Water Demand Management and tourism in arid countries – lessons learnt from Namibia

Klaudia SCHACHTSCHNEIDER

Ministry of Agriculture, Water and Rural Development, Division: Water Environment,
Private Bag: 13193, Windhoek, Namibia

schachtschneiderk@mawrd.gov.na

ABSTRACT

Namibia's aridity is forcing its decision-makers to resort to new water resource management approaches, including Water Demand Management (WDM). Such a change in management approach is facilitated through the country's opportunity at Independence to rewrite and adapt its old policies, including those for Water and Tourism. Old water-related policies in Namibia and South Africa have created a perception among the public that it is government's responsibility to provide water cheaply and in unrestricted quantities. The biggest challenge within WDM is to change the perceptions of society about the value of water and to instil a feeling of responsibility towards the resource as a whole. Legal support for WDM in form of the new Water Act is a crucial platform from which to plan the practical implementation of WDM throughout Namibia. In order to be able to put the policy into practice, it is imperative to understand which driving forces motivate people to adopt WDM initiatives. Within the Namibian tourism industry three main driving forces have been identified which motivate managers of tourist facilities to implement WDM. This paper discusses how decision-makers can build on these driving forces in order to achieve increased water use efficiency in the tourism sector. Furthermore, how the relevant policies, the Water and Tourism Policies, can complement each other in order to achieve mutual goals, such as sustainable use of scarce natural resources.

***Keywords*:** *Water Demand Management; tourism; driving forces; policy*

INTRODUCTION

In the past Namibia, like South Africa and many other arid developing countries have followed the typical path of ensuring a water supply which always exceeded the water demand with the help of technical and engineered solutions. The old South African and Namibian Water Acts supported the provision of cheap access to water for most citizens, leading to a general perception among the public, especially outside Municipal boundaries, that it is the governments duty to provide water as a cheap and abundant commodity (Turton, 1999). This lack of respect for the value of water in an arid country like Namibia can result in an inefficient and unsustainable water demand, especially if development needs and population growth create a constant increase in water demand as well. Opportunities to develop new supply-sided solutions, such as dams, water transfers and desalination plants are limited and extremely expensive.

Namibia's Independence in 1990 has provided a unique opportunity to write new and to adapt old policies and acts, including the Namibian Water Act and a new Tourism Act. Currently Namibian decision makers attempt to increase water use efficiency by making Water Demand Management (WDM) an integral part of the new Water Act.

Legal support for WDM in form of the new Water Act is a crucial platform from which to plan the practical implementation of WDM throughout Namibia. In order to put the policy into practice effectively, it is imperative to understand which driving forces motivate the different water use sectors and their people to adopt WDM initiatives.

Water Demand Management (WDM) is a broad concept with many definitions. In this paper it is defined as: A management approach for the water sector and user stressing the efficient use of existing supplies, rather than developing new ones, with the help of policies, ethical, economic, educational and technological means (van der Merwe, 1999).

BACKGROUND

Namibia's water and tourism

Namibia is a semi-arid to arid country with low, seasonal and variable rainfall that is below 20 mm along the west coast to 600 mm per annum in the far North-east. Annual evaporation rates exceed rainfall by up to six times. As a result Namibia's water supply relies on the limited available surface water and groundwater sources. Currently, the available surface and groundwater sources are almost fully exploited (Bethune, 1996).

Tourism is the fourth largest and fastest growing sector of the Namibian economy (6 – 9 % per annum) with a 7% contribution (N$ 1.3 Billion in 1998) to the GDP. A quarter million tourists made use of Namibian tourist facilities in 1999 and approximately 25 000 Namibians are employed in the sector (Minister of Environment and Tourism, 1999).

Tourism uses less than 1 % of Namibia's available water, whilst agriculture (irrigation and livestock) uses 61% (Lange, 1997). Improved water use efficiency in tourism will only have a comparatively small impact on Namibia's overall water use. However, many tourist facilities lie in particularly arid and ecologically sensitive areas where effective resource management (including WDM) is crucial to ensure sustainable tourism operations (Schachtschneider, 2000).

