinking; and agricultural and industrial uses. Research on contaminant sources, loads, transport and partitioning and as well as their combined impacts is also key in determining appropriate risk management scenarios and developing the appropriate water quality management responses such as tools/technologies and regulatory/policy instruments.	**Open**	**Open**
Programme 1: *Smart water quality monitoring and decision making*	**Open**	**Open**
Theme 1: Development of innovative methods/models for detecting and monitoring water quality changes; sources, transport and partitioning of contaminants between the water component and sediment, and the subsequent use of the information for decision making. The following needs to be prioritised: • Technology scan or survey of rapid and efficient household microbial and chemical water quality monitoring devices/methods.		
Theme 2: Development of decision support systems, knowledge hubs and cataloguing platforms for water quality information, ready to be uploaded onto the Water Research Observatory (https://www.waterresearchobservatory.org/home). The following needs to be prioritised: • Development of national database of environmental occurrence of antimicrobials and antimicrobial resistant organisms • Development of a national database and mapping of desalination and water reuse plants in South Africa •Further development and enhancement of the decision support tool for the South African Water Quality Guidelines for domestic water quality		
Programme 2: *Water quality regulation, compliance and reporting*	**Open**	**Open**
Theme 1: Development of customized manuals and for drinking water quality management to support compliance to regulations and achieve capacity development. The following needs to be prioritised: •Determine the impact of raw water quality pollution and non-compliance to SANS 241 to human health		

THRUSTS, PROGRAMMES AND THEMES	BUDGET 2023/24 (R)	TOTAL BUDGET (R)
•Conduct an audit of drinking water treatment chemicals used in South Africa, and establish the effectiveness of treatment processes in removing these chemicals and associated health risks		
Programme 3: *Risk assessment for environmental water quality management*	**Open**	**Open**
Theme 1: Development and application of quantitative and comparative risk assessment, integrated human and ecological risk assessment approaches, as well as risk perception and communication methodologies for water quality assessment		
Programme 4: *Emerging issues and substances of concern in water*	**Open**	**Open**
Theme 1: Integration of state-of-the-art analytical and environmental forensic technologies for identifying, and studying the sources, concentrations, transport and fate of emerging substances of concern within the urban water cycle		
Programme 5: *Innovations in water treatment technologies*	**Open**	**Open**
Theme 1: Development and demonstration of innovative technological solutions for water purification, clearly demonstrating primary linkages and trade-offs between energy use efficiency (and cost), as linkages to better outcomes in terms of health		
THRUST 3: SUSTAINABLE INTEGRATED WASTEWATER RESOURCES FUTURES		
The scope of this thrust is to address wastewater as a resource, encourage the valorisation, reuse of wastewater effluents and promote sustainable integrated wastewater management through reducing pollution, removing pollutants, reusing/recycling reclaimed water and recovering useful resources. The thrust is premised on a paradigm shift from current wastewater management practices, catalysing achievement of sustainable development goals (SDGs) and need to transition the water sector to a circular economy. The thrust therefore prioritizes research, development and innovation that deliver the required solutions, innovations, processes and interventions at scale.	**Open**	**Open**
Programme 1: *Quantification and Minimisation of water use and effluent production* The objective of reducing pollution at source entails, (i) better understanding of the water footprint of industries, (ii) promotion of water use efficiency with reduced effluent production and (iii) establishing capabilities for preventing and reducing pollutants from entering the environment. In this regard, new tools, methodologies and models, etc. that aid with prediction, quantification, minimization of water use and effluent production will be prioritised.	**Open**	**Open**
Programme 2: *Effluent Treatment, Volarization and Reuse* Reclaimed water offers opportunities for a sustainable and reliable water supply for industries and municipalities as an alternative source to meet increasing demand. Therefore, the treatment of wastewater effluents and volarisation to a quality standard acceptable by users (i.e. 'fit-for-purpose' treatment) need to be prioritised to supplement the ever-growing demand of water supply in support of sustainable reuse. The objective of effluent reuse and volarisation will entail, (i) tapping into reclaimed water opportunities as alternative source and (ii) treatment of effluents and volarisation to quality standard acceptable by users. Further, 'fit-for-purpose' treatment to supplement the ever-growing demand of water supply needs to be prioritised.	**Open**	**Open**
Programme 3: *Advanced Technologies and Processes for Resource Recovery* Innovative technologies, processes and solutions for resource recovery from wastewater effluents need to be developed and used to demonstrate recovery of high value products that can be used as feedstocks for secondary industrial processes, with special focus on scaling up recovery of water, material and energy-based resources. Therefore, the objective of resource recovery will entail, (i) development of innovative technologies, processes and solutions for resource recovery from wastewater(s) (ii) demonstrating recovery of high value products that can be used as feedstocks for secondary industrial processes and (iii) scaling up recovery of water, material and energy-based resources.	**Open**	**Open**
Programme 4: *Nature-based Tools, Solutions and Innovations* The objective of nature-based solutions entails prioritizing projects that emulate, mimic and use nature inspired forms, processes and systems to address challenges associated with sustainable	**Open**	**Open**

