Department of Water and Sanitation

POLICY

WATER AND SANITATION
SECTOR POLICY ON CLIMATE CHANGE

POLICY 2017

WATER IS LIFE - SANITATION IS DIGNITY

water & sanitation

Department:
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REPUBLIC OF SOUTH AFRICA

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PREFACE: MINISTER

Climate change is one of the leading environmental conundrums we are facing in the 21st century. It is the environmental phenomenon that is reshaping the way in which we think about ourselves, our societies and humanity's place on earth. Its effects on the environment and human health are beyond our imagination. Climate change also adds stress on the water and sanitation sector, by affecting the quality of water and further reducing the availability of our already limited resource.

South Africa is vulnerable to the effects of climate change on health, livelihoods, water, sanitation and food, with a disproportionate impact on the poor, especially women and children, who have contributed least to its causes. It is further acknowledged that the causes and impacts of climate change cannot be addressed by any single country in isolation. This is a global problem requiring global solutions, achieved through the concerted and cooperative efforts of all countries. As a result, in 2011 the National Climate Change Response (NCCR) White Paper was approved by cabinet which sets out the overall National Government response to the challenges of climate change. The NCCR decreed that all government departments to review their policies, strategies, legislations, regulations and plans within two years of its adoption.

In response, the Department of Water and Sanitation as the custodian of South Africa's water resources took a cue from Conference of the Parties (COP17), Southern African Development Community (SADC) Strategy and the NCCR White Paper in responding to this Global phenomenon by drafting the Water and Sanitation Sector Policy on Climate change. These policy positions seek to respond on the impacts of climate change on water and sanitation sector, and are informed by the provisions of the country's Constitution, the National Environment Management Act (NEMA); the National Water Act (NWA); the National Water Resource Strategy 2 (NWRS 2), SADC Strategy and the Sustainable Development Goals (SDGs). Since the impact of climate change is global in scope we believe that global solutions must be found, with due consideration to regional and national conditions.

This Water and Sanitation Policy on Climate Change will provide a framework for the implementation of the Climate Change Response Strategy for the water and sanitation sector, not forgetting that the policy will also strengthen the development,

implementation and enforcement of regulations that has implications for climate change. I therefore urge for collective efforts to ensure that the policy principles that strive to strengthen the effective protection, conservation and management of water resources and sustainable sanitation services against the impacts of climate change are realised.

MRS N P MOKONYANE,
MINISTER OF WATER AND SANITATION

PREFACE: DEPUTY MINISTER

In light of the exacerbated effects of climate change on our water resources, sanitation services are also affected, as a result this might hinder other development priorities such as improved global health, economic productivity, and food security. Many sanitation facilities are located at the lowest altitude and are therefore vulnerable to climate change-related problems such as sea level rise, storm surge, and flooding. Moreover severe storm events can overwhelm these facilities.

The Development and endorsement of a National Climate Change Response Policy (NCCR) has informed this sector policy. The current plan represents the first iteration of the sector's on-going efforts to adapt to climate change and contribute to the effective implementation of the NCCR Policy for sustainable water resources management and sustainable sanitation delivery in the country.

The Water and Sanitation Sector Policy on Climate Change looks at adaptation and ways in which water and sanitation can be used in mitigating the effects of climate change. We also acknowledge that there is water-energy nexus in which the two are interdependent on each other. Water needs energy to be pumped for irrigation and consumption, and on the other hand energy needs water in the cooling processes of energy generation. The policy encourages the use of technologies that are climate friendly and use water efficiently in contributing to the country's need to sharper its innovative edge with a view to continue contributing to global scientific and technological advancement.

I believe this policy is strengthening the sector's response on complex interactions that are posed by the impacts of climate change on the country's water resources and sanitation services. It is upon all of us to work together to mitigate the impacts of climate change which affects the marginalised community most.

MRS P TSHWETE, MP
DEPUTY MINISTER OF WATER AND SANITATION

FOREWORD

The Water and Sanitation Sector Policy on Climate Change was initiated in October 2015. This policy was developed through the collective and committed efforts of the Department's personnel, and participation from all stakeholders in the water and sanitation sector, guided by the National Climate Change Response (NCCR) and other policy instruments.

The focus of the Water and Sanitation Water Sector Policy on Climate Change is to advocate sector specific policy positions on:

- Water and sanitation adaptation to climate change.
- Role of water and sanitation in mitigation.
- Mainstreaming climate change into the sector.
- Cost and subsidies.

