

Policy options

This section aims to identify feasible policy options that target key components identified in the Causal chain analysis in order to minimise future impacts on the transboundary aquatic environment. Recommended policy options were identified through a pragmatic process that evaluated a wide range of potential policy options proposed by regional experts and key political actors according to a number of criteria that were appropriate for the institutional context, such as political and social acceptability, costs and benefits and capacity for implementation. The policy options presented in the report require additional detailed analysis that is beyond the scope of the GIWA and, as a consequence, they are not formal recommendations to governments but rather contributions to broader policy processes in the region.

The suites of policy options presented below were generated by the Benguela Current Task team as a set of responses to the root causes identified during the Causal chain analyses. By their nature, each policy option usually addresses more than one of the root causes identified. Attempting to link the policy options directly to each root cause identified in the Causal chain analyses was not always possible, and would have resulted in much repetition within the policy options, thereby creating unnecessary confusion. The policy options have thus been presented in a more thematic manner.

An attempt was made to devise sets of policy options which are practical and realistic, and which together will make a substantial contribution towards improving the situations outlined in the Assessment and Causal chain analysis for the two chosen systems. The policy options should thus preferably not be viewed as individual interventions, but as sets of interlinked interventions which together present an holistic approach.

Addressing modification of stream flow

A suite of three thematic policy options are suggested for arresting the modification of stream flow in the Orange-Vaal river system. These include changing the way water is perceived and used, effecting holistic planning, and improving existing management.

Changing the way water is perceived and used

Most of the Benguela Current region and the drainage basin of the Orange-Vaal system is characterised by naturally highly variable rainfall, and in most parts rainfall is also extremely low. Attitudes of both the general public and managers towards water in the region are, however, not consistent with the reality of this stochastic supply. Domestic, industrial and agricultural users, for the most part, do not take due cognisance of the limited and variable supply of this resource. Where realisation of the natural variability of rainfall has been recognised, it has been met with something of a sense of panic, resulting in a fever of dam-building in the region in order to ensure that as much water as possible is retained for human use. Water which flows down a river and enters the sea has traditionally been regarded as water wasted (for an example, consider the category “River losses” in data published on the official South African Department of Water Affairs and Forestry website, reproduced in Table 15 in the Causal chain analysis section). These attitudes towards water and its management have resulted in major negative environmental and socio-economic impacts in the region.

A further factor influencing how water is perceived and used is related to the low value that is placed on it at all levels, from government to individual users. The perceived low value has been entrenched in users through inappropriately low tariffs, and through government subsidy schemes which have supplied cheap water to farmers. Changing attitudes towards water and encouraging more efficient

use of water will require careful consideration of the economics of the resource.

Water management in the Orange-Vaal system has largely been based on managing the supply of water, and little attention has been given to managing water demands. The emphasis on water management has resulted in efforts to retain as much water as possible through the building of dams and impoundments, and to move this water to where the users are through inter-basin transfer schemes. A critical step in changing the way water is used is by shifting the emphasis from managing the highly variable supply towards managing the demand for water. Such water demand management requires a multi-faceted approach, including education and awareness surrounding the limited supply of water, introduction of water conservation measures and appropriate technology, adjustment of water tariffs, and the inclusion of water considerations in town and city planning. For integrated water resources management of an international transboundary river such as the Orange River to be effective, there has to be a “common vision” adopted between the various stakeholders impacted by and impacting on the water resource. This includes inter-governmental organisations such as ORASECOM as well as community and other non-governmental groups in the river system. As the four basin states require an increased amount of water from the river and more pressure is placed on its resources over the coming decades, planning and management system need to be in place to promote science-based decision-making, incorporating as wide a range of involved stakeholders as possible.

For users to change their perceptions of water and how it relates to the natural environment requires recognition of the importance of water and the legitimacy of the environment as a user of water at the government policy level. The South African National Water Act of 1998 is to be commended on doing exactly this, by making provision for the implementation of minimum in-stream flow requirements, referred to as the “ecological reserve”, with the intention of giving due recognition to the environment as a user of water and promoting the environmentally sustainable use of water resources. Additionally, it makes provision for the assurance of a “fair and equitable” share of the water for downstream users. However, it is the implementation of the provisions of such legislation which presents problems. Management and development of the resources of the drainage basin has been on an ad-hoc basis with little coordination between geographic areas or between government departments. This is the case both within the largest of the basin states, South Africa, as well as between the individual states. Thus far collaborative planning has only been around specific projects, such as the Lesotho Highlands Water Transfer project.