Namibia's Tourism Draft Policy

In the past Namibia's tourism was developed around large scale, self catering, state owned resorts in protected areas. With independence the numbers of private and communal tourist operations have grown markedly, catering for different clientele. The Tourism Policy for 2000 to 2010 is currently being drafted. In its present form it is pointing out that there is evidence of natural resource over-utilisation within Namibia's tourism industry. On account of the countries fragile resource base, the draft policy seeks to encourage stakeholders to develop high quality, low impact tourism. This would mean the exploitation of specialist tourist niches for few but high paying customers.

One such niche would be proper 'ecotourist' destinations, who provide a natural and educational experience to few, high paying guests and who usually operate in very scenic and sensitive areas.They integrate sustainable resource use in their marketing strategy, which provides them with unique business opportunities, allows guests to have a unique 'nature' experience and ensures efficient natural resource use within the operating area.

Namibia's Water Policy

The South African Water Act 54 of 1956 is still used in Namibia today. A new Water Act more suitable to Namibian circumstances is nearing completion. This Act will be based on the recently accepted National Water Policy (2000).

The new Policy supports the implementation of WDM implementation in that:

1. Government will be the custodians of all water resources and will have the right to control all water use and disposal
2. Integrated supply and demand planning is required in both the short and long term
3. The Policy promotes sustainable water utilisation through appropriate pricing, promotion of water efficient technology, public information and awareness programmes, information sharing and co-operation between parties, the promotion of wastewater reuse and active support of research and data gathering on water conservation
4. Consideration is given to the establishment of an environmental reserve.
5. Catchment management is provided
6. The establishment of Namibian water quality standards will be very important for wastewater reuse.

Until the new Water Act is in place it is difficult to enforce WDM principles since there is no control over borehole numbers or water abstraction in most of Namibia. The only controlled areas relevant to tourism lie within Municipal boundaries or nature reserves. The old Act does not support WDM initiatives and nobody outside municipal boundaries is required to use water efficiently, thus the drive to implement WDM principles in tourism and other industries is currently not backed or enforced by law. At the moment one can only appeal to businesses to use water more efficiently. In the tourism sector the best voluntary support has come from 'ecotourist' facilities that include efficient resource use as part of their marketing strategy.

WDM and Tourism

The Water Demand Management Study of Namibian Tourist Facilities is a three year project run by the Ministry of Agriculture Water and Rural Development and supported by the Water Research Fund for Southern Africa (WARFSA). The 1999 baseline study looked at water use in different kinds of tourism establishments, including hotels, large scale resorts, lodges, community camps and so-called 'ecotourist' camps.

Results showed that community camps and ecotourist camps used the least water, often due to lack of water in the area, basic infrastructure and a sustainable management approach. Big resorts and luxurious lodges spent between 15 and 175 times more water on every guest than community camps and ecotourist camps (Schachtschneider, 2000).

In 2000 and 2001 the study looked at the implementation of WDM initiatives in the form of technology, awareness and management approaches at six study sites representing the different kinds of tourist facilities, i.e. lodges, resorts, urban facilities, community camps and ecotourist camps. Table 1 explains the differences between the study sites.

All project study sites received a list of recommendations on site specific, feasible WDM approaches, that could improve their water use efficiency. All study sites co-operated on a voluntary basis with the project and the project researcher acted as a facilitator for the implementation of the recommended approaches. Management at each study site was given the responsibility to decide which of the recommended WDM approaches to implement and which to ignore or postpone. Each study site (excluding the ecotourist sites, because they had implemented all suitable WDM steps themselves at the outset of their operation) chose to implement different kinds and amounts of WDM initiatives.

Since the project only observed and acted as a facilitator for WDM implementation, the project itself created an enabling environment to implement WDM, but it did not enforce any implementation. The project fieldwork was concluded with management interviews at each site, to find out what drove them to support and implement WDM. The answers were compared with

fieldwork observations. Three driving forces were identified: external controls, economics and ethics.