THRUSTS, PROGRAMMES AND THEMES	BUDGET 2023/24 (R)	TOTAL BUDGET (R)
integrated wastewater resources management. The focus will be on (i) capacity building and providing awareness, (ii) supporting the community of practice and (iii) strengthening nature inspired research, development and innovation traction targeting products and innovations.		
Programme 5: *Sustainable Mine Closure Management* The objective of sustainable mine closure will entails prioritizing projects supporting (i) sustainable mine-impacted water management, (ii) mine rehabilitation and land management, (iii) community upliftment through local economic development (iv) entrepreneurship and economic sustainability.	**Open**	**Open**
THRUST 4: THE SANITATION TRANSFORMATION INITIATIVE		
The scope of this thrust is to provide impetus to the development of non-sewered sanitation solutions which would assist sanitation service providers to be more efficient and cost-effective. The focus on non-sewered sanitation is designed to move away from current linear approach to a circular approach through development of innovations and models that promote cost-effectiveness and longevity of infrastructure investment in which re-use, recovery and recycling through the sanitation value chain are promoted. The thrust support acceleration of sanitation provision through innovative technologies and approaches; minimising health risk through use of toilets; recycling / re-using limited resources, meeting user experience and acceptance; minimising environmental pollution; and linking sanitation infrastructure to additional revenue streams from valorisation of faecal wastes.	**Open**	**Open**
Programme 1: *Re-Engineered Toilets*	**Open**	**Open**
Theme 1: New and Emerging Off-grid / Resource Recovery Toilets		
Programme 2: *Sanitation-Sensitive Design (SSD)*	**Open**	**Open**
Theme 1: New institutional and municipal financial, planning, and management models centred around Sanitation Sensitive Design (including circular economy)		
Theme 2: Training, education and awareness aspects which contribute to sanitation sensitive design		
Programme 3: *Municipal Sludge Valorisation*	**Open**	**Open**
Theme 1: Approaches, Tools, Practices and Innovations for municipal sludge valorisation		
Programme 4: *SaniBus – Sanitation Linked Business*	**Open**	**Open**
Theme 1: Business-driven Approaches, Tools, Innovations and Practices for Sanitation		

KSA 4: WATER UTILISATION IN AGRICULTURE

The first-year budget of all project proposals that are responding to the Open and Directed Call in this business Unit (BU) or Key Strategic Area (KSA) for 2023/24 is R5 000 000.

Please note that the following thrusts, programmes, and themes are available to accept project proposals in this KSA or BU. For more information, please contact the Executive Manager, Professor Sylvester Mpandeli (E-mail sylvesterm@wrc.org.za).