After the approval of the NCCR White Paper, which mandated that all government departments to review their policies, strategies, legislation, regulations and plans within two years of its adoption, the Water and Sanitation Sector Policy on Climate Change seeks to highlight and strengthen the linkages between the NCCR White Paper and water and sanitation sector responses.

I would like to acknowledge and thank all those who contributed to the Water and Sanitation Sector Policy on Climate Change development. The policy provides vigorous positions towards achieving Sustainable Development goal 6 (which seeks to ensure availability and sustainable management of water and sanitation) and goal 13 (which seeks to take urgent action to combat climate change and its impacts) of Sustainable Developments Goals. Implementing this policy will require a collaborative effort from all economic sectors as well as innovative and strategic thinking that will enable effective interventions to ensure environmental sustainability and resilience to future shocks as aspired by the National Development Plan.

MR SIFISO MKHIZE
DIRECTOR-GENERAL (Acting)

LIST OF ACRONYMS

CCA	CLIMATE CHANGE ADAPTATION
CCRSfWS	CLIMATE CHANGE RESPONSE STRATEGY FOR THE WATER SECTOR
CDM	CLEAN DEVELOPMENT MECHANISM
DBSA	DEVELOPMENT BANK OF SOUTH AFRICA
DoE	DEPARTMENT OR ENERGY
DEA	DEPARTMENT OF ENVIRONMENTAL AFFAIRS
DST	DEPARTMENT OF SCIENCE AND TECHNOLOGY
DTI	DEPARTMENT OF TRADE AND INDUSTRY
DWS	DEPARTMENT OF WATER AND SANITATION
GDP	GROSS DOMESTIC PRODUCT
GHG	GREENHOUSE GAS
IGCCC	INTERGOVERNMENTAL COMMITTEE ON CLIMATE CHANGE
IMCCC	INTER-MINISTERIAL COMMITTEE ON CLIMATE CHANGE
IPCC	INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE
IRP 2010	INTEGRATED RESOURCE PLAN FOR ELECTRICITY GENERATION 2010
MDGs	MILLENIUM DEVELOPMENT GOALS
MRV	MEASURE, REPORT AND VERIFY
NCCC	NATIONAL COMMITTEE ON CLIMATE CHANGE
NCCR	NATIONAL CLIMATE CHANGE RESPONSE
NDP	NATIONAL DEVELOPMENT PLAN
NEDLAC	NATIONAL ECONOMIC DEVELOPMETNT AND LABOUR COUNCIL
NEMA	NATIONAL ENVIRONMENTAL MANAGEMENT ACT
NEVA	NATIONAL EMPLOYMENT VULNERABILITY ASSESSMENTS
NEVB	NATIONAL EMPLOYMENT VULNERABILITY BASELINE
NGO	NON-GOVERNMENTAL ORGANOSATION
NGP	NEW GROWTH PATH
NRF	NATIONAL RESEARCH FOUNDATION
NWA	NATIONAL WATER ACT
NWRS	NATIONAL WATER RESOURCE STRATEGY
SAAQIS	SOUTH AFRICAM AIR QUALITY INFORMAION SYSTEM
SADC	SOUTHERN AFRICAN DEVELOPMENT COMMUNITY
SARVA	SOUTH AFRICAN RISK AND VULNERABILITY ATLAS
SETA	SECTOR EDUCATION AND TRAINING AUTHORITY
SJRPs	SECTOR JOBS RESILIENCE PLANS
UNFCCC	UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE
WSDP	WATER SERVICES DEVELOPMENT PLAN

EXECUTIVE SUMMARY

In 2011 Cabinet approved the National Climate Change Response White Paper (NCCR), which sets out the overall National Government response to the challenges of climate change. The NCCR White Paper deals with all sectors affected by or critical to climate change mitigation and adaptation including the water and sanitation sector.

The NCCR recognises the water and sanitation sector as one of a number of sectors that need immediate attention, along with health, agriculture, forestry, biodiversity, and human settlements. All of these sectors have major intersections with the water and sanitation sector. The NCCR also required all government departments to review their policies, strategies, legislation, regulations and plans within two years of its adoption, which led to the development of a climate change adaptation strategy for the water sector.

