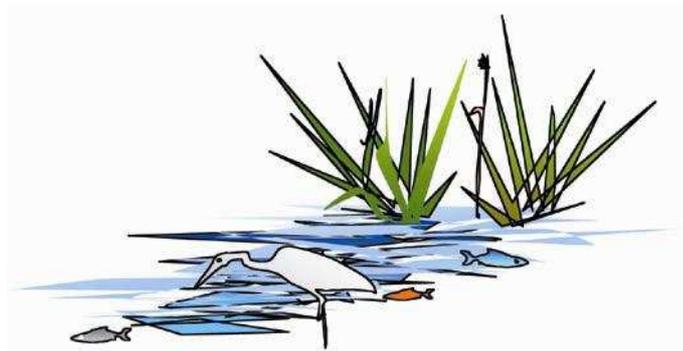


**Ministry of Environment and Tourism
Directorate of Environmental Affairs
and
Wetland Working Group of Namibia**

NAMIBIA'S DRAFT WETLAND POLICY



**FINAL REVISION
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GLOSSARY OF TERMS AND ACRONYMS USED IN THIS DOCUMENT

Agenda 21 – The set of principles used to guide sustainable development that emerged at the United Nations Conference on Environment and Development, UNCED or ‘The Earth Summit’, held in Rio de Janeiro in 1992.

AMCEN – African Ministers Conference on Environment

Basin - in relation to a water resource or water resources or part of a watercourse, ‘Basin means the area from which any rainfall will drain into a watercourse, part of a watercourse, or underground aquifer to a common point or common points.

CBNRM – Community Based Natural Resource Management

CITES – The Convention on International Trade in Endangered Species of Wild Fauna and Flora

Conservation - In relation to wetlands, ‘conservation’ means the efficient use and saving of water and other wetland resources, achieved through measures such as water saving devices, water demand management, protection from over-utilisation of wetland plants and animals and protection from pollution.

DEA – The Directorate of Environmental Affairs, Ministry of Environment and Tourism

Decentralization- The distribution of responsibilities for decision making and operations to lower levels of government, community organizations, the private sector, and non-governmental organizations.

EA – Environmental Assessment. A process that assesses the impacts of a planned activity on the physical, social and economic environment – thus providing decision-makers with an indication of the potential consequences of development decisions and actions. When it is part of the planning process, EA enables potentially negative impacts of a development to be mitigated and positive impacts to be maximised.

Environment - means the aggregate of surrounding objects, conditions and influences that affect the life and habits of people or any other living organism or collection of living organisms.

Environmental Reserve - The quantity and quality of water as well as duration and timing of flow required to ensure that the water needs of aquatic ecosystems and the environment are sustainably met.

Functions – in this Policy the term ‘functions’ refers to the natural processes and derivation of benefits and values associated with wetland ecosystems. This includes economic production, fish and wildlife habitat, organic carbon storage, nutrient cycling, water supply and purification, groundwater recharge, flood control, maintenance of flow regimes, shoreline erosion buffering, soil and water conservation, as well as tourism, heritage, recreational, educational, scientific and aesthetic opportunities.

GMOs - Genetically Modified Organisms

Hydro-environmental systems - The natural systems (geology, soils, vegetation and freshwater aquatic habitats) that furnish the resource base through a linked series of flows and water quality changes. The integrity of these systems is vital to maintain a flow of environmental goods and services as well as exploitable water.

MEA – Multinational Environmental Agreements, including the Ramsar Convention, the UNCCD, the UNFCCC and CITES.

MBSEC – Ministry of Basic Education, Sport and Culture

MET – Ministry of Environment and Tourism

MFMR – Ministry of Fisheries and Marine Resources

MHSS – Ministry of Health and Social Services

MLRR – Ministry of Lands, Resettlement and Rehabilitation

MME – Ministry of Mines and Energy

MAWRD – The Ministry of Agriculture, Water and Rural Development

NamWater - Namibia Water Corporation, Namibia's commercially operated bulk water supplier

NEPAD – The New Partnership for Africa's Development. This programme, accepted locally and internationally as providing a sustainable development framework for Africa, aims to (*inter alia*) fight underdevelopment and exclusion of Africa and Africans in a globalising world. It calls for “...*bold and imaginative leadership that is committed to a sustained human development effort and eradication of poverty, as well as new global partnerships based on shared responsibility and mutual interest.*”

NGOs – Non Governmental Organisations

NRA – Natural Resource Accounts

POPs – Persistent Organic Pollutants. (See Appendix 3 for further details)

Pollutant - any substance, whether liquid, solid or gas which, directly or indirectly, alters the quality of any segment or element of the receiving environment so as to affect any beneficial use adversely, or is hazardous or potentially hazardous to human, animal or plant health.

Water Demand Management - The use of price, quantitative restrictions, and other devices (including the creation of public awareness, legislation, good water operational practices by water authorities, efficient use of water by consumers and the use of unconventional water sources) to limit the demand for water.

Water Pollution – is the direct or indirect alteration of the physical, chemical or biological properties of a water resource which render it less fit for any beneficial purpose for which it may reasonably be expected to be used.

Polluter Pays Principle - At the UN Conference on Environment and Development, UNCED, a series of principles on environment and development were adopted including the 'Polluter Pays Principle'. This states: *The polluter (or developer) should bear the costs of any pollution prevention and control measures which are necessary in order to ensure that the environment is in an acceptable state*'. This principle is included in the economics section of the National Water Policy.

Precautionary Principle - At UNCED, a series of principles on environment and development were adopted including Principle 15, commonly known as the 'Precautionary Principle': *In order to protect the environment, the precautionary approach shall be widely applied by countries according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.* This principle is included in the economics section of the National Water Policy

River basin - A geographical area determined by the watershed limits of a water system, including surface and underground water, flowing into a common terminus.

Ramsar Convention – *The International Convention on Wetlands*, (Ramsar, Iran, 1971). The main aim of the Ramsar Convention is to halt the worldwide loss and degradation of wetlands and to conserve, through wise use and management, those that remain. (See Appendix 4 for further details)

Ramsar site – A wetland of recognised international importance and listed on the List of Wetlands of International importance under the International Convention on Wetlands (See Appendix 4 for further details)

SEA – Strategic Environmental Assessment. A process adopted to analyse the environmental impacts of policy, plans and programmes

SADC- The Southern African Development Community

Sustainable Development – Development that meets the needs of the present, without limiting the ability of future generations to meet their own needs. In order to pursue sustainable development, strategies that create a balance between the country’s social, economic and ecological needs must be adopted.

Sustainable Utilization - demands that wetlands and wetland resources are developed and managed in such a way as to promote equitable socio - economic development, without jeopardising the benefits and opportunities of future generations.

TEV- Total Economic Value. TEV embraces *direct use values* (income derived from actual use of natural resources - for example, income from fishing or tourism activities), *indirect use values* (the value of the indirect services of the natural environment – for example, the flood control value of a wetland) and the *non-use values* (the values perceived in the preservation of a resource either for later use (the *option value*) or to hand down to future generations (*bequest value*), or just to know that the resource exists (*existence value*)).

UNCBD – The United Nations Convention on Biodiversity

UNCCD – The United Nations Convention to Combat Desertification

UNCED – The United Nations Conference on Environment and Development held in Rio de Janeiro in 1992

UNFCCC – United Nations Framework Convention on Climate Change

Wetland resources – In this document the term ‘wetland resources’ is used to describe the water, soils, plants, invertebrates, vertebrates (fish, amphibians, reptiles, mammals and birds) that are associated with and dependent on a wetland for survival and which are linked together within the hydro-environmental cycle.

WRI – The World Resources Institute

WSSD – The World Summit for Sustainable Development held in Johannesburg in 2002.

Wise Use - The wise use of wetlands *is their sustainable utilisation for the benefit of humankind in a way compatible with the maintenance of the natural properties of the ecosystem.*
(See Appendix 4 for more details)

PREAMBLE

We cannot underestimate the importance of the natural environment to human well-being and prosperity. Not only does it provide essential services, natural capital and genetic resources that buffer the Nation against economic uncertainty, disease and environmental change, but the majority of rural Namibians rely heavily on natural resources for their livelihoods.

Wetlands are Namibia's richest natural environments. In addition to providing valuable goods such as water, fish, timber and grazing, they are also responsible for many less noticeable, yet vital, services including flood control and water purification. While wetlands are often valued as potential agricultural land, they are also feared for harbouring waterborne diseases and pests. Consequently, they have multiple uses and users and for these reasons have undergone extensive conversion and degradation throughout the world – usually at tremendous social, environmental and financial cost.