THRUSTS, PROGRAMMES AND THEMES	BUDGET 2023/24 (R)	TOTAL BUDGET (R)
THRUST 1: WATER UTILISATION FOR FOOD, FORAGE AND FIBRE PRODUCTION		
Programme 1: Water-efficient production methods in relation to soils, crops and technology in rain-fed and irrigated agriculture		
Theme: Climate change impacts on water sustainability of South African crop production in strategic water resource areas	Open	Open
Theme: Determine water use of Apricot crop	Open	Open

THRUSTS, PROGRAMMES AND THEMES	BUDGET 2023/24 (R)	TOTAL BUDGET (R)
Theme: Water use of Nectarine crop in different agro - ecological zones	Open	Open
THRUST 2: WATER UTILISATION FOR FUELWOOD AND TIMBER PRODUCTION		
Programme 1: ***Water-efficient production methods and systems in agro-forestry, woodlands and forestry plantations***		
Theme: Water use and energy production of Pines in the Eastern Cape, KwaZulu – Natal and Western Cape Provinces	Open	Open
THRUST 3: WATER UTILISATION FOR POVERTY REDUCTION AND WEALTH CREATION IN AGRICULTURE		
Programme 1: Sustainable water-based agricultural activities in rural communities		
Theme: Development of a drought early warning system for South Africa (SA-DEWS): linking access to climate services to rainfed agriculture in rural communities	Open	Open
Theme: Developing a database and utility tool for underutilised indigenous crops for increased agricultural diversification in South.	Open	Open
Theme: Contextualising and developing priorities for the African Union's Irrigation Development and Agricultural Water Management (IDAWM) Framework for South Africa Theme: Quantifying the impacts of the Revitalisation of Smallholder Irrigation Schemes (RESIS) Program in South Africa – 20 years later.	Open	Open
Programme 2: Integrated water management for profitable farming systems		
Theme: Linking crop failure of underutilised and conventional crops under climate change to resilience and sustainable diets in South Africa	Open	Open
Theme: Piloting Metagenomics In Irrigated Agricultural Systems : A WEFE approach	Open	Open
Theme: Developing a regional knowledge hub for the WEF nexus for southern Africa Theme: Institutionalising and embedding the WEF nexus and related appropriate tools into the South African future development context	Open	Open
THRUST 4: WATER RESOURCE PROTECTION, RESTORATION AND RECLAMATION IN AGRICULTURE		
Programme 1: Sustainable water resource use on irrigation schemes and within river catchments		
Theme: Developing scalable and inclusive pathways for water, land and ecosystem innovations for sustainable and resilient food systems for South Africa	Open	Open
Programme 2: Impact assessment and environmental management of agricultural production		
Theme: Mapping climate, water, energy, food and environmental risks and developing sustainability and climate change adaptation guidelines on the Water-Energy-Food (WEF) Nexus	Open	Open
Theme: Circular economy resource recycling and sustainability: wastewater irrigation and crop associated microbiomes	Open	Open

DIRECTED CALL

The WRC has also published terms of reference (ToR's) from different business Units or Key Strategic Areas. These terms of reference are part of the 2022 Annual Call for project proposals. The tables below indicate specific BU's/ KSA's, thrusts, programmes and themes or tiles that must be addressed by project proposals that are responding to those ToR's.

DIRECTED CALL FOR KSA 1&2: WATER RESOURCES AND ECOSYSTEMS

THRUSTS, PROGRAMMES AND THEMES	BUDGET 2023/24 (R)	TOTAL BUDGET (R)
THRUST 2: HYDROLOGICAL AND ECOSYSTEM PROCESSES **Programme: 2.** ***Data and hydroinformatics***		
The state of citizen science as an approach to water resource quality monitoring	**500 000**	**1500 000**
THRUST 5: RESOURCE QUALITY AND MANAGEMENT		
Programme 1: Water pollution, depletion and human health		
Title: Identifying Data Mining Tools that can be used to Quantify the South African Population affected by Negative Water Quality	**300 000**	**600 000**
Programme 2: Emerging contaminants		
Title: Resultant Effects on Urban River Environments as a result of the Complexity of E-Waste Streams and Recycling	**350 000**	**700 000**
Programme 3: Source water protection		
Title: Development of Viral Water Quality Management Tools for the effective protection of Source Water	**500 000**	**1 000 000**