Table 1: Description of study sites

CATEGORY	DESCRIPTION	SITES
COMMUNITY CAMP	Basic, small scale, affordable, camping outside Municipal area, on communal land, basic water supply, little water use, few staff live on site, limited water supply,	Spitzkoppe Community Camp
RESORTS	Large scale, ranging from camping to economy and VIP accommodation, outside Municipal area, often in Nature Reserve, large scale water supply, high water use, staff live on site	Bernabe de la Bat Resort
URBAN FACILITY	Range of accommodation Economy – Luxury inside Municipal area, urban, hotel, pension or self catering Municipal water supply connection, no staff live on site,	Swakopmund Municipal Bungalows
LODGES	Luxury accommodation for few, high-paying tourists outside Municipal area, on private land well-established, small scale water supply, staff live on site	Ongava Lodge
ECOTOURIST CAMP	Upmarket or comfortable basic accommodation for few guests, situated in sensitive environment, daily management according to sustainable resource use principles, planned and constructed with resource use efficiency in mind	Skeleton Coast Camp Etendeka Camp

External controls comprise the aridity of the area (and the inherent lack of water) as well as imposed restrictions by either a municipality or another external controlling body, such as the Ministry of Environment and Tourism if the facility operates in a nature reserve. Ethics is the amount of environmental sensitivity inherent in the facilities' business and management approach. Economics is the cost of water, calculated as the full supply cost for this project.

Each site found one or the other driving force more important and the amount of WDM implementation varied accordingly. The location of each study site is shown in Figure 1.

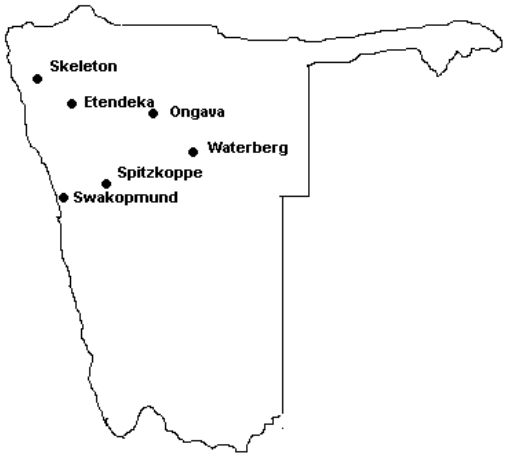


Figure 1: Map of Namibia with the six tourist facilities

RESULTS:

Etendeka Mountain Camp and Skeleton Coast Camp

The two sites are very similar in their setup, approach to water use and their water availability. Both cater for few, high paying guests. They were monitored by the WDM project, not to improve their water use, but as show cases, where water use efficiency has been perfected.

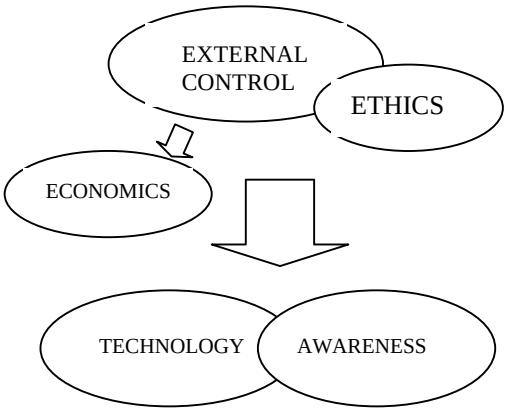


Figure 2: WDM driving forces of Skeleton Coast and Etendeka Mountain Camps

The Skeleton Coast Camp is situated in the extremely arid Namib desert, obtaining less than 20 mm of average annual rainfall. Since it is situated in the Skeleton Coast Nature Reserve, the Ministry of Environment and Tourism controls their water consumption. As a result of the lack of water in the area all water is transported to the camp by vehicle, pushing up the total supply cost to a phenomenal N$ 271 (U$ 32.00) per cubic metre. Due to the luxury level of the camp, it is possible to integrate the water cost into the guest fee, making it a slightly less important driving force than external controls or ethics.

Etendeka Mountain Camp is situated in a dry area with approximately 150 mm of average annual rainfall. The water scarcity is the main driving factor for WDM at Etendeka. Water also has to be transported by vehicle, making the total cost recovery price N$ 200 (U$ 24) per cubic metre. Like Skeleton Coast, the water cost is integrated into the guest fee, making it less of a driving factor.