To avoid the high costs associated with wetland degradation each country needs to develop and implement appropriate cross-sectoral policies and legislation. In arid countries like Namibia, where water scarcity and growing water demand limits socio-economic development, it is even more important to facilitate wise wetland management by implementing an enabling policy that integrates environmental and developmental issues into decision making at all levels. Many challenges are associated with this goal – not least the fact that many wetlands are part of much larger systems, often with significant components in other countries. In Namibia wetlands are poorly represented in the country's Protected Area Network and it is not surprising that they have been identified as Namibia's most threatened ecosystems.

The purpose of the wetlands policy

This policy strives to complement existing policy instruments regarding sustainable development and sound natural resource management in Namibia. Its implementation will provide a platform for the conservation and wise use of wetlands, thus promoting inter-generational equity regarding wetland resource utilisation. Furthermore, it facilitates the Nation's efforts to meet its commitments as a signatory to the International Convention on Wetlands (Ramsar) and other Multinational Environmental Agreements (MEA's).

The policy development process

In preparing this policy document a discussion paper was distributed for comment and a national workshop was held. Representatives from the MME, MLRR, MAWRD, MET, MFMR, the private sector and NGOs received the discussion paper and attended the workshop. During the workshop an attempt was made to reach consensus on the Vision, Key Objectives and Principles of the Policy. It was agreed that the basic principles of the National Water Policy (see below) should be used to provide a

framework for the development of this policy. Following the national workshop the draft policy document was revised to incorporate suggestions from the workshop and again circulated to all workshop delegates, pertinent ministries and to key persons for final comment and review. The comments received from the ministries and the extensive external review, have been incorporated in this final revision, intended for presentation to Cabinet for approval. The process has taken two years.

The National Water Policy – providing a framework for the development of the Wetlands Policy

The objectives and principles presented in this document reflect those expressed in the Namibian Constitution, the National Water Policy, Namibia's National Development Plan (NDP2), Namibia's Vision to 2030 and several other natural resource management policy instruments. The National Water Policy, in particular, provided a framework for the development of the Wetlands Policy. At the heart of the National Water Policy are the following principles:-

- Ownership
- Ecosystems values and sustainability
- Decentralisation
- Equity
- Awareness and Participation,
- Capacity building
- Promotion of Development
- Openness and Transparency
- Shared watercourses
- Economic Value
- Integrated management and planning
- Clarity of institutional roles & accountability

These principles have been used as a framework for the Wetlands Policy and, as in the Water Policy, further reorganised into more detailed principles and are discussed within six main thematic areas:

Research and Information
Integrated Management
Wetland Resource Use and Conservation
Legislation and Regulation
Institutional and Community Participation
Human Resources Development

Three of these areas of discussion *viz.* the *Legislative and Regulatory* principles the *Institutional and Community Participation* principles; and the *Human Resources Development* principles reflect those presented within the detailed National Water Policy. The remaining three areas of discussion *viz.* those under the headings of *Research and Information* ; *Integrated Management*; and the *Wetland Resource Use and Conservation* were adapted and expanded upon from the National Water Policy's *Water Resources Assessment Principles*, *Shared watercourses Principles* and *Wetland Resources Use and Conservation Principles* respectively. This adaptation of headings was a result of the specific outcomes received from the participants at the national wetland policy workshop and comments received during the review process.

Ministry of Environment and Tourism and the Wetlands Working Group of Namibia
November 2004

BACKGROUND INFORMATION

1. WHAT ARE WETLANDS?

Wetlands include a large variety of highly productive habitat types including rivers, lakes, floodplains, shallow pans and marshes. They are areas that have acquired special characteristics from being wet on a permanent or temporary basis. Under the International Convention on Wetlands (better known as the Ramsar Convention) wetlands are defined under articles 1.1 and 2.1 as shown below. This definition was developed to meet the needs of the international community and is accepted by this policy.

Article 1.1

“...wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres”.

In addition, Article 2.1 of the Convention provides that wetlands:

“...may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands.”

This policy document recognises the following categories and types of wetlands in Namibia based on the list provided by the International Convention on Wetlands and adapted to Namibian conditions by the Wetlands Working Group of the Namibian National Biodiversity Task Force (Barnard *et al*, 1998).

- Coastal wetlands including estuaries, deltas, river mouths, tidal lagoons, islands and the rocky shoreline to a depth of 6m.
- Perennial, ephemeral and seasonal rivers and streams and their floodplains.
- Perennial and periodic seeps and springs including geothermal springs.
- Freshwater, saltwater, perennial, seasonal and ephemeral lakes and pans, including subterranean karst lakes (e.g. Lakes Otjikoto and Guinas) and the temporary ponding that occurs in the fossil drainages, e.g. along the Eiseb, lower Omatako and similar fossil rivers
- Marshes, swamps and vleis.
- Artificial wetlands (salt evaporation pans, State impoundments, farm dams, reservoirs, sewerage treatment ponds, aquaculture ponds, constructed wetlands for wastewater treatment and mine drainage).

This policy recognises that artificial wetlands are capable of providing valuable functions. However, they should not be considered as replacements for natural wetlands.

2. THE VALUE OF WETLANDS

2.1 The importance of wetland ecosystems

Much of the water we use originates from natural wetlands. Each natural wetland is a functioning ecosystem supporting its own assemblage of aquatic plants and animals; wetlands are Namibia's richest ecosystems. The benefits provided by these natural aquatic ecosystems cannot be underestimated.

They include:

- Water provision
- Sediment and erosion control
- Maintenance of water quality and abatement of pollution
- Maintenance of surface and underground water supply
- Contributions to fisheries
- Contribution to climatic stability
- Flood control
- Contributions to grazing and Agriculture
- Provision of habitat for wildlife, especially water fowl and floodplain grazers
- Contributions to the multimillion dollar ecotourism industry

If the natural functions of wetlands are maintained these benefits accrue to humans free of charge.

However, if wetlands are degraded, these functions have to be provided artificially, often at immense financial cost, or the wetland has to be restored, which costs even more. As a consequence, countries that are negligent regarding the conservation of their wetlands end up with unnecessary and large financial costs¹.

2.2 The economic value of wetlands and wetland resources

The following values, extracted from the Chobe-Caprivi wetland area of the Zambezi River Basin (an estimated 220 000 ha) by Turpie *et al* (1999), can be used as a typical Namibian example to illustrate the economic worth of wetlands and some wetland resources²:

- The net total **direct-use** economic value/year generated from *livestock production, crops, fish, wild animals, water fowl, reeds, grass, and palm leaves* is estimated to be US\$4.8 million.
- The net total **indirect-use** economic value/year due to *flood control, sediment retention, nutrient recycling, erosion control, provision of wildlife habitats, breeding and nursery grounds for fish & waterfowl* is estimated to be US\$ 22 million.
- Although they were not estimated in this study, economists recognise the **non-use value** of wetlands. These are the values associated with their preservation for later use (the *option value*) or to hand down to future generations (the *bequest value*) or just to know they exist (the *existence value*). With the correct mechanisms in place all of these values are able to capture income for communities and national economies.

¹ For example, during the 1990's, USA government agencies began to reverse a century of activities that have resulted in the severe degradation of the Florida Everglades. This project is likely to cost an estimated US\$ 8 billion - a financial cost that is considered small when compared to the costs that will accrue if further losses to water capacity and quality, soil quality, biodiversity and tourism potential are allowed to continue (WRI 2000).

2.3 Wetlands and Namibia's comparative advantages within the global market

Quoting from Namibia's Vision 2030 document on Natural Resources (NPC, 2001) "*In today's overcrowded, rapidly developing world, the few remaining natural environments that provide solitude, silence and natural beauty have become highly sought after commodities*".

Consequently, Namibia's vast, wide-open spaces and relatively uninhabited wilderness areas (including those associated with wetlands) are becoming increasingly valuable within the global market. Together with abundant and diverse wildlife populations (that are well adapted to Namibia's harsh climatic and physical conditions) and the country's relatively uncontaminated, free-range meat and fish products³, these wilderness areas are regarded as Namibia's most valuable comparative advantages (NPC, 2001).

3. CHALLENGES TO NAMIBIA'S WETLANDS

3.1 Important trends regarding use of wetland resources in Namibia

- Escalating water scarcity is regarded as the greatest challenge to sustainable development in southern Africa, particularly in the more arid countries (Namibia, Botswana and South Africa) where consumption is beginning to outstrip supply (Falkenmark, 1989; Ashton & Neal, 2003; UNEP, 2003).
- Human demand for water in Namibia is expected to increase at least 250% between 2003 and 2030 (in NPC, 2001). While the water demand for domestic, livestock, mining and industry is expected to increase only slightly over this period, the water demand for irrigation (which accounted for 45 % of all the water consumed in Namibia in 2000) is likely to continue to increase considerably⁴ (*ibid*).
- Although access to clean drinking water and adequate sanitation has improved since independence, meeting national goals in this regard is challenged by the population growth rate⁵ and escalating costs of water purification and supply (UNEP, 2003).
- During the past three decades yields of plant foods, fish and mammals associated with wetlands have declined noticeably in Namibia, as elsewhere in southern Africa (Barnard 1998, Turpie *et al* 1999, Hay 2000, Shaw *et al.* 2004).