DIRECTED CALL FOR KSA 3: WATER USE, WASTEWATER RESOURCES AND SANITATION FUTURES

THRUSTS, PRGRAMMES AND THEMES	BUDGET 2023/24 (R)	TOTAL BUDGET (R)
THRUST 1: WATER SENSITIVE AND RESILIENT SETTLEMENTS		
Programme 1: Smart water supply management		
Title 1: Development of an approach towards digitalization of water services sector in SA	400 000.00	750 000.00
Title 2: Smart water metering, trends, opportunities, risks and policy.	350 000.00	600 000.00
Programme 2: Sustainable drainage Programme futures		
Title 1: Demonstration of the development of a WSD plans for four case study municipalities from category B and C.	600 000.00	1 500 00.00
Title 2: An investigation and analysis of the intense storms generated by climate change and its impact on urban drainage design and practice – case study of Ethekweni and surroundings.	300 000.00	600 000.00
Programme 3: Water efficiency and behaviour change		
Title 1: Strategy for national scaling of behavioural nudges and other associated behaviour change tools	450 000.00	450 000.00
Programme 4: Water services Institutional and management programme		
Title 1: The DDM model and its implications on Water Services Legislation, planning and regulation.	300 000.00	500 000.00
THRUST 2: WATER QUALITY FUTURES		
None	none	
THRUST 3: SUSTAINABLE INTEGRATED WASTEWATER RESOURCES FUTURES		
None	None	None
THRUST 4: THE SANITATION TRANSFORMATION INITIATIVE		
Programme 1: *Re-Engineered Toilets*		

THRUSTS, PRGRAMMES AND THEMES	BUDGET 2023/24 (R)	TOTAL BUDGET (R)
Title 1: SMARTSAN 1- Proof-of-Concept for urban, household re-engineered toilet that uses incineration as the main treatment process. Conceptual design must meet spatial requirements of urban toilet cubicle and deal with flushing water content.	400 000	600 000
Title 2: SMARTSAN 2 – Proof-of-Concept for urban, household re-engineered toilet that carbonises human faecal waste. Conceptual design must meet spatial requirements of urban toilet cubicle and deal with flushing water content.	400 000	600 000
Programme 2: Sanitation-Sensitive Design (SSD)		
Title 1: The Development of a Framework and Model for Designing Sanitation Sensitive Cities	300 000	600 000
Title 2: Development of a Strategic Approach to include Re-Engineered Toilets into Institutional and Municipal Financial Planning	350 000	700 000
Programme 3: Municipal Sludge Valorisation		
Title 1: Development of Curricula for Non-Sewered Sanitation & Sludge Valorisation	250 000	500 000
Title 2: What are municipalities doing with their municipal sludge? Understanding the current practices and the cost associated with municipal sludge disposal with case studies	350 000	700 000
Title 3: Understanding the current trends and advances in municipal sludge technology and innovative options related to sludge management	400,000	700,000
Title 4: Paradigm shift towards Circular Economy (CE) approaches in the Water and Wastewater Sector: Understanding the benefits, financing options and recommending policy, institutional and regulation frameworks and actions required to shift towards CE approach, including local examples of best practice	400 000	800 000

DIRECTED CALL FOR KSA 4: WATER UTILISATION IN AGRICULTURE

NO PLANNED DIRECTED PROJECTS ARE ANTICIPATED FOR KSA 4: IN WATER UTILISATION IN AGRICULTURE DURING THE 2023/24 FINANCIAL YEAR