Both enterprises follow strong 'ecotourist' principles by operating with minimal environmental impact through efficient and appropriate resource use. The facilities were planned and constructed with water efficiency in mind. The number of water outlets is minimised and piping is standardised in order to make maintenance and spare part storage easier. WDM incentives include technical WDM solutions such as wastewater reuse, the installation of low flush toilets, water efficient showers and kitchen taps, the absence of pools and watered gardens. Laundry is transported off the premises to be washed elsewhere. Leak losses are minimal due to strict maintenance controls. Management encourages all visitors and staff to minimise their water use through talks and comprehensive notices. All these measures ensure that Skeleton Coast and Etendeka use no more than 1.5 cubic metres of water on a fully occupied day.

Spitzkoppe Community Restcamp

The Spitzkoppe Community Camp lies at the edge of the Namib and receives very unreliable rainfall of less than 100 mm per annum on average. Since 1992 the Spitzkoppe community has ventured into the tourism market in order to broaden their income opportunities.

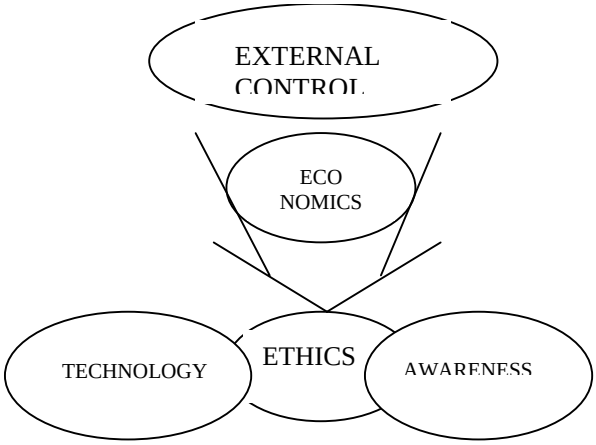


Figure 3: Spitzkoppe Community Camp driving forces

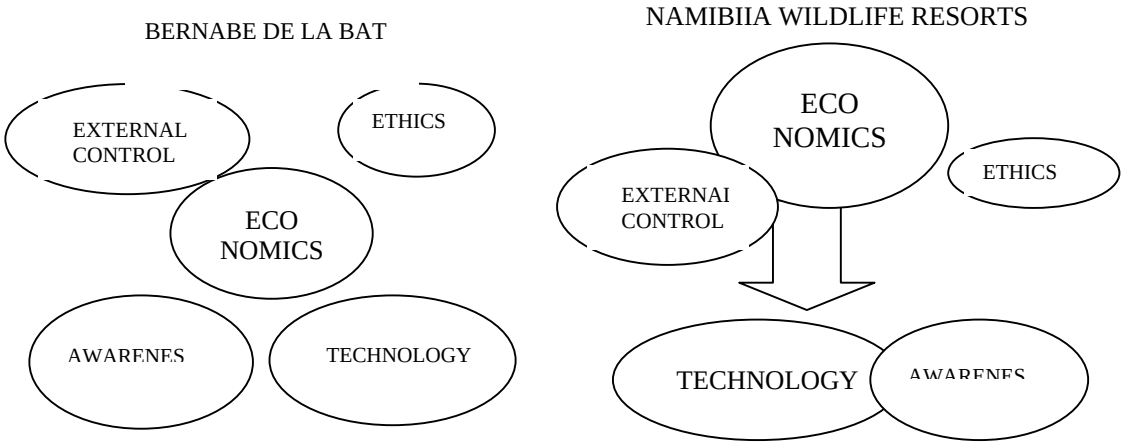
Water is extremely scarce in the Spitzkoppe area, making it the most important driving force. The tourist camp with its 28 camping sites and two bungalows obtains a rationed amount of 5 000 litres of water per month from the nearby village desalination plant. The rest of the water is brought along by visitors.

The subsidised supply cost of water to the community camp is minimal (N$ 2.75, U$ 0.33) per cubic metre. When looking at the billed supply costs alone, the camp staff do not regard the cost of water as a great driving force, but when looking at the total supply cost (including capital costs and maintenance), the cost of water is substantial at N$ 56 (U$ 6.67) per cubic metre.