² These values have increased since 1999.

³ Over the years, meat produced in many developed countries (mainly within the EU and USA) has become increasingly contaminated with hazardous substances associated with high pollution levels, diseases and modern methods of intensive livestock and fish farming. Provided Namibian beef, game and fish products remain free of contamination, they will have a comparative advantage on the global market.

⁴ The National Agricultural Policy aims for a five fold increase in irrigation.

⁵ The WSSD target for access to clean water and sanitation in the next 10 years is to halve the number of people without access to clean water and sanitation. This target involves halving the number of people currently in this category, plus all the future people.

- Catchment run-off carries nutrients, salts, sediments and pollutants into waterways and eventually wetlands, where they settle. As populations in southern Africa grow and become more industrialised, they will have to cope with greater volumes of polluting waste and more dangerous polluting substances accumulating in wetlands and contaminating water supplies (Tarr & NWAC 2002).

3.2 Major causes of wetland degradation

- **Over exploitation of resources.** Over exploitation of wetland resources is mainly due to population pressure, poverty, limited ecological and biological knowledge, and “open access” to resources (lack of tenure) (Turpie *et al* 1999, Shaw *et al.* 2004).
- **Over abstraction of surface and groundwater.** Over abstraction poses a threat to wetlands as this can lead to the loss of springs and other surface waters, underground aquifers and riparian vegetation. The environmental water needs for the lower Kuiseb River basin aquifers (DRFN, 2000), and to a lesser extent for the Khan River near Rössing Mine (Ashton 1996) have been challenged due to over abstraction. This has begun to affect the riparian trees and the water security of people living downstream (Amakali 2002). Over abstraction from the Okavango River in Namibia could have severe transboundary impacts on the unique ecosystems that make up the Okavango Delta in Botswana (Ramberg 1997; Ashton, 2003(a), Shaw *et al.* 2004)
- **Lack of adequate ecological protection.** Virtually all wetlands in Namibia are under protected (Barnard *et al.* 1998) and the majority are not incorporated within the country’s protected areas network. Implementing protected area regulations adequately is difficult because many wetlands are part of larger systems - usually with significant components in unprotected areas or in other countries (Curtis, *et al.* 1998).
- **Declining water quality.** Global trends regarding declining water quality are linked directly to *chemical and nutrient pollution* associated mainly with domestic and industrial effluent and run-off water (containing agrochemicals) from irrigation fields. Many pesticides that are commonly used to control agricultural pests and water-borne diseases like malaria are classified as Persistent Organic Pollutants (POPs), which accumulate in wetlands and exhibit high levels of toxicity (Tarr & NWAC 2002).
- **Altered hydrology.** Changes in water flow regimes caused by the construction of weirs, dams and canals for water storage and supply, for hydropower plants, large irrigation schemes, aquaculture ventures and the development of residential areas can reduce and alter the timing, extent and frequency of flows that sustain wetlands (Amakali *et al.* 2002).
- **Introduction of invasive species.** Water weeds (including the Kariba weed, *Salvinia molesta*, water hyacinth, *Eichhornia crassipes*, red water fern, *Azolla filiculoides*, water lettuce or Nile cabbage, *Pistia stratioides*, and parrots’ feather, *Myriophyllum aquaticum*) can alter normal hydrological flows by clogging waterways and threatening the survival of native species, whilst the

introduction of invasive animals can cause pest problems, habitat destruction and in the case of non-indigenous species, genetic pollution of closely related native animals (Bethune & Roberts 2002, Bethune *et al.* 2004).

- **Aquaculture.** Aquaculture developments can have devastating impacts on wetlands both from direct destruction of habitat and indirect effects on water quality and native biota (resulting from concentrated fish excreta, food and medicine residues)⁶. As a potential industry in Namibia aquaculture will need to be carefully managed to avoid similar impacts (Bethune 2004).
- **Climate Change.** Global warming and changes to the world's climates will have major implications for wetlands in the decades to come. In addition to increased temperatures, Hulme *et al* (1996) predict that most areas in Namibia are likely to experience a decrease in precipitation, altered runoff patterns (reduced by 10-40% for most of the country) and increased rainfall variability as a result of climate change. More extreme flood events during years of good rain are also likely. As a consequence, current constraints that threaten the freshwater fisheries sector and wetland integrity in general will be dramatically altered (in Tarr, 1998)
- **Traditional and commercial agricultural development.** In the absence of well planned, integrated land-use management procedures, farming activities can cause substantial losses to wetland functions and values. The irrigation sector, as the largest water user, needs to seriously consider the implementation of water demand management (Van der Merwe *et al.* 1999.).

3.3. The consequences of wetland degradation and loss

The conversion and degradation of natural wetlands has been identified as one of the major causes of increased flood severity, a decline in fisheries and a reduction in livelihood options throughout the world (WRI 2000). Floods, similar to those experienced in the Caprivi during 2003⁷ and 2004, (are identified as the world's most expensive type of catastrophe - costing governments an estimated US\$ 273 billion between 1991 and 2000⁸. Ultimately, wetland degradation results in increased costs of water purification and supply, reduced development options, increasing poverty and possible conflict over shared water resources (WRI, 2001; UNEP, 2003).

⁶ Harmful algal blooms linked to fish farming activities and increasing agricultural runoff containing fertilisers are on the increase globally. These algal blooms threaten human and environmental health and between 1972 and 1998 economic losses from aquaculture enterprises in northern Europe, North America, Asia and South America totalled more than 300 million US dollars directly as a result of this polluting source (Brown *et al* 1999).

⁸ Source: EM-DAT, Cred, University of Louven, Belgium.

4. THE PURPOSE OF THE POLICY

4.1 To enhance the goals, objectives and strategies of Namibia's existing policy instruments

Namibia is supported by admirable policy direction regarding sustainable development and the wise use of its natural resources. This Wetlands Policy has been developed with full recognition of the need to complement the existing policy instruments mentioned below.

The Namibian Constitution proclaims its commitment to sustainable development through the inclusion of two key environmental clauses. These clauses establish a framework for environmental protection and wise natural resource management in the country. Firstly,

Article 91: The Function of the Ombudsman

The function of the Ombudsman shall be defined and prescribed by an Act of Parliament and shall include the following:

(c) the duty to investigate complaints concerning the over utilisation of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia.

Secondly,

Article 95I: Promotion of the Welfare of the People

The government shall actively promote and maintain the welfare of the people by adopting inter alia, policies aimed at the following:

(l) maintenance of ecosystems, essential ecological functions, processes and biological diversity of Namibia and utilisation of natural resources on a sustainable basis for the benefit of all Namibians both present and future...

Namibia's second, five-year *National Development Plan (NDP2)* recognizes the importance of ecosystems as legitimate water users that should receive a fair allocation of water. Three of the major Water Sector Objectives listed in *NDP2* are to:

- *Utilise, conserve and protect all water resources in an environmentally sustainable manner.*
- *Manage and allocate the scarce water resources in an equitable and efficient manner with due consideration to the environment.*
- *Develop an appropriate method to determine environmental water flow requirements for Namibian rivers.*

Namibia's National Water Policy (MAWRD 2000) states that water concerns extend beyond human needs for health and survival, that water is essential to maintain natural ecosystems and that in a country as dry as Namibia, all social and economic activity depends on healthy aquatic ecosystems. A basic principle in this policy is the "Principle of Ecosystem Values and Sustainability" which states that the "management of water resources needs to harmonise human and environmental requirements, recognising the role of water in supporting the ecosystem".

The Environmental Water Reserve is specifically included in the “Legislative and Regulatory Principles” that state that: *“The legislation will provide for determining an environmental water reserve for freshwater sources before they can be used to supply any other demand than domestic and subsistence livestock watering.”* A strategy in the policy is to ensure both environmental and economic sustainability and to *“Ensure that in-stream flows are adequate in terms of both quality and quantity to sustain the ecosystem.”* (Amakali *et al*, 2002). This policy further recognises the need for inter-sectoral coordination between all stakeholders involved in using and managing water resources. It proposes to protect water resources from pollution, through enforcing the *polluter pays* principle and regular water quality monitoring on all proposed projects. Furthermore, it proposes to improve knowledge on the vulnerability of critical wetland ecosystems and to develop strategies for their effective management.