The policy, whilst responding to the NCCR White Paper, is also aligned with the Southern African Development Community (SADC) Climate Change Adaptation Strategy for the Water Sector and with the National Water Resource Strategy (NWRS) 2. It is further aligned with the National Development Plan (NDP) objectives, which recognise climate change as one of five critical trends in South Africa that will affect development. This alignment ensures national and regional integration of climate change issues.

This sector policy echoes and reaffirms the objectives of the NCCR White Paper within the context of sustainable water management in the country, hence its primary objectives are as follows:

To effectively manage inevitable climate change impacts on the country's water through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity.

To make a fair contribution to the global and regional effort to promote further the application of integrated water management as a priority tool to reduce climate vulnerability and to ensure that water management systems are well adapted to increased climate variability.

Integrate climate change considerations into short, medium and long term planning processes for water and sanitation.

Given the above objectives, the policy is thus premised on the principles of the NCCR, SADC Strategy, NDP and the NWRS.

INTRODUCTION AND BACKGROUND

The National Climate Change Response White Paper refers to 'climate change' as a phenomenon that presents itself as an on-going trend of changes in the earth's general weather conditions as a result of an average rise in the temperature of the earth's surface often referred to as global warming. The United Nations Framework Convention on Climate Change (UNFCCC) defines it as a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. The Climate Change Response Strategy for the Water Sector refers to it as long-term changes in the climate experienced in a particular region. While climate change occurs naturally over long periods of time, in the context of this strategy, climate change refers to the rapid change currently being experienced as a result of human activities and the increased production of greenhouse gases.

It is argued widely that Climate Change will excessively affect the poor, who have contributed least to its causes, and Africa is particularly vulnerable to its impacts. It is further acknowledged that the causes and impacts of climate change cannot be addressed by any single country in isolation. This is a global problem requiring global solutions, achieved through the concerted and cooperative efforts of all countries.

To meet its responsibility to the South African people to respond to the impacts of climate change, and to contribute to the international effort to mitigate climate change, the Government of South Africa, in consultation with business, labour and civil society, has endorsed a National Climate Change Response White Paper. The water and sanitation sector has in response to the White Paper's call, developed a Climate Change Response Strategy for the sector which is a step towards broadening the focus from a climatic prediction and mitigation to response and adaptation options. The strategy, amongst other examines the status quo of water resources in South Africa and the additional dimension that climate change adds to various aspects of managing water in the country, outlining adaptation and mitigation measures.

1 PURPOSE AND OBJECTIVES OF THE SECTOR POLICY

The overall purpose of this document is to provide a policy position of the water and sanitation sector on climate change.

Given the above purpose, the objectives of this Water and Sanitation Sector Policy on Climate Change are then:

- To highlight and strengthen the linkages between the National Climate Change Response White Paper and water and sanitation sector responses.
- To provide a framework for the implementation of the Climate Change Response Strategy for the water and sanitation sector.
- To strengthen the development, implementation and enforcement of regulations that has implications for climate change.
- To highlight the policy principles of the water and sanitation sector with regards to climate change.

2 SCOPE OF THE POLICY

The Water and Sanitation Sector Policy on Climate Change sets out principles that strive to strengthen the effective protection, conservation and management of water resources against the impacts of climate change. The policy principles enshrined herein are informed by the White Paper which is guided by the principles as set out in the country's Constitution, the Bill of Rights, the National Environmental Management Act (NEMA) and National Water Act (NWA), the National Water Resource Strategy 2 (NWRS 2), the SDGs and the UNFCCC. It further makes provisions for the relevant and appropriate legislative remedies in order to strengthen a climate change adaptive and resilient approaches for the sector.

3 RELEVANT LEGISLATIVE FRAMEWORK

3.1 DWS Mandate

The Department of Water and Sanitation (DWS) is the custodian of South Africa's water resources. It is primarily responsible for the formulation and implementation of policy governing the development and management of the water and sanitation sector. It also has a responsibility to regulate and support provision for water services provided by local government.

The National Water Act (NWA) (Act 36 of 1998) provides a framework for the protection, use, development, conservation, management and control of water resources for the country as a whole.

Integrated Water Resource Management (IWRM) is described in the Act as the means to affect the aim of the NWA, and is operationalized through the National Water Resource Strategy (NWRS), which inter alia:

Sets principles for water conservation, water use and water quality.