For the community members WDM is part of everyday life. They cope with the 5 000 litres by doing leak control, selling water to tourists, promoting water imports by visitors and appropriate technological incentives which include dry sanitation and bucket shower systems.
While they are very knowledgeable and innovative about water use efficiency, WDM is not inherent in their business ethic. Should the water supply ever increase, the additional water would be readily used, irrespective whether it is sustainable to the area.

Waterberg

The Bernabe de la Bat Resort is operated by the company Namibia Wildlife Resorts and it is situated in the Waterberg Plateau Park, a nature reserve. The importance of driving forces differed between the Bernabe de la Bat Resort and the overall company.



Figures 4 and 5: WDM driving forces at Bernabe de la Bat and Namibia Wildlife Resorts

Bernabe de la Bat has vast amounts of spring water at their disposal, which is unmonitored. There are no external controls driving the implementation of WDM. Staff and management living on site regard water as a cheap and readily available commodity and WDM as unnecessary. The total cost recovery price per cubic metre at Bernabe de la Bat is less than N$ 1 (U$ 0.12) per cubic metre, providing no economic driving force either. As a result almost no WDM approaches were implemented over the study period.

While the project efforts were unsuccessful at Bernabe de la Bat, top management adopted some of the WDM recommendations and applied them at other resorts. A combination of mainly economic and sometimes external controls (water scarcity) drove the company to adopt WDM approaches, such as awareness materials, improved maintenance and water saving/reuse technology. The company Namibia Wildlife Resorts does not yet have a company 'Environmental Management Plan' or 'Environmental Statement' to drive WDM, therefore ethics play only a minor role.

Swakopmund Municipal Bungalows

The Swakopmund Municipal Rest camp is a self-catering accommodation situated in the desert coastal town of Swakopmund. The rest camp has 193 bungalows with a maximum capacity of 960 beds.

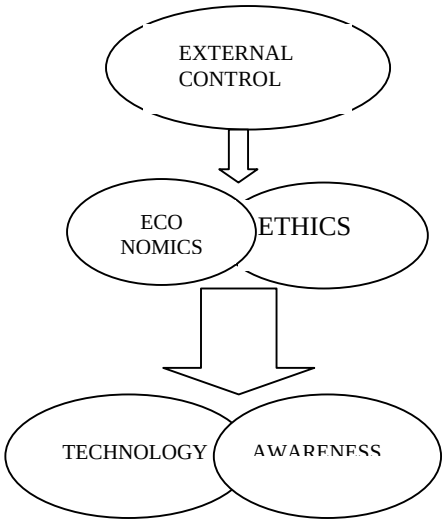


Figure 6: WDM driving forces of the Swakopmund Municipal Bungalows

Swakopmund lies in an environmentally sensitive area and is facing severe water scarcity, which is the main driving factor for WDM. It has resulted in the Town Council adopting an environmental statement and an environmental conservation committee. The committee promotes the improvement of environmental conditions and supports environmental awareness campaigns and research. Water use efficiency is regulated with the help of block tariff systems that discourage water wastage (N$ 5-9, U$ 0.59-1) per cubic metre. Different WDM approaches, including regular water awareness campaigns and innovative supply solutions, including desalination and semi-purified effluent reuse for gardening are part of the Swakopmund Town Council strategy.

The Swakopmund Municipal Bungalows fall directly under the Town Council and adopt the same approach to WDM. They pay a municipal rate of up to N$ 5 (U$ 0.59) per cubic metre for their water use and are forced to maximise their water use efficiency for business reasons. They do it by monitoring their daily water use, reusing wastewater for landscaping, implementing water saving devices such as low flow shower heads, running a very strict maintenance control system and distributing awareness materials for visitors.

Ongava Lodge

Ongava Lodge is a luxury lodge for 20 guests, situated at the western border of the Etosha National Park in an area with an average 400 mm annual rainfall. Ongava Lodge is run by the company 'Wilderness Safaris' on a private 29 000 hectare game reserve.