The final draft of the ***Water Resources Management Bill (MAWRD 2004)*** provides for basic human and environmental water needs under the heading of “Reservation of water resources”. Paragraph 27 states that: *“The Minister, with the concurrence of the regional councils concerned, may in the prescribed manner reserve part or all of the flow of a watercourse, including any groundwater resource and the water stored in a public reservoir to –*

- (a) meet the domestic use of the water users concerned; and*
- (b) reasonably protect aquatic and wetland ecosystems, including their biological diversity and to maintain essential ecosystem functions.”*

One of the fundamental principles of the *Water Resources Management Bill* is the *“harmonisation of human needs with environmental ecosystems and the species that depend upon them, while recognising that those ecosystems must be protected to the maximum extent.* This recognises the national value of our wetland ecosystems and that they should be protected. Further, the Basin Management Committees proposed in this Bill aim to involve all stakeholders in decisions regarding their water resources and to delegate the task to the most appropriate level of management.

The Water Supply and Sanitation Policy (MAWRD 1993) advocates environmentally sustainable development of water resources and environmentally sound use of national water resources. In addition it states that communities should have the right, with due regard for the environmental needs and resources available, to determine which solutions and service levels are acceptable to them.

The Namibia Water Corporation Act (MAWRD 1997) requires NamWater to carry out its functions in an environmentally sound and sustainable way, with proper regard to the conservation and protection of water resources.

The National Agricultural Policy (MAWRD 1995) recognises that water resources in Namibia are limited and that growth within the agricultural sector should not be at the expense of the natural environment. Furthermore, it encourages the use of Environmental Assessment for agriculture projects and proposes a review of legislation related to agrochemical use.

Namibia's Aquaculture Policy – towards responsible development of aquaculture (March 2001) deals with the responsible and sustainable development of farming with aquatic plants, fish, molluscs and crustaceans and advocates responsible aquaculture developments. One of the Principles on which the Act is based is: *“to insure the protection of the living resources of national and international waters, both marine and freshwater, from possible adverse effects resulting from aquaculture activities, introductions and effluents”*. Potentially adverse impacts include the release of introduced species and genetically modified organisms, the mixing of farmed and wild stock (genetic pollution) and the risk of disease transfer. The policy outlines responsible aquaculture production practices and makes the developer responsible for safe and efficient farm management.

The Aquaculture Act No 18 of 2002, regulates and controls aquaculture activities and the sustainable development of aquaculture resources. It allows the Minister to formulate policy based on social, economic and environmental factors, the best scientific information and advice from the advisory council to *inter alia* promote sustainable aquaculture and manage, protect and conserve aquatic ecosystems. All aquaculture ventures are subject to strict licensing and a licence can be withheld if the enterprise poses *“a significant risk of pollution or (may) otherwise adversely affect the environment”* or cancelled *‘to ensure protection and conservation of the environment’* or if *the licensee has failed to report the presence of ...harmful organism...or taken all possible measures to prevent the spread of ...any harmful organism”*. ***The Aquaculture (licensing) regulations: Aquaculture Act, 2002 (Government notice 246 of 2003)***, basically give effect to the Aquaculture Act and set out the requirements for gaining a licence and running aquaculture facilities.

The Inland Fisheries Resources Act No 1 of 2003 (MFMR) allows for the updating and development of new policies for the conservation and sustainable utilisation of Namibia's inland fisheries. It encourages cooperation with neighbouring countries regarding the management and conservation of shared waterways. Furthermore it prohibits the use of destructive fishing methods and the introduction and/or transfer of non-indigenous fish species. The Act makes it compulsory to have a fishing licence to fish in any inland water using any regulated fishing gear, specified as a rod, line, hook and/or nets and requires the registration of nets. The Act allows for the protection for endangered fish species as well as the declaration of fisheries reserve areas where no one may fish, pollute the water, dredge the area nor disturb the *natural environment of fish and related ecosystems*.

The Draft Environmental Management Bill (MET 1998) requires adherence to the principle of optimal sustainable yield in the exploitation of all natural resources. Once enacted, it will promote inter-generational equity in the utilisation of all natural resources and make Environmental Assessments (EAs) essential prior to the development of projects that can impact on wetlands. One of the principles on which the bill is based is that *“equitable access to sufficient water of ecological systems shall be fulfilled to insure the sustainability of such systems.”* This essentially requires that all ecosystems be provided with sufficient water to meet their ecological water requirements. To cater for this principle, several activities that would have an impact on natural water resources and the goods and services provided by wetlands are included in the list that would by law require detailed Environmental Impact Assessments. These include: the abstraction of ground or surface water; alteration of natural wetland systems; the drilling of boreholes and the construction of dams, reservoirs, levees and weirs; the construction of canals and channels including the diversion of normal flow of water in a riverbed and water transfer schemes between water catchments and impoundment.

The Parks and Wildlife Management Bill, of 2004 (May 2004 draft), will protect all indigenous species and control the exploitation of all plants and wildlife. The bill is intended to give effect to *“Article 95 of the Namibian Constitution by establishing a legal framework to provide for and promote the maintenance of ecosystems, essential ecological processes and the biological diversity of Namibia..... and to promote the mutually beneficial co-existence of humans with wildlife, to give effect to Namibia’s obligations under relevant international legal instruments including the Convention on Biological Diversity and the Convention on International Trade in Endangered Species of Wild Fauna and Flora...”* In keeping with the Namibian Constitution, the principles underlying the Bill, are simply that biological diversity and essential ecological processes and life support systems be maintained and it takes into account national obligations as a signatory of the Ramsar Convention.

The new Forestry Act, no 12 (MET 2001), includes a clause for the protection of riparian vegetation, and thus legislates against soil erosion and resultant siltation. This clause states that it is an offence *to harm, injure or remove any living tree, bush or shrub within 100m of any river, stream or watercourse.*

The Tourism White Paper (MET 1994) commits the Government of Namibia to (*inter alia*) developing the tourism industry without threatening Namibia’s biodiversity. It requires part of the income derived from tourism be re-invested in the conservation of natural resources (including wetland resources).

The ***Draft National Tourism Policy (MET 1999)*** aims to secure and develop important tourism areas (including those associated with wetlands) so that their value is not undermined by other, unsustainable land use options.

The Community-Based Tourism Policy (MET 1995) was developed in recognition of the fact that tourism could bring significant social and economic benefits to previously disadvantaged people, whilst also promoting biodiversity conservation. Under the terms of the policy the MET is obliged to ensure that development of the community based tourism sector is environmentally sustainable and that no development takes place without the participation of the people affected.

Namibia's ***Biodiversity Strategy and Action Plan*** (Barnard et al 2002(a)) has as its fifth objective, *Sustainable Wetland Management*. The main strategic aims of this objective are to:

- Protect and maintain essential ecological functions and the biological diversity of Namibia's wetland ecosystems
- Create additional conservation areas for wetlands
- Promote integrated land and water management
- Raise awareness of wetland values and threats

The Policy on Prospecting and Mining in Protected Areas and National Monuments (MET/MME and MBESC 1999) recognises that mineral exploitation can result in significant negative environmental impacts including habitat destruction, loss of biodiversity and impacts that will threaten growth within the tourism industry. It aims to ensure that the environment is protected through the implementation of mitigation measures that are adopted before, during, and after the prospecting and mining activities.

The Regional Planning and Development Policy (NPC 1997) acknowledges trends of increasing degradation of pastures, rangelands and woodland and gives attention to soil, water and forest management as development tools. It promotes strategies such as soil conservation and controlled grazing cycles.

The National Policy and Strategy for Malaria Control (MHSS 1995) recommends personal protection against malaria through the use of low impact repellents (e.g. *pyrethroid* based insecticides) which, when compared to pesticides like DDT, are considered to have minimal impacts on environmental (and in particular wetland) health.

The National Land Policy (MLRR 1998) proposes financial and tax incentives for the protection and rehabilitation of natural environments (e.g. planting of indigenous trees and using alternative energy to reduce rates of deforestation and pollution). This policy aims to establish the Land Use and Environmental Board, which will promote environmental protection, coordinated planning and management at national and regional levels.

The Communal Land Reform Bill (MLRR 2000) makes provision for the prevention of land degradation and for mitigating impacts from prospecting, mining, road works and the use of water resources.

4.2 To meet Namibia's commitments as signatory to the Revised SADC Protocol on Shared Watercourse Systems, the Protocol on Fisheries and to NEPAD.

In recognition of the fact that water deficient countries like Namibia, Botswana and South Africa will suffer if national and regional water policies and laws do not take cognisance of the water needs of the environment, the need to maintain adequate in-stream flows have found a place in the *SADC Protocol on Shared Watercourse Systems*. This Protocol recognises international consensus on a number of concepts and principles related to water resource development and management in an environmentally sound manner (Ramoeli 2002). The revised Protocol of 2000 promotes the environmental protection of wetlands. It acknowledges that the environment is a legitimate user of water and includes clearly defined objectives that aim to promote co-ordinated and integrated, environmentally sound development and management of shared watercourses within the SADC region.