The strategy further provides the overall framework for water resource management in the country. Ultimately, in order to sustain the established uses of water; the natural resource base must be suitably protected.

3.2 Other Sector Policies

National Climate Change Response White Paper (NCCRP) (2011): The NCCRP highlights that South Africa's response to climate change has two objectives:

To effectively **manage the inevitable climate change impacts** through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity; and

To **make a fair contribution to the global effort for stabilising greenhouse gas (GHG) concentrations** in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner.

4 POLICY PRINCIPLES

The overall policy principles adapted from the White Paper are as follows:

Common but differentiated responsibilities and respective capabilities – aligning our domestic measures to adapt to the adverse effects of climate change with our unique national circumstances, stage of development and capacity to act.

Adaptive management approach - a structured, iterative process of robust decision making in the face of uncertainty, with an aim of reducing uncertainty over time via system monitoring.

Equity – ensuring a fair allocation of effort, cost and benefits in the context of the need to address disproportionate vulnerabilities, responsibilities, capabilities, disparities and inequalities.

Special needs and circumstances – considering the special needs and circumstances of localities and people that are particularly vulnerable to the adverse effects of climate change, including vulnerable groups such as women,

and especially poor and/or rural women; resource poor farmers, children, especially infants and child-headed families; the aged; the sick; and the physically challenged.

Uplifting the poor and vulnerable – climate change measures should address the needs of the poor and vulnerable and ensure human dignity, whilst endeavouring to attain environmental, social and economic sustainability.

Intra and Inter-generational sustainability– managing our water resources and capital responsibly for current and future generations.

The Precautionary Principle – applying a risk-averse and cautious approach in all our interventions, which take into account the limits of current knowledge about the consequences of decisions and actions.

The Polluter Pays Principle – those responsible or harming the environment paying the costs of remedying pollution and environmental degradation and supporting any consequent adaptive response that may be required.

Informed participation – enhancing public awareness and understanding of climate change causes and impacts, to promote participation and action at all levels.

Economic, social and ecological pillars of sustainable development – recognising that a robust and sustainable economy and a healthy society depends on the services that well-functioning water and sanitation services provide, and that enhancing the sustainability of the economic, social and ecological services is an integral component of an effective and efficient climate change response.

In addition to the above, there are sector specific principles adapted from the NWRS2 for managing water resources for climate change which are as follows:

A **sound scientific foundation** as the basis of all recommendations and actions.

Maintenance of a **balanced approach between preparedness and over reaction.**

Integration of potential climate change impacts into water resources and water services planning and supply at all levels.

Provision of **leadership** by the Department with strategic partners to drive appropriate strategic responses to minimise the impacts of climate change.

Alignment of existing initiatives and institutions to improve the effectiveness of the sector response strategy.

Elevation of climate and water onto appropriate agendas to ensure incorporation of this new field into the national agenda and adequate management.

Improved knowledge of the climate-water relationship and its impact on the society.

Protection and enhancement of critical natural infrastructure (ecosystems).

Physical infrastructure is planned for a changing future using a no-regrets/ low regrets approach.

5 POLICY POSITIONS

5.1 Position 1: Adaptation

As pointed out in the introduction, South Africa's National Climate Change Response White Paper of 2011 is the overarching policy that informs all sector response policies including the Water and Sanitation sector. Additionally, the Water and Sanitation Sector Policy on Climate Change has also taken account of the SADC region's Climate Change Strategy for the Water Sector as well as the National Development Plan and the National Water Resource Strategy.

Considering that the main aim of this policy, together with the recently developed Sector Strategy is to underpin and guide the mainstreaming of climate change adaptation into water and sanitation management and planning, the main goals and objectives include understanding how climate induced changes alter aquatic and terrestrial ecosystem with water related secondary and tertiary impacts, understanding how climate change leads to increased extreme events and thus changes in the hydrological system, how to mainstream climate change adaptation into water and sanitation management as well as opportunities for the future desired state.