Effecting holistic planning

Effective integrated water resources management in the Orange-Vaal system requires holistic planning, from implementation of good town and city planning to basin-wide management. Town and city planning must take into account the low and highly variable natural water supply and plan accordingly. The unchecked growth of urban centres which is occurring in much of the region leads to enormous pressure on available water resources. Town and city planning thus needs to take into account the available water supplies in plans for further development and expansion of urban centres. Water conservation measures such as making provision for the re-use of grey water from households, or treated sewage effluents, for example, need to be incorporated into town and city development at the planning stage. Likewise, agricultural developments need to take into consideration the climatic realities of the drainage basin as well as the economic realities of the local and international food markets. Prices of staple foods have, in real terms, been decreasing since the end of the Second World War. Overproduction in the developed world and the opening up of most markets in developing countries has resulted in a drop in average staple food prices in countries of the Orange River Basin. Yet the cost of irrigation schemes has not dropped, with energy costs and other operation and maintenance costs all experiencing real increases over the past half century. These factors have combined as a call by commercial farmers for water charges to be kept low, leading to inefficient and wasteful use of water in the drainage basin.

The Orange-Vaal system is vast and complex, and by the continuous nature of rivers, impacts on parts of the system are translated into cumulative impacts downstream. It is therefore not practical to plan for only one part of the system, but planning must thus be done for the system as a whole. Such planning should not only include the water resources themselves, but should also include land use planning in the entire catchment, including revision and adjustment of current land use policies and practices. Attention should also be paid to the current system of water rights which are closely tied to land tenure and effectively allow private ownership of water.

Improving existing management

Many measures are already in place to manage water in the Orange-Vaal system, and water management could be greatly enhanced merely by strengthening and improving these. A highly practical intervention would be through upgrading and improved maintenance of existing urban reticulation systems to minimise wastage of high-quality water. The same goes for water used in irrigation systems, where much of the infrastructure needs to be converted to incorporate improvements in the efficiency of water application to the root zone.

Much legislation pertaining to the management of water in this, and other, systems is already in existence. There are, however, shortfalls between the existence of legislation and regulations and the implementation of these. If these instruments are to be as effective as they are intended, it is necessary that such legislation is implemented by management, that there is a high level of voluntary compliance with regulations, and that adequate enforcement is in place to act as a disincentive to a lack of compliance. In accordance with the integrated water resources management approach there needs to be a basin-wide management system. However the day to day practical running of the basin resources, taking place according to the principle of subsidiarity, will result in resources being managed at the lowest practical level.

Fragmentation at both policy and implementation levels is one of the major challenges facing sustainable water management in the Orange-Vaal system. Once basin-wide planning is in place, it is also essential to introduce basin-wide management so that the system is managed in its entirety in a coordinated way.

Both good planning and good management require the input of reliable information for decision-making. Both planning and management of the water resources of the Orange-Vaal system could be greatly enhanced by improvement in the supply of such information for decision-support. Improved reliability of long-range forecasting and rainfall predictions are highlighted as critically important for supporting effective planning and management in this system which is characterised by a high degree of stochasticity. Once a reliable information set has been established it needs to be legitimised by the parties involved. The process of contestation surrounding information can be a vital step in generating a shared vision and understanding between stakeholders of each others problems, challenges, pressures and possible solutions.

Addressing unsustainable exploitation of inshore finfish resources

Overexploitation

The inshore finfish fishery in the Benguela Current region is a complex multi-user, multi-species fishery, for which there is no “one size fits all” solution. To effectively address the severe overexploitation problems will require a multi-faceted approach aimed at the key outcome of reducing effort through restriction of effort, effective enforcement of

both new and existing regulations, and achieving improved voluntary compliance on the part of fishers.

Reducing access

It is abundantly evident that the current high level of effort expended in the inshore finfish fishery is not sustainable, and there is an urgent necessity to restrict this effort further than is provided for by existing legislation and regulations. Although a contentious and emotional issue, the possibility of restricting access to this fishery may need to be considered. Certainly one intervention that requires consideration is a restriction on access by individual participants to multiple fishery resources in order to reduce opportunistic fishing on inshore finfish at times when CPUE is elevated (e.g. during aggregated spawning events). De-commercialising the fishery entirely is another available option. As we have learned with land mammals, however, this option should be treated with great caution as it may lead to the establishment of an even more lucrative black-market, resulting in even greater illegal activity and fishing pressure.

Decreasing accessibility to these resources (by whatever means) to fishers will result in shrinkage of livelihood and economic opportunities in coastal areas. A key allied intervention will thus be to simultaneously generate attractive alternative livelihood and economic opportunities for those who have previously relied on fishing. Aquaculture offers an obvious opportunity for generation of livelihoods which are not reliant on the capture of wild populations.

Modern technology has improved the efficiency of fishers to access, locate and capture fish. While legislation already exist regarding the use of fishing gear to capture inshore finfish, it may be necessary to impose further gear restrictions, or at least to discourage the use of certain gear by imposing licenses for their possession.