The *SADC Protocol on Fisheries*, signed in August 2001, recognises the UN Convention on the Law of the Sea (UNCLOS) and takes into account the FAO Code of Conduct for responsible Fisheries. Its objective is “*to promote the responsible and sustainable use of the living aquatic resources and aquatic ecosystems..*” and interestingly defines a fish as *any aquatic plant or animal* and resources as *all aquatic ecosystems*. The preamble emphasizes the *necessity for joint co-operative and integrative actions at regional level*, awareness and support of national initiatives to *implement international conventions on sustainable use* and recognises *the unique transboundary character of the aquatic resources and ecosystems* and the need to cooperate in their management. The State parties are committed to upholding their responsibilities in term of international conventions and agreements and to co-operate to manage these shared resources, to exchange information on shared fishery resources, establish joint instruments for cooperation and management, to harmonize management plans and their implementation and to balance the needs of the industry and fishermen in a *politically, environmentally and economically sustainable manner*. They further agree to involve all stakeholders in decision making *at the appropriate level* and are required to harmonise national legislation relevant to shared resource management and to co-operate in terms of law enforcement.

In addition to these SADC Protocols, Namibia is party to several regional water commissions on shared rivers/ watercourses, such as OKACOM with Botswana and Angola (see Appendix 2).

Furthermore NEPAD, which provides the vision for sustainable development in Africa, promotes wetland conservation as one of its 8 priorities within its Environment Action Plan (NEPAD, 2002).

4.3 To meet commitments as a signatory to Ramsar and other legally binding international conventions

Namibia became a signatory to the *International Convention on Wetlands* in 1995. The main aim of this convention is to halt the worldwide loss and degradation of wetlands and to conserve, through wise use and management, those that remain. The Ramsar Convention requires parties to:

- Designate at least one suitable wetland for the *List of Wetlands of International Importance* (known as Ramsar sites), and to manage these sustainably (Article 2);
- Include wetland conservation considerations within their national land-use planning (Article 3)
- Promote the conservation of wetlands through the establishment of wetland reserves (Article 4); and
- Co-operate internationally for the sound management of shared wetlands and shared wetland species (Article 5).

To date Namibia has designated four wetlands as Ramsar sites (wetlands of International importance) viz. the Walvis Bay Lagoon, Sandwich Harbour Lagoon, the Orange River Mouth and the Etosha Pan. Several other wetlands in Namibia qualify for Ramsar site status. These are: The Kunene River Mouth; The Cape Cross Lagoons; Lakes Otjikoto and Guinas; The Nyae-Nyae Pans system; the lower Okavango River (downstream from Mukwe); The Zambezi floodplains, Linyanti Swamp and Lake Liambezi; and Namibia's offshore islands, and the Cuvelai oshanas. (Kolberg, undated, Shaw *et al.* 2004).

Certain of these wetlands or components of these wetlands demand absolute protection. These include sites that are the only known habitat for endemic fish species and include: the Aigamas Cave near Otavi, the only habitat in the world for the rare blind cave catfish *Clarias cavernicola*; Otjikoto and Guinas lakes, home to the Otjikoto tilapia, *Tilapia guinasana*; some ephemeral rainwater pools in the Caprivi woodlands where the Caprivi killifish, *Nothobranchius sp.* occur and the rocky rapid habitat sections of the perennial rivers. e.g. between Mukwe and Popa Falls on the Okavango River and at Wenela on the Zambezi River the rocky rapids are the only known habitats for the red data species, *Clariallabes platyprosopos* and the spiny eel, *Aethiomastacembalus vanderwaali*, and in sections of the Kunene River another endemic *Clariallabes* species, known as the Kunene flathead catfish was recently discovered. (Curtis *et al.* 1998).

In addition to these naturally occurring wetlands, the Swakopmund Saltworks, a manmade system of shallow evaporation ponds also qualifies as a wetland of international importance. This site, used for commercial salt production and oyster farming supports thousands of waders and seabirds (Kolberg, undated).

The Convention on International Trade in Endangered Species of Flora and Fauna (CITES) deals with trade in a number of wetland species and therefore has important links with Ramsar.

The United Nations Convention on Biodiversity (UNCBD). At a global level, an estimated 50% of all natural wetlands have disappeared. In terms of species diversity, freshwater ecosystems are by far the most degraded, with 20% of global freshwater species now extinct (WRI, 2000). Consequently, the UNCBD has particular relevance to the Ramsar Convention and can be considered an overarching instrument towards which Ramsar, with its more specific focus, must contribute. A *Memorandum of Cooperation*, which provides for institutional cooperation, exchange of information, coordination of work programmes and joint conservation action, has been signed in recognition of the many specific points of common concern that exist between the Convention on International Wetlands and the UNCBD.

The United Nations Framework Convention on Climate Change (UNFCCC) recognises the need to integrate climate change risks into water and wetland resource management and policy development in southern Africa. Increasing global temperatures and altered rainfall patterns associated with human induced global warming are likely to have negative impacts on the region's already overburdened hydrology (Hulme *et al* 1996; in Tarr 1998; and Zhou 2002).

The ***United Nations Convention to Combat Desertification (UNCCD)*** aims to mitigate land degradation in arid and semi-arid areas. Deforestation, particularly if it occurs along rivers, and land degradation, particularly activities causing soil erosion, impact heavily on the healthy functioning of wetland ecosystems and are major causes of declining water quality and flood control in rivers. Recognising the close link between land degradation and water resources in Africa, the Africa group within the UNCCD have included water resources as one of the four main thematic areas and assigned this task to the SADC Water Sector. Namibia's Programme to Combat Desertification, Napcod, recognizes that the natural aridity and the high reliance of the majority of Namibians on natural resources, so dependent on scarce and unpredictable rainfall is the common thread linking the environmental conventions. All farming activities are linked to viable water resources and all, Namibians, their livestock as well as the natural vegetation and wildlife need adapt to living with droughts. A cornerstone of Namibia's approach to combating desertification is sustainable resource management and in an arid country the most vital resource is that supplied by our wetlands (Bethune 2000; Bethune and Pallet, 2002).

At some time in the future Namibia may become party to the ***UN Convention on Migratory Species*** which is particularly relevant to wetlands and rivers and their international role as feeding and breeding sites for migratory birds and fish (e.g. the catfish and tigerfish migration between Namibia and Botswana).

5. THE NEED FOR PARTNERSHIPS AND CO-OPERATION

Wetlands issues are cross-sectoral. Thus, the successful implementation of this policy depends on creating co-operative partnerships between all agencies that affect, or are affected by, wetlands. These include government departments responsible for agriculture, mining, health, rural development, urban development, local government, trade and industry, environment and tourism as well as various NGO's, the private sector and communities that are traditionally dependent on wetlands for their livelihoods.

While the lead agency for water resources management in Namibia is the MAWRD, the MET and MFMR are also responsible for wetland issues. Meeting the goals of this policy requires harmonisation of policy between these lead agencies and all other relevant sectors – as the definitions of wetlands provided at the beginning of this chapter indicate an overlap of jurisdiction between the MET, MAWRD and the MFMR over coastal and freshwater resources in Namibia. Managers and decision makers are aware of these challenges and the proposed Basin Management Committees (as documented in the Final Draft of the Water Resources Management Bill) could play a vital role in this regard. However, wetland specialists and representatives from the MET and the MFMR should serve on these committees alongside representatives from the MAWRD. Two pilot schemes are currently underway to test this concept, one for the Kuiseb River Basin under the ELAC project at DRFN, recently led to the official establishment of the Kuiseb River Basin Committee in 2004 (Roberts and Manning 2005), whilst the second on the Cuvelai drainage System in Namibia, under the Department of Water Affairs is working towards the establishment of a similar committee for the Cuvelai.

The challenge of creating intersectoral synergy faces the successful implementation of all cross-sectoral policies and could be met through the adoption of certain models that aim at promoting co-operative governance (Mackay and Ashton, 2003). Currently the Wetlands Working Group of Namibia provides a scientific forum for cross-sectoral co-ordination and co-operation on wetland issues. This group has representatives from all three lead Ministries as well as from NGO, Academic and Private Sector organisations involved in wetland conservation and management and has been instrumental in the drafting of this wetland policy.

POLICY

1. THE POLICY VISION

Namibia's Wetland Policy Vision is:

Namibia shall manage national and shared wetlands wisely by protecting their biodiversity, vital ecological functions and life support systems for the current and future benefit of people's welfare, livelihoods and socio-economic development.

2. POLICY OBJECTIVES

The objectives of the policy are:

1. To protect and conserve wetland diversity and ecosystem functioning to support basic human needs.
2. To provide a framework for the enduring use of wetland resources.
3. To promote the integration of wetland management into other sectoral policies.
4. To recognise and fulfill Namibia's international and regional commitments concerning shared wetlands and wetlands of international importance.