The strategic actions on building resilience and reducing vulnerability to address the water and sanitation related impacts of climate change are categorised into governance, development and management in line with the SADC framework with the following issues of articulated directly to address the South African context:

Water and Sanitation Governance	Infrastructure Development	Water and Sanitation Management
• Building adaptive institutions • Intergovernmental relations • Awareness, communication and shared learning • Research and development • Stakeholder participation • Regional engagement • Climate financing	• Multi-purpose water storage • Water supply and sanitation • Groundwater development • Alternative water supply sources • Flood protection measures • Infrastructure safety • Hydro-geo-meteorological monitoring system	• Data and information • Scenarios and climate modelling • Vulnerability assessments • Precipitation and flow forecasting • Planning • Water allocation and authorisation • Optimisation of dam and groundwater operation • Water conservation and water demand management • Ground water management • Water quality management • Resource management and protection • Disaster management

5.1.1 Problem Statement

Climate change impacts on water availability are likely to have negative effects on people, ecosystems and the economy. As a result, climate change poses significant additional risks for water security, which in turn has knock-on effects on those sectors highly reliant on water such as agriculture, electricity generation as well as some mining and industrial activities. Thus, this set of vulnerabilities are considered and integrated into both short and medium-term water sector planning approaches.[1].

1 NCCR

There are various key focus areas that need to be taken into cognisance in the effective adaptation considerations by the sector as follows:

5.1.1.1 Understanding the current or baseline information on hydro-climatic conditions

There is a need to understand the status quo on natural climate variability. Some of the key elements or issues include rainfall, stream flow, surface water and groundwater levels, groundwater recharge, sea water levels, temperature and evaporation.

5.1.1.2 Understanding impacts, sensitivities, vulnerabilities as well as system's response

Then to understand changes that are likely to occur as a result of climate change vulnerability assessment of the hydrological and ecosystem as well as socio-economic impacts is crucial. Non-climatic stress factors such as land-use, siltation, variations in demography and pollution should also be noted for attribution purposes. Assessing impacts on water and sanitation through observation and monitoring.

5.1.1.3 Mainstreaming Climate Change adaptation into planning and management processes

Mainstreaming is an iterative process of integrating considerations of climate change adaptation into policy formulation and practice, budgeting and implementation. This involves among others using decision support tools and response measures to address challenges. It further provides the strategic direction from the currently impacted state to the future desired state. For instance, "the degree to which the current non-revenue water will be reduced by 2030 through enhanced efficiency in water use" could be a policy position taken now to move the sector from the current to future status.

5.1.1.4 Various elements of climate change adaptation including monitoring data and information to underpin adaptation

Additional to water security and decent sanitation as the ultimate goal of this policy, various elements of adaptation include the means of implementation (i.e. financial support, capacity building and technical support) and monitoring data (i.e. biophysical, socio-economic, climate scenarios). It also includes decision support tools, infrastructure, knowledge networks, assessments, climate risk reduction, information (such as systems and database), adaptive institutions and enhanced adaptive capacity.

5.1.1.5 Water-Energy-Food Nexus

It is essential to understand the interdependencies among water, energy and food in order to reduce trade-offs and increase co-benefits. Water is essential for both energy generation and food production while energy is also used in water pumping for instance. It is therefore essential to understand the interdependencies among water, energy and food in order to reduce trade-offs and increase co-benefits.

Policy Positions

Sector adaptation considerations must be based on scientific diagnosis of the status quo on hydro climatic conditions, possible impacts on the hydrological system and opportunities for the future desired state.

In the short term, the development of a climate change response for the water and sanitation sector through the National Water Resource Strategy plays a key role in Government's Integrated Water Resource Planning process and will inform the on-going maintenance of the water balance reconciliation strategies for water management areas that have recently been developed for water supply systems.

In the medium to long term, the Water for Growth and Development Framework, which has a 2030 planning horizon, aims to balance the critical role of water in terms of both poverty alleviation (ensuring the constitutional right to a reliable and safe water supply) and economic development (be it for domestic, industry, mining, agricultural or forestry use).

Water vulnerability and response must also be adequately factored into adaptation considerations.

5.2 Position 2: Role of Water and Sanitation in Mitigation

South Africa's approach to mitigation is informed by two contexts: first, its contribution as a responsible global citizen to the international effort to curb global emissions; and second, its successful management of the development and poverty eradication challenges it faces.

In line with the key elements of the country's overall approach to mitigation, the sector will adopt the following approaches:

- Identify desired sectorial mitigation contributions.
- Develop a sector mitigation plan.
- Develop, contribute and implement a wide range and mix of different types of mitigation approaches, strategies, measures and actions that optimise the mitigation outcomes for the sector.
- Contributing to a national system of data collection for the sector to support the proposed Climate Change Response Monitoring and Evaluation System.