Improving voluntary compliance

The usefulness of legislation and regulations aimed at sustainable management of fisheries is highly dependent on effective enforcement of these. It is clear that current enforcement of the existing regulations is inadequate and requires strong intervention. Given the vastness of the coastline, the number of participants in the fishery and the different user groups involved, this becomes extremely expensive. The economic considerations are undoubtedly the major factor responsible for the current weaknesses in enforcement of regulations pertaining to these fisheries in the region, and it may be naive to imagine that anything will change in this regard. More creative means of enforcement may thus need to be sought, such as community-policing, and improving voluntary compliance.

Improving voluntary compliance with existing regulations and management measures is critical in addressing the current overexploitation in the inshore finfish fisheries in the Benguela Current region. Improving voluntary compliance revolves around changing attitudes of fishers towards the resources they utilise. Such shifts in attitude can only be brought about through generating understanding and a sense of stewardship. Understanding can be enhanced through education and awareness programmes which highlight the nature of the resources and the impacts of exploitation on these. Involvement of a knowledgeable fishing community in management decision-making provides an important basis for the building of a sense of stewardship on the part of these individuals.

Although such changes in attitude are often perceived to be difficult to effect, this is not necessarily the case. One case in particular, on the KwaZulu-Natal coast of South Africa, serves to illustrate just how well interventions to improve understanding and generate a sense of stewardship can work to improve voluntary compliance and self-policing in relation to exploitation of marine living resources (Harris et al. 2003, Sowman et al. 2003).

Degradation of habitats

As has been highlighted in the Causal chain analysis, there are several root causes of degradation of habitats of inshore finfish resources in the Benguela Current region. To address these varied causes will require a relatively broad approach aimed at a range of levels of intervention.

Holistic management

While the necessity for provision of water at urban centres cannot be denied, the impacts of this on estuaries downstream can be mitigated through adoption of “white water to blue water” or “hilltop to oceans” approaches to the management of freshwater basins. Improving agricultural practices in catchments, and regulating minimum flow requirements for freshwater systems, as has been done in South Africa’s Water Law of 1998 are highlighted as important interventions in the protection of estuarine health. For the estuary itself, it is critical to prepare management and development plans which incorporate good ecological practice, and which are subject to rigorous environmental impact assessments before implementation.

The establishment of protected mangrove areas may assist as an interim solution to retarding the destruction of mangroves. Strict compliance by the communities will be required for protected mangrove areas to be at all effective. Ensuring strict compliance can be achieved through costly enforcement, or through generating community stewardship of these areas by involving communities in education and awareness

programmes, and in the establishment and management of protected mangrove areas.

Creation of alternative economic activities

Much of the destruction of mangroves is brought about by a lack of alternatives for building materials and firewood, and a number of policy options can be considered in addressing this. Government provision of building material and firewood is likely to be an impractical option as it is extremely expensive and unsustainable. Aforestation programme may alleviate the situation somewhat, but bring with them their own negative impacts on the terrestrial environment. The provision of cheap electricity to these coastal communities would not alleviate the problem as it relates to building materials, but would go a long way to alleviating the necessity for using mangrove wood for cooking fires. The only truly sustainable long-term option for alleviating the pressure on mangroves for building materials lies in creating sufficient economic opportunities in these coastal areas so that communities are better able to afford to utilise alternative building materials.

Destructive fishing methods are utilised by fishers because they are time- and cost-effective. Once again, reducing the reliance of coastal people on inshore finfish resources by creating alternative livelihoods and economic opportunities in coastal areas is the one truly sustainable option. In the interim, increasing voluntary compliance through increasing understanding of the resources and the impact that destructive fishing practices have on these, and creating a sense of stewardship will go some way to alleviating the problem, but only in cases in which there is no economic or livelihood reliance on these resources.

Improving voluntary compliance

Deterioration of environmental quality leading to a reduction in inshore finfish and their habitats in the Benguela Current region, can be attributed primarily to the degradation of critical estuarine and mangrove habitats and to destructive fishing practices. Much legislation already exists in the countries involved to protect environmental quality (Annex IV). There are, however, failures in the implementation of this legislation, and environmental degradation continues, in some cases despite the best efforts of enforcement agencies. The option of stepping-up enforcement is an expensive one, and not necessarily sustainable, nor does it address the root causes of the problem. In most instances, the problems exist because local communities have no alternatives to utilising coastal resources, and are unaware of the larger impacts that their activities may be creating. Public awareness of the impacts of particular activities and public involvement in management will be the key to addressing these problems, as will the generation of alternative sustainable livelihood opportunities in coastal areas.