3. GUIDING PRINCIPLES

The basic principles used in Namibia's National Water Policy which "...are intended to provide a framework for the development of all water-related policies" (MAWRD 2000) have been adapted for the Wetlands Policy as follows:

1. Ownership: Namibia's limited and sensitive natural wetlands are a national asset, whose ownership is vested in the state on behalf of the whole society. However, many of these wetlands are part of much larger systems, some of which have considerable components in other countries, whilst others are of international importance in that they serve as vital feeding and breeding areas for migratory birds and other species. Consequently, Namibia is committed to respecting all regional, continental and global associations relating to wetlands.

Many artificial wetlands are privately owned e.g. the Swakopmund saltworks, water treatment works and farm dams.

2. Sustainable and equitable use: The concepts of sustainable development and equity, as advocated in the Namibian Constitution and Namibia's National Development Plans are fundamental to this policy.

3. Economic value: The scarcity and vulnerability of Namibia's wetlands require that their total economic value (TEV) be recognised, and that their utilisation, management and conservation is efficient and environmentally sound.

4. Awareness and participation: To improve the management of wetland resources Namibia is committed to ongoing research and monitoring of wetland processes, dynamics and management. In order to encourage participation in decision making from all stakeholders, all levels of society are made aware of wetland values and benefits.

5. Openness and transparency: Socio-economic and environmental information on wetlands are accessible to the public and all stakeholders. Decision making processes regarding wetland management shall be conducted in an open and transparent way.

6. Decentralisation: Where capacity exists, the management of wetlands and wetland resources shall be decentralised to the lowest practicable level, (identified in the National Water Policy and subsequent draft water legislation as the level at which all major stakeholders within a river basin or catchment area would co-operate through an appropriate Basin Management Committee) focusing the role of the government on policy/standard setting, regulation and facilitation.

7. Ecosystem values and sustainability: The International Convention on Wetlands' definitions and guidelines regarding the wise use of wetlands will be followed. The environment is a legitimate water user and in order to safeguard water quality, minimise the loss of livelihood options and the high financial costs associated with wetland rehabilitation, sufficient water, of good quality, shall be available to maintain essential ecological functions, goods and services and biological diversity provided by wetland ecosystems. Care shall be taken to maintain seasonal flow patterns.

8. Integrated management and planning: Wetlands have multiple uses and users. Consequently wetland issues are cross-sectoral, directly affecting and affected by almost all other sectoral policies. A shared vision between all spheres of Government regarding integrated water and land-use management shall be developed for each catchment area, including shared trans-boundary catchments.

9. Clarity of institutional roles and accountability: Institutional functions and roles need to be clearly identified to avoid jurisdictional conflict. Policy and regulatory functions will be separated from management and operational functions.

10. Capacity building: Capacity building shall involve a continuous process of institutional and human development at all levels of wetland resources management and will include the participation of public, private, NGO and community structures.

11. Shared watercourses: Namibia shall cooperate with her neighbours and the international community regarding the conservation, management and sustainable utilisation of shared wetlands and wetlands of international importance. In all negotiations regarding shared watercourses, Namibia shall adhere to generally accepted principles of international law. User rights asserted by Namibia will respect the rights of upstream and downstream users, and support the need for shared rivers to produce optimal benefit to all the riparian countries.

4. DETAILED PRINCIPLES

The principles above form the foundation of the detailed policy which is divided into the following thematic areas:

1. Integrated Management Principles
2. Wetland Resource Use and Conservation Principles
3. Legislative and Regulatory Principles
4. Institutional and Community Participation Principles
5. Human Resources Development Principles
6. Research and Information Principles

The detailed principles and objectives are given on pages 17 to 21:

4.1 Integrated Management Principles

- 4.1.1 Co-operative partnerships, such as Basin Management Committees, between all agencies that affect, or are affected by, wetlands shall be created⁹. Integrated policies that optimise the combination of economic and environmental benefits that the land and wetlands can provide, without limiting their future productivity, shall be developed and implemented.
- 4.1.2 A basin-wide approach to wetland management shall be adopted and integrated regional planning encouraged to avoid any possible conflict of interest, duplication of effort, waste of resources and potential loss of valuable habitats in wetlands that span two or more political or administrative regions within a single country or two or more sovereign nations that may be subject to different management strategies.
- 4.1.3 Wetland /environmental water flow requirements for each of Namibia's major perennial, ephemeral and seasonal rivers (including the Cuvelai drainage system) will be incorporated into all municipal, local, regional and national water supply plans.
- 4.1.4 The distinct roles of the institutions involved in wetlands management will be defined and clearly established.

4.2 Wetland Resource Use and Conservation Principles

- 4.2.1 The right of every citizen to be able to obtain, within reasonable distance from their place of abode, a quantity of water sufficient to maintain life, health and reasonable productive activity is respected by this policy.
- 4.2.2 The protected areas network in Namibia shall be expanded to include vulnerable wetlands as well as functional units of each wetland type. Trans-frontier protected areas shall be established (e.g. along the lower reaches of the Okavango downstream of Mukwe in both Namibia and Botswana, and between Namibia, Angola, Botswana, Zambia and Zimbabwe that share the Zambezi River at its floodplains upstream of the Victoria Falls).
- 4.2.3 The management of wetlands and wetland resources will recognise that ecosystems are legitimate water users.
- 4.2.4 The principle of sustainable utilisation shall be adopted by all stakeholders to prevent wastage of wetland resources and erosion of natural resource capital.
- 4.2.5 Any decisions concerning the use and management of Namibia's wetland resources (including water) shall be made in accordance with the *Precautionary* and *Polluter Pays Principles*.
- 4.2.6 The economic benefits of wetlands to communities dependent on wetland resources for their livelihoods should be taken into account in assessing wetland values and priority uses.

⁹ This includes all water-use, land-use and development sector policies including those pertaining to agriculture, forestry, water management, inland fisheries, tourism, trade and industry, mining and prospecting, works and transport and town planning.

- 4.2.7 Tools such as EA and SEA will be applied in accordance with Namibia's EA policy and Environmental Management Bill to help reduce negative impacts and enhance sustainability.
- 4.2.8 Active water demand management will be implemented for all sectors, thus helping to provide for efficient and effective management that support reduction of excessive and wasteful water use.
- 4.2.9 Compatible land-use practices that benefit communities and reduce stress on the aquatic and semi-aquatic environment shall be developed and implemented.
- 4.2.10 In the light of limited knowledge currently available concerning the extent and nature of water resources in Namibia, a conservative approach to further allocation of water shall be adopted until more detailed information on the entire water resource base is available.
- 4.2.11 Programmes that rehabilitate, reforest and improve degraded land associated with watersheds and wetlands shall be encouraged.
- 4.2.12 The introduction, importation, use or manufacture of potentially hazardous substances that can pollute wetlands, threaten human health and the productivity of agriculture and fisheries must be avoided.
- 4.2.13 The introduction, importation of, and trade in, seeds, plants and animals that are alien to Namibia and that have the ability to invade natural wetland habitats and thus compete with or threaten the survival of indigenous species shall be avoided.
- 4.2.14 Alien aquatic weeds (including the Kariba weed, *Salvinia molesta*, water hyacinth, *Echhornia crassipes*, red water fern, *Azolla filiculoides*, water lettuce or Nile cabbage, *Pistia stratiotes*, and parrot's feather, *Myriophyllum aquaticum*) and other invasive alien organisms that threaten wetland functioning and production shall be controlled through a combination of government funded mechanisms, local government incentives, and cross border cooperation.
- 4.2.15 All wetlands that have been identified as Ramsar sites or potential Ramsar sites shall be afforded the highest possible protection by the State.
- 4.2.16 Certain wetlands or components of wetlands in Namibia demand absolute protection. These include sites that are the only known habitat for endemic fish species (see Background Information on The Ramsar Convention).
- 4.2.17 Similarly there are wetland habitats essential to the survival of endemic and rare amphibians, birds and mammals which should be identified and protected.
- 4.2.18 Efforts shall be made to repair or rehabilitate degraded wetlands, based on sound scientific and technological knowledge.
- 4.2.19 To help maintain and improve Namibia's natural wetland capital, a funding mechanism shall be established (or the existing Environmental Investment Fund used) to ensure that some of the revenue generated from wetland use (for example from tourism activities or bulk water abstraction) is fed back into wetland conservation and/or rehabilitation.