5.2.1 Problem Statement

5.2.1.1 Water and Sanitation related Climate Change Mitigation

The relationship between climate change mitigation, sanitation and water is a reciprocal one, since mitigation measures influence water resources and the management thereof, while policies and measures taken potentially have influence on greenhouse gas emissions. For instance, interventions in the water and sanitation system may be counter-productive when evaluated in terms of climate change mitigation. This may be illustrated by a scenario where, a policy position is taken to use water for irrigating bio-fuel crops in a water scarcity area of the country.

Evaporative cooling in residential buildings may have substantial savings from economic perspective. However, this type of cooling places an extra pressure on water availability. A trade-off situation may be realised through changing the shape and orientation of the building to reduce the cooling load and hence also demand on water use.

One of the mitigation strategies under consideration aimed at reducing carbon dioxide concentration in the atmosphere from coal power stations is to capture, transport and then store that carbon dioxide in deep groundwater aquifers. This may help reduce the greenhouse gas emissions. However, this process has potential to degrade the quality of host water thus rendering it unsuitable for use.

5.2.1.2 Water-Energy Nexus in the context of Climate Change

Water and energy are interdependent since on one hand energy is required to pump water for irrigation while on the other water is used for cooling purposes in the generation of energy. The added complexity posed by a changing climate has to be taken into account. In other words, adaptive approaches and innovative interventions are essential to address these challenges. The South African situation is even far more complex and tricky to deal with because generation of

electricity (energy) is carbon intensive which does not bode well with efforts aimed at reducing greenhouse gas emissions, while most renewables (i.e. alternative options) are water intensive in this water scarce country. The question is: "*how does one under such circumstances, strike a balance between use of renewable technologies to mitigate potential effects of climate change while ensuring efficiency in water use?*" Part of the solution is to innovatively identify trade-offs between using climate friendly technology choices and water use efficiency. Hence, water energy nexus in the context of climate change.

5.2.2 Policy Positions

The two main elements of this policy position highlight a specific focus on Water and Sanitation related Climate Change Mitigation where trade-offs must be carefully managed on climate change mitigation measures that influence water resources and their management thereof.

From the sanitation perspective, the utilisation of biogas from municipal wastewater treatment plants as an option must be considered to generate renewable energy as this method of energy production is considered to be an environmentally responsible production, classified as carbon-neutral power generation.

The second element refers to the Water-Energy Nexus in the context of Climate Change, where trade-offs must be identified between using climate friendly technology choices and water use efficiency.

5.3 Position 3: Mainstreaming Climate Change into the Sector

5.3.1 Problem Statement

Climate change requires that societies and governments rethink the way they function and operate, firstly to prevent that further deterioration take place, secondly to ensure that the observed and projected changes will have the lowest negative impacts on the society and the economy.

As such, mitigation and adaptation needs to be integrated formally into all sectors, processes, and water management programmes. The South African Government in particular is ensuring that all existing instruments in the water and sanitation sector are inline with the requirements of climate change adaptation and mitigation, and that existing sector policies neither conflict with nor hamper adaptation and mitigation in other sectors.

The key elements identified for effective mainstreaming of climate change adaptation and mitigation initiatives in the water and sanitation sector have been identified as follows in line with the NCCR White Paper:

5.3.1.1 Policy and Planning Review and Regulatory Audits

Achieving climate change resilient development requires both horizontal and vertical integration of climate change into government planning, and needs to involve all sectors of society. The water and sanitation sector has a multifaceted planning regime which is central in the development and implementation of adaptive and mitigation responses to climate change.

The South African water and sanitation sector has a number of levels of water and sanitation planning. Vertically, planning is aligned from national to local level, with consistent legal requirements and, the delegation of responsibilities from national level down to local and sub-catchment levels. Horizontally, there is cooperation among the broad sectors including water and information management, water infrastructure, regulation and corporate services.