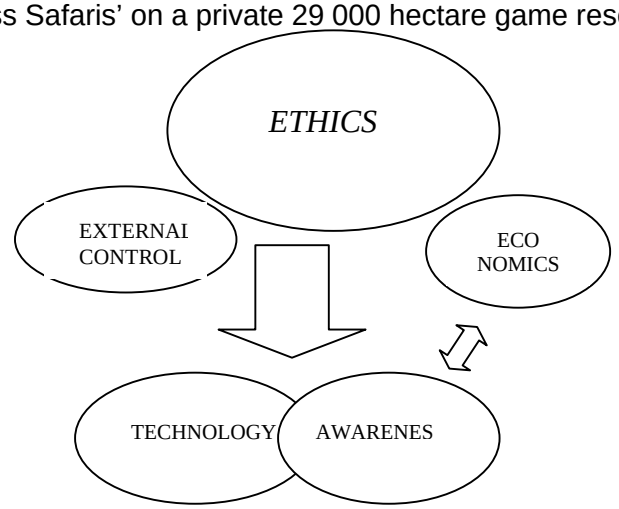


Figure 7: WDM driving forces at Ongava

Ongava Lodge is responsible for its own water supply. It has a sufficient and stable groundwater supply, so there is no imminent local water scarcity. Ongava Lodge pumps its own borehole water and the total supply cost is only N$ 3 (U$ 0.36) per cubic metre. Water costs are therefore no important driving factor either.

However, Ongava lies in a relatively dry area and sells the 'wildlife' experience to guests. Wilderness Safaris operates in many such areas, therefore the efficient and sustainable use of resources is part of the international company strategy. This approach is actively promoted by top management and is embraced by local management and staff members. This strong ethical feeling to use natural resources sustainably has led to the implementation of several WDM steps. They include an intensive maintenance programme, the replacement of lawns with more suitable indigenous vegetation, implementation of evaporation control, suitable technical devices and awareness material for visitors in the form of notices and talks.

DISCUSSION

The case studies have shown that WDM implementation differs within the Namibian tourism industry due the presence or lack of three driving forces:

1. External Controls - the level of water scarcity and levels of control over water use by a separate body (MET or town councils) in the operating area
2. Economics - the cost of water, depicted here as total cost recovery
3. Ethics - perceptions of staff and management concerning the value of water and resultant attitudes towards WDM initiatives

WDM is most effectively implemented where all three driving forces play an important part, as shown by the Skeleton Coast, Etendeka Camp and Swakopmund examples. Usually a local water scarcity directly influences water costs and the management approach of the facility. Where none of the driving forces are considered important, WDM is not implemented (Bernabe de la Bat). As shown by the Ongava case, strong ethics is a driving factor apart from local water scarcity which can induce WDM implementation in the absence of other driving factors. Many tourist facilities in Namibia are not facing imminent water scarcity and they would need another driving force to make them implement WDM initiatives.

While the right attitude towards WDM is a powerful driving factor on its own, it unfortunately is also the most difficult to implement on a national scale, since there is no common approach or recipe to change attitudes of individuals. Especially in Southern Africa WDM faces its greatest challenge in changing perceptions that have been engrained by inappropriate past policies and the provision of free water.

For the sake of WDM implementation in the Namibian tourism sector, decision makers should build on the power of all three driving factors and ensure that all tourist facilities are compelled to reduce their water use, receiving pressure from the economic, external control and ethical driving forces.

New policies can complement one another to reach common goals and help to overcome past policy shortcomings. The Water Policy promotes the implementation of WDM, while the Tourism Policy promotes the idea of specialised tourism with low numbers and high profitability. The case studies have shown that so-called 'ecotourist' sites use very little water and are water efficient. Close co-operation of the water and tourism sectors can ensure that the development of such appropriate facilities receives preference to less sustainable and larger ones in the future.

Policies and Acts can directly impose external controls on the tourism sector. The Tourism and Water Acts can jointly support the changing of the Namibian Building Standards, enforcing appropriate technology implementation and water efficient construction at new tourist enterprises. The changing of Building Standards will additionally provide a marketing opportunity for Namibian entrepreneurs to expanded the efficient technology market and to ensure a selection of appropriate, suitably robust, affordable and reliable devices country-wide.