4.3 Legislative and regulatory principles

- 4.3.1 Legislation to protect Namibia's diverse and vulnerable wetlands as well as those shared with other countries, shall be developed.
- 4.3.2 Regulations for maintaining water quality and the ecological integrity of wetlands shall be developed and enforced by all sectors.
- 4.3.3 Regulations to prevent and control the introduction and translocation of potentially invasive species shall be developed and enforced.
- 4.3.4 Legal guidelines and mechanisms for the implementation and enforcement of wetland conservation and sustainable wetland management shall be developed.
- 4.3.5 The need to protect the biodiversity and ecological functioning of wetlands will be factored into all new laws and policies.
- 4.3.6 Decisions regarding effluent disposal, water abstraction and other wetland resource use will be based on scientific surveys and the outcomes of environmental impact assessments which are conducted according to the guidelines laid down in Namibia's EA Policy and Environmental Management Bill.
- 4.3.7 All riparian zones shall be protected in accordance with the Forestry Act, No 12 (2001).
- 4.3.8 The use of chemical pesticides, fertilisers, GMOs and land clearing, deforestation, burning and other practices that can cause land (and wetland) degradation or pollution shall be regulated.
- 4.3.9 The Government shall implement The Basel Convention on the Transboundary Movements of Hazardous Wastes and their disposal in order to prevent irreversible wetland pollution.
- 4.3.10 To protect wetland catchment areas and maintain water quality, full protection shall be given to Forest Reserves and headwater catchments.
- 4.3.11 Setting aside water for aquatic ecosystems ('water for environmental flows') shall be incorporated into the policies and legislation of all agencies that use water.
- 4.3.12 Pollution of water resources from point-type sources, including the outfalls of municipal sewers, will be prevented or abated through permit and charging mechanisms. Permits will be tied to standards of effluent quality (and/or to water quality objectives for the receiving water resources).
- 4.3.13 Regulatory measures for controlling pollution of wetlands from agricultural runoff and drainage will also be provided for, using guidelines e.g. in the Pollution and Waste Management Bill.
- 4.3.14 The role of economic and financial instruments to enhance compliance with wetland policy objectives shall be recognised in water-related regulations.

4.4 Institutional and Community Participation Principles

- 4.4.1 Tenure systems regarding all wetland resources shall be strengthened.
- 4.4.2 Extend CBNRM activities into all areas associated with wetlands that have potential for tourism and ecotourism.
- 4.4.3 Institutions shall be structured so as to devolve decision-making regarding wetland use to the lowest appropriate administrative level, (e.g. Basin Management Committees, Water User Associations and Water Point Committees) accompanied by the necessary human and financial resources for training and effective implementation.
- 4.4.4 The management of wetlands and wetland resources shall provide for broad community involvement at all levels and shall be based on continuous education and awareness-building concerning the benefits of wise wetland management.
- 4.4.5 The right to consultation between all relevant stakeholders, including representatives of basin management committees, water user associations, water point committees and community based organisations affected by development decisions occurring at the local, basin and international level, shall be respected.
- 4.4.6 Namibia shall develop its institutional capacity to participate effectively and pro-actively in multilateral and regional -bodies and ongoing initiatives to regulate the development, conservation and management of shared water systems.

4.5 Human Resources Development Principles

- 4.5.1 Awareness regarding the Total Economic Value (TEV) of healthy wetland systems and how best to achieve wise wetland management shall be enhanced through environmental education programmes, in English and local languages to target all levels of society.
- 4.5.2 Opportunities for improving the knowledge, skills and capacity of institutions and communities involved with wetland use and management shall be provided. Experienced environmental educators, scientists and managers and indigenous knowledge and traditional practices should be used to provide information and advice to decision-makers at all levels.
- 4.5.3 Awareness shall be raised amongst all managers and decision makers regarding the *Pollution Control and Waste Management Bill* and the *Environmental Management Bill* and how these can help their sectors to prevent water pollution or unnecessary damage to wetlands.
- 4.5.4 The results of research pertaining to wetland functioning and wetland resources shall be made available to all institutions and basin management committees, both national and regional, which share the responsibility of wetland management.
- 4.5.5 Decentralized extension services and capacity building for people who live off wetland resources shall be developed. These services must highlight compatible, environmentally friendly land-use practices that will benefit the communities concerned.

4.5.6 Opportunities shall be sought for school leavers and water resource personnel to obtain appropriate nationally and internationally recognised academic qualifications in wetland conservation and management.

4.6 Research and Information Principles

4.6.1 A high quality of research and monitoring shall be maintained to obtain reliable and up-to-date information.

4.6.2 The collection of wetland resource information needs to be responsive to the particular needs of all wetland and wetland resource users at local, basin, regional and international levels.

4.6.3 Wetland /environmental water flow requirements for each major river basin in Namibia shall be determined and regularly re-assessed in co-operation with all riparian states.

4.6.4 Knowledge regarding the biology and ecology of exploitable wetland species as well as wetland ecosystem components and their linking processes shall be improved. The potential impacts associated with fish farming shall be fully researched before any large scale future developments in this area are embarked upon.

4.6.5 Alternative strategies¹⁰ that can be employed to reduce the negative impacts associated with irrigation (including high water demand and increasing use of pesticides and fertilisers) shall be researched and feasible solutions implemented.

4.6.6 Applied research shall be geared to dealing with the acute hydrological and associated environmental risks that Namibia faces, so that managers can plan for and mitigate, wherever possible, the effects of global phenomena (for example climate change and stratospheric ozone depletion) on vulnerable wetlands and wetland resources.

4.6.7 Natural resource economics and the use of Natural Resource Accounts (NRA) as tools to help planners and decision makers assess the real value of wetland natural resources and determine the costs of environmental degradation or natural resource loss, shall be applied.

4.6.8 Environmentally and socially sound strategies for public health management regarding human and livestock diseases associated with wetlands (including malaria control), shall be investigated and implemented.

4.6.9 Information and databases relating to wetland ecosystems shall be accessible to the public and all stakeholders.

4.6.10 Research on the impacts, control and management of aquatic and riparian invasive and alien species shall be conducted and lists of potentially invasive species and their status shall be regularly updated.

4.6.11 Traditional knowledge and belief systems shall be recognised, documented and used to augment scientific research, planning and wetland conservation, monitoring and management.

¹⁰ For example, the use of Integrated Pest Management.

5. POLICY IMPLEMENTATION

Key stakeholders must identify the lead agency for managing wetlands and developing co-ordinating mechanisms. Furthermore:

- The detailed roles and responsibilities of the different tiers of government (national, regional and local) should be identified and inter-agency collaboration, including that with local and basin management committees, should be strengthened.
- Opportunities for partnerships between government and civil society, particularly national and international NGOs, shall be developed.
- Namibia's Biodiversity Strategy and Action Plan for wetlands shall be implemented and regularly updated.
- A capacity building strategy involving central government and community training shall be prepared and implemented.
- A detailed funding strategy for national wetlands research, conservation and management should be developed.
- Cost effective and flexible policy instruments should be adopted, to help implement this policy

These include:

- The compulsory use of Environmental Assessments for activities likely to affect wetlands and water resources.
- Determining the ecological water reserves for all major ephemeral, seasonal and perennial rivers.
- Issuing permits and quotas for wetland resource use with strict quotas being set for species that are vulnerable to extinction or local eradication.
- Economic instruments including tax and subsidy incentives, and sustainable management options, for example, environmentally friendly pest and weed control.
- Using procedures for guiding the allocation and use of water and other wetland resources. For example, Strategic Environmental Assessment and Natural Resource Accounting.
- Develop a detailed funding strategy for National wetlands research and management.

This Wetland Policy is based on National Water Policy and is designed to complement the proposed Water Resource Management Bill developed by the Ministry of Agriculture, Water and Rural Development for the conservation, management and wise use of Namibia's rare and precious water resources and wetlands. The implementation of a sound integrated Wetland Policy in Namibia will provide a platform for the sustainable management of our scarce water resources and will contribute towards national sustainable development given that water availability is a serious constraint.