5.3.1.2 Roles and Institutional Arrangements

The consistent implementation of various instruments to improve climate resilience in order to achieve sustainable and integrated water resources management and sanitation provision in the country and the region requires a long-term framework for institutional coordination to:

- Coordinate research and development and promote innovation.
- Coordinate adaptation and mitigation actions.
- Measure, report and verify climate change responses.
- *Facilitate and promote the use of carbon trading andoff-set schemes.*

5.3.1.3 Partnering with Stakeholders

Stakeholder participation is a key in the full realisation of the objectives of this sector policy and other sector instruments in adapting and mitigating against climate change. Regional collaboration with SADC structures and national collaboration with relevant national structures and Departments needs to be forged to develop shared water and sanitation solutions as part of economic integration process. Industry, business, agriculture, labour and civil society including vulnerable groups such as the youth, women and people with disabilities are also critical for such partnerships where strategic gender roles and indigenous knowledge are taken into account.

5.3.1.4 Coordination Mechanisms

There is a need to utilise appropriate structures to ensure that the implementation of climate change instruments for the sector is balanced and well advocated to ensure effective mainstreaming.

5.3.1.5 Communication and Behaviour Change

Developing climate resilience requires a change in behaviour and consciousness of various adaptation and mitigation strategies by all stakeholders within the sector. There is a need to implement incentive/incentive mechanisms to convey water scarcity signal to the users.

One of the important communication challenges is to disseminate information to interested and affected parties as quickly as possible and to ensure that the information is in a format that is accessible, useful and indigenous where possible to the target audience in order to enhance interest and ownership of the adaptation processes.

Failure to effectively implement these policy instruments by the sector would result in continued fragmented approaches to create an adaptive and resilient environment that would directly fail any sector initiatives.

5.3.2 Policy Positions

Policy and Planning Review and Regulatory Audits: The planning horizon responding to the National Climate Change Response White Paper for the water sector must factor in climate change impacts when updated. The key policy instruments identified for this include:

National Water Resources Strategy (NWRS): which assumes that climate change will increase the pressure on already stressed water resources, and thus that there is a crucial requirement for the effective management, use, allocation and re-allocation of available water resources. Climate change objectives must be integrated into the short, medium and long term planning for water resources.

Water for Growth and Development Framework (WGDF): which describes the threat of climate change on water resources. The Department must focus on adaptation responses, as the mitigation potential in the sector may be relatively small.

Climate Change Response Strategy for the Water Sector: which provides guidance on adaptation to the water-related impacts of climate change and to maximise any beneficial impacts. Approaches must be taken to climate and water adaptation, as well as measures and actions focusing on actions that support both adaptation and mitigation.

Groundwater management strategy: which recognises the importance of groundwater as an underutilised water resource therefore aims to quantify groundwater as a resource, and provide direction for its management. The strategy not only recognises the need to ensure that groundwater should be protected, but it must also form part of the climate change adaptation strategy to assure the continuity of water supplies.

Water Resource System Planning: which requires an understanding of the key drivers of water demand and how different development futures will impact on water resource availability and use through reconciliation studies. This must guide water infrastructure planning and comprise detailed planning and operational considerations, informed by assumptions of water demand trajectories.

Water Services Development Plans: which is a primary instrument of planning in the water services sector, with a main purpose of assisting water service authorities to carry out their mandate effectively. It requires the consideration of the physical, social, economic, financial, environmental and institutional aspects of water services provision in a particular water services authority area. It must inform, and be informed by:

- the local government's Integrated Development Plan (IDP), of which it forms part;
- catchment management strategies and the national water resource strategy;
- water resource infrastructure plans; and
- regional water services business plans
- On roles and institutional Arrangements:

All three spheres of government play important roles in addressing climate change. In this regard, this policy must be aligned to other relevant sector policies.

Business and industry: must play a fundamental role in driving the transition to a climate-resilient, equitable and internationally competitive, lower-carbon economy and society. Government recognises the importance of private sector funding in achieving national climate change response actions and will work with the financial sector to explore the most appropriate mechanisms to achieve efficient funding flows.

Civil society and organised groupings: must play an important role in ensuring the success of national efforts. They must critically evaluate, comment on and respond to the sector initiatives in adapting and mitigating against climate change. Civil society organisations that work directly with communities and particularly with the urban and rural poor and with women are an important conduit for ensuring that climate information is timeously communicated and to inform government and research institutions of vulnerable groupings' climate change-related issues.

Academia and scientists: are central in supporting the development of tools, approaches and case studies that inform water and sanitation planning for long-term climate change. There is a need to explore appropriate mitigation and adaptation responses in accordance with the sector response strategy; continue to build capacity in climate change science; and inform the sector and the public of climate change-related socio-economic challenges and opportunities.