Both Acts could influence the ethical driving forces by supporting an environmental award for the facility with the most sustainable resource use (including water, energy and waste management). Such an award will serve as a positive reinforcement tool for those tourist facilities interested in sustainable resource management. The Acts could cover an even greater percentage of tourist facilities if sustainable resource use became an integral component of the tourism grading standards. It would force every existing tourist facility to adopt more efficient resource use practices if they want to be eligible for grading. The grading system needs to be considerate towards differences in design and age, which can make the implementation of WDM initiatives difficult.

A lot of focus needs to be placed on awareness, which can minimise water wastage through appropriate maintenance schemes, visitor awareness and appropriate staff behaviour at all facilities. The Namibian National Water Awareness Campaign has produced awareness material for the past nine years, informing the public of the national realities of water scarcity and promoting a change of attitude towards water both as a resource and as a habitat for wildlife. While increased awareness does not imply an immediate change of attitude, the awareness campaign is a valuable national tool to contribute to the ethical WDM driving force.

The new Water Act itself will provide government with more power over Namibia's water resources, making it possible to exercise control over water use at different sites, provided that the necessary manpower is available to do inspections. Negative enforcement in the form of fines and permit refusals would be an option when faced with a severe offender. When interviewed, management admitted that this option is extremely unpopular, however, they agreed that it is a very effective and necessary method to enforce appropriate behaviour.

Finally, the Water Policy promotes appropriate pricing for water use. Payment for water can hardly be enforced throughout Namibia's tourism sector due to the lack of manpower and the sheer number and spread of the facilities. Internal water efficiency could be improved at facilities by

metering resident staff water use and charging them a fair price that will encourage water saving behaviour. The money could be led back into a staff water supply maintenance budget.

CONCLUSION

Since Independence, Namibia has had the unusual opportunity to rewrite and adapt old policies which are no longer practical, including the Water and Tourism Policies. The aridity of Namibia has forced decision makers to adopt new water resource management approaches, including water demand management in the new Water Policy. Legal support for WDM in the form of policies is a crucial cornerstone to implement WDM country-wide, but it is equally important for decision makers to understand the main driving forces that motivate people to adopt WDM initiatives if the new policies are to be put into practice effectively. Within the Namibian tourist industry, the three driving forces were identified as external controls, economic reasons and ethical principles.

When the new water policy is put into practice, the power of all three driving forces needs to be taken into consideration. The new Tourism and Water Laws can complement each other to achieve a mutual goal – to support environmentally sustainable tourist facilities which cater for few, high paying visitors, since such facilities have proved to be the most profitable and sustainable within the Namibian tourism industry.

REFERENCES

Bethune, S., 1996: Sustainable Water Use, *Namibia Environment*, Volume 1.

Lange, G.M., 1997: *An Approach to Sustainable Water Management Using Natural Resource Accounts: the Use of Water, the Economic Value of Water, and Implications for Policy*, Research Discussion Paper No 18, Ministry of Environment and Tourism.

Minister of Environment and Tourism Speech, 1999: *The Policy and Vision of the Environment and Tourism Portfolio*, Ministry of Environment and Tourism, Namibia.

Ministry of Environment and Tourism, 2001: *Draft Tourism Policy, 2000 – 2010,* draft internal document.

Ministry of Agriculture, Water and Rural Development 2000: *National Water Policy White Paper*, Republic of Namibia.

Republic of South Africa, 1956: *Water Act, Number 54*.

Schachtschneider K, 2000: *Preliminary Survey Report of the Water Demand Management Study of Namibian Tourist Facilities*, Internal Report of the Ministry of Agriculture, Water and Rural Development, Namibia, File: 20/13/6/2.

Turton, A.R. 1999*: Water Demand Management (WDM): A Case Study from South Africa*, Paper presented to Water Issues Group, School of Oriental and African Studies.

Van der Merwe B. (ed.), 1999: *IUCN Water Demand Management Country Study – Namibia*. Directorate Resource Management DWA, MAWRD and City Engineer (Water Services) City of Windhoek.

Van der Merwe B.: 2000: *Leakage Management on Plumbing Systems in Households and on Government Properties*, Funding Proposal to Sida.