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APPENDIX 1. RELEVANT POLICIES AND LEGISLATION PERTAINING TO WETLAND MANAGEMENT

A. Relevant National Legislation

- Namibian Constitution
- Environmental Assessment Policy (MET 1995)
- The Draft Environmental Management Act (MET 1995)
- Namibia's Waste Management and Pollution Control Bill (MET 2002)
- The National Agricultural Policy (MAWRD 1995)
- The National Water Policy White Paper (MAWRD 2000)
- The Draft Water Resources Management Bill (MAWRD 2004)
- The Water Supply and Sanitation Policy (MAWRD 1993)
- The Namibia Water Corporation Act (1997)
- The Inland Fisheries Act 1 of 2003 (MFMR)
- The Sea Fisheries Act (MFMR 1992)
- Namibia's Aquaculture Policy (MFMR 2001)
- The Aquaculture Act 18 of 2002 (MFMR)
- The Aquaculture (licensing regulations) (MFMR 2003)
- The Tourism White Paper (1994)
- Draft National Tourism Policy (MET 1999)
- The Community-Based Tourism Policy (MET 1995)
- Wildlife Management, Utilisation and Tourism In Communal Areas (MET 1995)
- Amendment to the 1975 Nature Conservation Ordinance (MET 1996)
- Parks and Wildlife Management Bill (MET 2004)
- Land-Use Planning Towards Sustainable Development (MET 1994)
- The Forestry Act (MET 2001)
- Policy on Prospecting And Mining In Protected Areas and National Monuments (MET/MME and MBEC 1999)
- The Regional Planning and Development Policy (NPC 1997)
- The National Policy and Strategy for Malaria Control (MHSS 1995)
- Namibia's Trade Policy (MTI 1998) - including trade policies in agricultural, fisheries and forestry products
- The National Land Policy (MLRR 1998)
- The Communal Land Reform Bill (MLRR 2000)

B. Relevant International Conventions

- Convention on Wetlands of International Importance (Ramsar convention) 1971.
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) 1973.
- United Nations Convention on Biological Diversity (CBD) 1992.
- Biodiversity Strategy and Action Plan (MET 2002)
- United Nations Convention on the Law of the Sea (UNCLOS) 1982.
- United Nations Framework Convention on Climate Change (UNFCCC)
- United Nations Convention to Combat Desertification (UNCCD)

APPENDIX 2

WATER CONVENTIONS, PROTOCOLS AND AGREEMENTS RATIFIED BY NAMIBIA

1. Agreement between the Governments of the People's Republic of Angola and the Republic of Namibia on the establishment of the Angolan-Namibian Joint Commission of Cooperation. Signed on 18 September 1990, Lubango, Angola. Ratified on 2 July 1997.
2. Agreement between the Governments of the People's Republic of Angola and the Republic of Namibia to endorse and affirm the old agreements between the Colonial Powers, Portugal and South Africa, in order to re-establish the Permanent Joint Technical Commission (**PJTC**) and the Joint Operating Authority on the Cunene River. Signed 18 September 1990, Lubango, Angola. Ratified on 2 July 1997.
3. Agreement between the Governments of the Republic of Botswana and the Republic of Namibia on the establishment of a Joint Permanent Water Commission (**JPWC**) (the name changed from Committee to Commission). Signed on 13 November 1990, Windhoek, Namibia. Ratified on 2 July 1997.
4. Agreement between the Governments of the Republic of Namibia and the Republic of South Africa on the establishment of a Permanent Water Commission (**PWC**). Signed on 14 September 1992, Noordoewer, Namibia. Ratified on 2 July 1997.
5. Agreement between the Governments of the Republic of South Africa and the Republic of Namibia on the Vioolsdrift and Noordoewer Joint Irrigation Scheme. signed on 14 September 1992, Noordoewer Namibia. Ratified on 2 July 1997.
6. Agreement between the Governments of the Republic of Angola, the Republic of Botswana and the Republic of Namibia, on the establishment of a Permanent Okavango River Basin Water Commission (**OKACOM**). Signed on 15 September 1994, Windhoek, Namibia. Ratified on 2 July 1997.
7. Protocol of Shared Watercourse Systems in the Southern African Development Community (**SADC**) Region. Signed on 28 August 1985, Johannesburg, South Africa. Ratified on 2 July 1997.
8. Convention on the law of the Non-navigational Uses of International Watercourses. Signed on 19 May 2000, New York, United States of America. Ratified on 3 October 2000.
9. Protocol on Fisheries. Signed by all 14 SADC States on 14 August 2001 in Blantyre, Malawi.
10. ZamCom, all Zambezi River riparian countries, signed in 2004. Yet to be ratified.

APPENDIX 3. POPs – PERSISTENT ORGANIC POLLUTANTS.

POPs are a large group of man-made organic compounds many of which exhibit extremely high levels of toxicity and which accumulate in water sources and aquatic ecosystems. Many pesticides, dioxins and PCBs are classified as POPs. Pesticides are commonly used to control agricultural and other pests. Dioxins are produced as a by-product in several industrial processes (for example, the bleaching of paper and the burning of waste matter containing plastics). PCBs (Polychlorinated Biphenols) are used to manufacture many electrical goods, plastics, paints and adhesives. In addition, our increasingly sophisticated way of life, 'enriches' the environment with POPs derived from domestic chemicals (for example cleaning and disinfecting agents, pharmaceutical products, cosmetics, food additives and paints and solvents). POPs are extremely dangerous to humans and their environment because:

- ***They are persistent and stay in the environment forever.*** In other words, they resist the processes that break down or biodegrade other contaminants.
- ***They display bioconcentration.*** Instead of undergoing metabolism, breakdown and excretion, they accumulate or build up in body fat and can be passed on from mother to foetus and through breast milk.
- ***They display biomagnification.*** The concentrations of POPs are magnified with each step in the food chain. As a result, very high concentrations can be observed in top predators like birds of prey, whales and humans.
- ***They are easily transported around the world on wind and water currents*** and can be carried long distances away from their point of emission

Cancer, infertility and birth defects are some of the severe human ailments associated with regular exposure to POPs through consuming contaminated water, fish or other food. Since the 1980s several POPs have been banned or subjected to severe use restrictions in many countries. POPs, however, are still in use in many countries. In Namibia the POP, DDT is used by the MHSS to help control malaria.

APPENDIX 4. THE RAMSAR CONVENTION AND CRITERIA FOR RAMSAR SITES

The Convention on Wetlands of International Importance, especially as a waterfowl habitat, was drawn up in the town of Ramsar in Iran in 1971. The Convention has subsequently become known as the “Ramsar Convention”. The main aims of the convention are to prevent the loss and degradation of wetlands worldwide and to ensure that they are used wisely and sustainably, while conserving their biodiversity values and ecosystem services.

The concept of wise use of wetlands is central to the Ramsar approach and is defined as:

“ their sustainable utilisation for the benefit of humankind in a way compatible with the maintenance of the natural properties of the ecosystem.”

From this definition the Conference of Contracting Parties to the Ramsar Convention developed guidelines (Recommendation C.4.10) and additional guidance (Resolution C.5.6) to assist member states with the implementation of the wise use concept. .

These wise use provisions apply to all wetlands and their support systems within the territory of a Contracting Party, both those wetlands designated for the List of Wetlands of International Importance, and all other wetlands. The concept of wise use seeks both the formulation and implementation of general wetland policies, and wise use of specific wetlands. These activities are integral parts of ecologically sustainable development.

A Ramsar site is a wetland of recognised international importance, under the Ramsar Convention. Wetlands are considered to be of international importance and may be selected as Ramsar sites if they:

- Can be described as representative, rare or unique aquatic ecosystems and/or;
- Support vulnerable, endangered or threatened species of plants or animals and/or;
- Support a high diversity of plant and/or animal life and are important for maintaining the biological diversity of a particular biogeography region and/or;
- Support plant or animal species at a critical stage in their life cycles, or provide refuge during adverse conditions and/or;
- Regularly support 20 000 or more waterbirds and/or;
- Regularly support 1% of the total number of individuals in a population of one species or sub-species of waterbird; and/or
- Are of particular value to fish (supporting high numbers of indigenous subspecies, species or families, life history stages or if it is an important source of food for fish, provide spawning/ nursery grounds and/or migratory paths on which important fish stocks depend).

Recognising the importance of wetlands in Namibia, the Government of Namibia acceded to the Convention on Wetlands of International Importance on 23 December 1995 and to date has designated four Ramsar sites. They are:

- Walvis Bay Wetland, the most important coastal wetland in southern Africa
- Sandwich Harbour
- Orange River Mouth, a Ramsar site shared with South Africa
- Etosha Pan

Several other Namibian wetlands may qualify as potential Ramsar sites, but have yet to be designated. They include: The Kunene River mouth, Cape Cross lagoons, Swakopmund saltworks, Lakes Otjikoto, Guinas and Liambezi, the Nyae Nyae pans and vleis system, the lower Okavango River between Mukwe and the Botswana border, the Zambezi River floodplains including Linyanti swamp, Namibia’s offshore islands and the Oshanas of the Cuvelai system.

The Ramsar Convention defines wetlands as:

“areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters”.

Further, it states that wetlands *“may incorporate riparian and coastal zones adjacent to the wetlands, islands or bodies of marine water deeper than six meters at low tide lying within wetlands”.*

This definition includes a wide variety of aquatic and semi-aquatic habitats. In Namibia, these may be either:

- Natural (lagoons, the inter-tidal zone, mudflats, estuaries, river mouths, ephemeral, seasonal and perennial rivers, their floodplains, oshanas, vleis, pans, lakes, springs and hot water springs, or
- Artificial (dams, ponds, reservoirs, canals and also sewage treatment and oxidation ponds).