In terms of Partnering with Stakeholders: The Department commits to putting in place the necessary co-operation and co-ordination mechanisms in the water sector and between vulnerable sectors.

On Coordination Mechanisms: The Department must use the appropriate structures to ensure that the implementation of climate change instruments for the sector is balanced and well advocated.

On Communication and Behaviour Change: There must be extensive awareness and communication campaigns in collaboration with sector stakeholders to ensure that all water and sanitation institutions and water users, including communities understand the water and sanitation related climate change issues and how to respond to them.

5.4 Position 4: Cost and subsidies

5.4.1 Problem Statement

Quite often, the cost of making water available has been equated with the supply costs, which are basically the financial costs associated with the provision of water and waterborne sanitation systems. These costs have been estimated so as to form some basis of determining water charges. Factors associated with climate change resilience are incorporated into water pricing so as to ensure that the charge is a true reflection of the cost of water, factors such as flooding, droughts, veld fires and so on.

The full cost of water is the capital cost, operation and maintenance (O&M) costs, the costs that society has to bear in terms of reduced opportunities of using water resources in alternative ways and the costs that are necessary for maintaining and improving the quality and quantity of the water capital at a level that is considered sufficient for long-term sustainability.[2]

Water use charges cater for the conditions brought about by the climate change through the water resource management charge and waste discharge charge[3]. The pricing strategy allows the Minister to apply her mind to grant some form of relief to the affected users. The relief suggested by the strategy is the curtailment of water use entitlements. Furthermore, the water use charges are used as means of encouraging reduction in water waste through waste discharge, and provision is also made for incentives for effective and efficient water use.

Water resources management expenditure relates to those activities that are required to protect, allocate, conserve, manage and control the water resource and manage water quality located within the Water Management Areas. These costs include but not limited to the following activities:

- Planning and implementing Catchment Management Strategy;
- Monitoring and assessing water resources availability and use;
- Water use allocations;
- Water quality management, including flooding and drought management, water distribution control over abstraction, storage and stream flow reduction activities;
- Water resource protection, resource quality, management and water pollution control;

2 Reviewing of Pricing Strategy, 2012
3 Section 56(6) National Water Act

- Water conservation and demand management; and
- Institutional development and enabling the public to participate in Water Resources Management decision-making

5.4.2 Policy Positions

Factors associated with climate change resilience must be incorporated into water pricing so as to ensure that the charge is a true reflection of the cost of water, factors such as flooding, droughts, veld fires and so on. This means that water resource management charges must ensure that water resources management expenditure activities are monitored to improve decision making, thus adapt to the impact of the climate change.

The pricing strategy must determine the assurance of water availability for productive use. This requires the following to be taken into account: historic availability of water through rainfall, run-off and storage characteristics in respect of individual water users and the imposition of water restrictions during drought. These could assist in the determination of the economic charge which supports the objective of economic efficiency in providing an incentive to shift water use from low to high values.

6 MONITORING AND EVALUATION

Monitoring and evaluation of climate change responses is critical to ensure their effective implementation. In the case of a water and climate change strategy in particular, there are two aspects to monitoring that must be addressed, the first being monitoring of actual climate related impacts on water resources and the second being monitoring of implementation of the strategy.

7 IMPLEMENTATION

Climate change impacts on South Africa are likely to be felt primarily via effects on water resources. While every economic sector in the country will have to develop its own responses to the effects of climate change, mitigating climate change to ensure the disruption caused to human and water resource systems within manageable parameters can arise out of regional and global responses.

The Development and endorsement of a National Climate Change Response Policy has informed this sector policy, whilst other instruments have been developed in parallel. The current plan represents the first iteration of the sector's on-going efforts to adapt to climate change and contribute to the effective implementation of the NCCR Policy for sustainable water resources management in the country.

The implementation of the Policy will be aligned with Department of Environment's current initiatives and DWS implementation plan which is guided by the sector strategy. This implementation plan will inform the development of a system for monitoring the implementation of the various sector instruments and feedback provided to the role-players on progress. Role-players will be held accountable for the implementation of the agreed tasks.

8 REVIEW OF THE POLICY

Due to the advancement of water technologies and on-going studies on climate change impacts in water resources this policy position will be reviewed and updated as and when required to adapt to ever changing status quo. This departmental policy position is approved by:

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